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Report No: 96554-GH

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

AND

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON

PROPOSED IBRD ENCLAVE GUARANTEES

IN THE AMOUNT OF UP TO US$200 MILLION

AND

A PROPOSED IDA GUARANTEE

IN THE AMOUNT OF US$500 MILLION

FOR THE

REPUBLIC OF GHANA

IN SUPPORT OF THE

SANKOFA GAS PROJECT

July 7, 2015

Energy and Extractives Global Practice
Africa Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective May 31, 2015)

Currency Unit = Ghana Cedis (GHS)
GHS 4.06 = US$1

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

Bbl	Barrel
Btu	British thermal units
CAPI	Carried and Participating Interests
CBOs	Community Based Organizations
CI	Community Investments
CLO	Community Liaison Officer
CO	Carbon Monoxide
CPI	Consumer Price Index (US)
CPS	Country Partnership Strategy
DPOs	Development Policy Operations
EBITDA	Earnings Before Interests Tax Depreciation and Amortization
EC	Energy Commission
ECG	Electricity Company of Ghana
EOI	Expression of Interest
EPA	Ghana Environmental Protection Agency
ERR	Economic Rate of Return
ESHIA	Environmental, Social and Health Impact Assessment
ESHMP	Environmental, Social and Health Management Plan
FDIs	Foreign Direct Investment
FID	Final Investment Decision
FIRR	Financial Internal Rate of Return
FLO	Fisheries Liaison Officer
FPSO	Floating Production Storage and Offloading
GDA	Government Disbursement Account
GDP	Gross Domestic Product
GEDAP	Ghana Energy Development and Access Project
GHG	Greenhouse Gases
GHS	Ghana Cedis
GNGC	Ghana National Gas Company
GNPC	Ghana National Petroleum Corporation
GoG	Government of Ghana
GRIDCo	Ghana Grid Company

GRM	Grievance Redress Mechanism
GSA	Gas Supply Agreement
GSGDA	Ghana Shared Growth and Development Agenda
HoA	Heads of Agreement
HSE	Health, Safety, Environment
IBA	International Bird Area
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
IFC	International Finance Corporation
IFIs	International Financial Institutions
IFRS	International Financial Reporting Standards
IMF	International Monetary Fund
IOCs	International Oil Companies
IPIECA	International Petroleum Industry Environmental Conservation Association
IPP	Independent Power Project
IRR	Internal Rate of Return
ITLOS	International Tribunal of the Law of the Sea
JOA	Joint Operating Agreement
JV	Joint Venture
kWh	Kilowatt Hours
LC	Letter of Credit
LCO	Light Crude Oil
LNG	Liquefied Natural Gas
LRP	Livelihood Restoration Plan
MCC	Millennium Challenge Corporation
MIGA	Multilateral Investment Guarantee Agency
MMboe	Millions of barrels of oil equivalents
MMBtu	Millions of British thermal units
MMcf	Millions cubic feet
MMcfd	Millions cubic feet per day
MW	Megawatt
NAG	Non-Associated Gas
NEDCo	Northern Electricity Distribution Company
NGOs	Non-Governmental Organizations
NO_x	Oxides of Nitrogen
NPV	Net Present Value
OCTP	Offshore Cape Three Points
O&M	Operations and Maintenance
ORF	Onshore Receiving Facilities
OSCP	Oil Spill Contingency Plan
OSRL	Oil Spill Response Limited
PAD	Project Appraisal Document
PAP	Project Affected People
PDO	Project Development Objective
PHF	Petroleum Holding Fund

PoD	Plan of Development
PPA	Power Purchase Agreement
PPP	Public Private Partnership
PRI	Political Risk Insurance
PRMA	Petroleum Revenue Management Act
PS	Performance Standards
PURC	Public Utilities and Regulatory Commission
RAP	Resettlement Action Plan
ROW	Right of Way
SEP	Stakeholder Engagement Plan
SGP	Sankofa Gas Project
SOEs	State-owned-enterprises
SO_x	Oxides of Sulphur
Tcf	Trillion cubic feet
ToP	Take or Pay
TWh	Terawatt hour
VOCs	Volatile Organic Compounds
VRA	Volta River Authority
VUGL	Vitol Upstream Ghana Limited
WACAF	West and Central Africa
WAGP	West African Gas Pipeline
WAPCo	West African Gas Pipeline Company
WBG	World Bank Group
WTI	West Texas Intermediate

Regional Vice President:	Makhtar Diop
Country Director:	Yusupha B. Crookes
Senior Global Practice Director:	Anita Marangoly George
Practice Managers:	Pankaj Gupta / Meike van Ginneken
Task Team Leaders:	Robert Schlotterer / Sunil Mathrani

GHANA
Sankofa Gas Project

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PAD DATA SHEET

GHANA

SANKOFA GAS PROJECT (P152670)

PROJECT APPRAISAL DOCUMENT

AFRICA
GEEDR

Report No: 96554GH

Basic Information			
Project ID:	EA Category		Team Leader(s)
P152670	A – Full Assessment		Robert Schlotterer / Sunil Mathrani
Lending Instrument IDA Guarantee (Payment), IBRD Enclave Guarantee (Loan)	Fragile and/or Capacity Constraints [ ]		
	Financial Intermediaries [ ]		
	Series of Projects [ ]		
Expected Effectiveness Date	Expected Closing Date		
December 29, 2015	December 31, 2018		
Expected IDA Guarantees Expiry Date:	December 31, 2038		
Joint IFC			
Practice Managers/Manager	Senior Global Practice Director	Country Director	Regional Vice President
Pankaj Gupta / Meike van Ginneken	Anita Marangoly George	Yusupha B. Crookes	Makhtar Diop

Borrower: Republic of Ghana

Guarantors: IDA and IBRD Project Sponsors:
Eni Ghana Exploration and Production Ltd.;
Vitol Upstream Ghana Ltd.
Beneficiaries of the Guarantees:
ENI Finance International SA
Vitol SA (Geneva) / Other Vitol upstream entity to be identified
Letter of Credit Bank
Commercial Lenders

Project Financing Data (in USD Million)

[ ] Loan [ ] Credit [ ] Grant [X] Guarantee [ ] Other:

For Loans/Credits/Others:
Total World Bank financing (US$m.):
Proposed terms: US$500 million IDA Guarantee(s) for a maximum period of 22 years against defined risk coverage and US$200 million IBRD Enclave Loan Guarantees

Financing Plan (US$m)	
Source	**Total**
Total Capital Cost	**7,900.00**[1]
Of which Phase I (oil)	*3,900.00*
Of which Phase II (gas)	*4,000.00*
Funding requirement to first gas	**3,900.00**
Eni (equity and shareholder loans)	*2,200.00*
Vitol	*1,700.00*
Vitol equity/shareholder loans	*500.00*
Vitol debt (commercial and DFI)	*1,200.00*
Total:	**3,900.00**

Borrower:
Republic of Ghana
Guarantors: IDA and IBRD
Project Sponsors:
Eni Ghana Exploration and Production Ltd.;
Vitol Upstream Ghana Ltd.
Beneficiaries of the Guarantees:
ENI Finance International SA
Vitol SA (Geneva)/Other Vitol upstream entity to be identified
Letter of Credit Bank
Commercial Lenders

Content		
For Guarantees:	**[X] Project Based Payment Guarantee [X] Project Based Loan Guarantee [ ] Both Policy and Project Based**	
Proposed Coverage:	Guarantee of the Ghana National Petroleum Corporation (GNPC) gas payments to the Project's Private Sponsors and Government payment obligations as detailed in the Gas Supply Agreement (GSA) and related security package documents currently under development.	
Nature of Underlying Financing:	Letter of credit from commercial bank(s) Commercial Bank Loans Shareholder Loans	
Terms of Financing for IBRD/IDA Guarantee:	**Principal Amount (US$m):**	700
	Final Maturity:	22 years
	Amortization Profile:	N/A
	Grace Period:	None
Financing available without Guarantee:	**[ ] Yes [x] No**	
If Yes, estimated Cost or Maturity:	N/A	

[1] The total CAPEX includes US$2.9 billion in lease fees of the FPSO during operation and an additional US$1.1 billion of investments until first gas.

Estimated Financing Cost or Maturity with Guarantee:	N/A
World Bank Group Participation:	**[X] IFC [X] MIGA**

Estimated disbursements (in USD million)								
FY	16	17	18	19	20	21	22	23
Annual	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Institutional Data

Practice Area / Cross Cutting Solution Area

Energy and Extractives

Cross Cutting Areas

[ ] Climate Change
[ ] Fragile, Conflict & Violence
[ ] Gender
[ ] Jobs
[X] Public Private Partnership

Sectors / Climate Change

Sector (Maximum 5 and total % must equal 100)

Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %
Energy and mining	Oil and gas	100		

☑ I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information applicable to this project.

Themes

Theme (Maximum 5 and total % must equal 100)

Major theme	Theme	%
Finance and Private Sector Development	Infrastructure Services for Private Sector Development	100
Total		100

Project Development Objective(s)

The project development objective (PDO) is to increase the availability of natural gas for clean power generation by leveraging private capital investment.

Project Description

The Project supports the development of the non-associated natural gas reserves in the Sankofa gas field within the Offshore Cape Three Points (OCTP) block through a package of IDA Guarantee(s) and IBRD Enclave Guarantees. The OCTP block will be developed by two private investors (Eni of Italy and Vitol of Netherlands) together with GNPC. The Sankofa gas field could supply close to 1,000MW of power generation plants.

Components

Component Name	Cost (USD Millions)

Systematic Operations Risk Rating Tool (SORT)	
Risk Category	**Rating**
1. Political and Governance	High
2. Macroeconomic	High
3. Sector Strategies and Policies	High
4. Technical Design of Project or Program	Moderate
5. Institutional Capacity for Implementation and Sustainability	Low
6. Fiduciary	Low
7. Environment and Social	High
8. Stakeholders	Substantial
9. Other	N/A
Overall	**High**

Compliance	
Policy	
Does the project depart from the CAS in content or other significant respects?	[ ]Yes [X] No
Does the project require any exceptions from World Bank policies?	[ ]Yes [X] No
Have these been approved by World Bank management?	[ ]Yes [ ] No
Is approval for any policy exception sought from the Board?	[ ]Yes [X] No
Does the project include any critical risks rated "substantial" or "high"?	[X] Yes [ ] No
Does the project meet the Regional criteria for readiness for implementation?	[X]Yes [ ] No
Safeguard Policies	**Triggered**
PS 1: Social and Environmental Assessment and Management Systems	**YES**
PS 2: Labor and Working Conditions	**YES**
PS 3: Resource Efficiency and Pollution Prevention	**YES**
PS 4: Community Health, Safety & Security	**YES**
PS 5: Land Acquisition and Involuntary Resettlement	**YES**
PS 6: Biodiversity Conservation & Sustainable Natural Resource Management	**YES**
PS 7: Indigenous People	**NO**
PS 8: Cultural Heritage	**NO**

Legal Covenants – Standard Covenants, Representations, and Warranties for Guarantees are proposed to be included in the legal documentation. In addition, the following covenants will be included under the IDA & IBRD Indemnity Agreements with GoG and Cooperation Agreements with GNPC.

Name	Recurrent	Due Date	Frequency
Indemnity Agreement	No	TBD	Once

Description of Covenant

The Government of Ghana (GoG) will agree to:

(i) Create a committee headed by the Ministry of Finance and the Ministry of Petroleum to monitor progress of the contractual milestones agreed between the GoG, GNPC and the Sponsors under the Heads of Agreement and Gas Sales Agreement (the "Milestones") by the milestone completion dates provided under such agreements. The committee shall meet and report to the relevant parties and the Bank on a quarterly basis.

(ii) Prepare and provide to the Bank for discussion a plan of action to conclude a tie-in agreement and a transportation agreement between GNPC and West African Gas Pipeline Company (WAPCo) to ensure that the West African Gas Pipeline (WAGP) will be operational, ready and available to receive and transport gas from Aboadze to Tema. The GoG will keep the Bank

informed on the progress of any actions provided under the Plan and discuss and agree with the Bank any remedial measures to be taken in the event of delay or failure to implement the plan.

Name	Recurrent	Due Date	Frequency
Covenants under the Cooperation Agreement	No	As per Project milestones' completion dates.	TBD

Description of Covenant

GNPC shall take all actions under its responsibility to ensure the timely completion of the project milestones as per its contractual undertakings. In particular, GNPC shall ensure that:

(i) Transportation and tie-in agreements are entered into by the relevant parties thereto to ship contracted OCTP gas sales volumes to the power plants taking such contracted gas sales volumes;
(ii) Gas sales agreements are entered into with new or existing power plants for the firm purchase of all contracted gas sales volumes.
(iii) The required pipelines to transport the contracted gas sales volumes and power plants with the necessary power capacity are in place to absorb the contracted gas sales volumes; and
(iv) natural gas nominations processes, procedures and systems are in place to enable operation of the gas infrastructure supplying gas from multiple suppliers to multiple offtakers and which should include provisions of OCTP gas volumes to be made available by the Sponsors at the delivery point to be nominated, received, transported and delivered to consumers of gas for baseload power generation; and
(v) prior to agreeing to any indebtedness that could result in GNPC's cumulative principal amount of debt under any pari passu financing arrangement to exceed USD500 million, GNPC shall require the prior written consent of IBRD.

Team Composition

Bank Staff

Name	Role	Title	Unit
Robert Schlotterer	Co-Task Team Leader	Senior Infrastructure Finance Specialist	GEEDR
Sunil Mathrani	Co-Task Team Leader	Senior Energy Specialist	GEEDR
David Santley	Team Member	Senior Petroleum Specialist	GEEDR
Manuel Luengo	Team Member	Senior Energy Specialist	GEEDR
Carol Litwin	Team Member	Senior Energy Specialist	GEEDR
Vincent Launay	Team Member	Infrastructure Finance Specialist	GEEDR
Monica Restrepo	Counsel	Senior Counsel	LEGSO
Demba Balde	Safeguards Specialist	Senior Social Development Specialist	GSURR
Chita Oje	Team Member	Program Assistant	GEEDR
Ayishetu Terewina	Team Member	Program Assistant	AFCW1
Thomas Walton	Environmental Specialist	Environmental Specialist	GENDR

Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
Ghana					Nationwide

I. STRATEGIC CONTEXT

1. **Improved macroeconomic stability and more effective public spending are necessary for Ghana to realize its goals of sustained growth and enhanced economy-wide competitiveness.** Following a long period of sustained growth, the Ghanaian economy has suffered a number of external and domestic macroeconomic shocks since 2012, which has led to slowing down of economic growth in 2014-15 to below 5 percent. Major external shocks included the low volume of gas imports from Nigeria through the West African Gas Pipeline (WAGP) and highly volatile prices for gold exports. Due to low and intermittent gas supply from Nigeria, combined with slower than expected domestic gas development, Ghana has been forced to increase oil imports to generate electricity. During the past year the liquid fuel import bill rose dramatically, by approximately US$27 million per month, when gas was unavailable. The increase in oil imports was partially offset by rising export prices for gold. However, the recent sharp reduction in gold prices has pushed the current-account deficit to about 9.2 percent of Gross Domestic Product (GDP) in 2014. Over-expansionary fiscal policy contributed to the large and protracted external imbalances, which sapped the country's net international reserves. In 2014, the Ghanaian Cedi depreciated by 35 percent against the U.S. Dollar, pushing inflation to over 17 percent.

2. **Developing new offshore oil and gas resources are key to reestablishing macroeconomic stability and putting Ghana back on a strong growth path.** The commencement of local gas production in 2015 is expected to lower the cost of electricity generation and reduce oil imports. The increase in oil exports and compressed aggregate demand resulting from the ongoing fiscal correction will support an improvement in the external current account deficit over the medium term, from about 9 percent of GDP in 2014 to about 5 percent in 2017. Harnessing of more natural gas resources for future electricity generation will significantly lower electricity production costs and thus reduce the need for fuel subsidies for the power sector which in the past several years have amounted to over half a billion dollars. Developing the non-associated Sankofa gas field[2] supported through this project, will also create a substantial additional fiscal revenue stream for the Government of Ghana (GoG) since close to half of the revenues from the sale of gas returns to the GoG in the form of taxes and royalties. In addition, improving the reliability of power supply will allow economic growth to accelerate again.

3. **The proposed Sankofa Gas Project (SGP) will substitute expensive, imported, liquid fuels used by the power sector of Ghana with domestic and reasonably priced natural gas.** Exploiting the Sankofa gas field non-associated gas reserves will be a game changer for Ghana. The field is capable of providing baseload gas to fuel up to 1,000MW of power plants and export 131 million barrels of oil to the global markets. The SGP will replace expensive, polluting liquid fuels currently used by the power sector of Ghana as well as enable new generation capacity to be constructed. Gas production at other fields currently in operation in Ghana will decline rapidly after 2020. The Sankofa gas field is expected to be in production for almost two decades thereafter[3]. Investments in the proposed gas project will also ensure the integrated development of

[2] The project supports the development of two non-associated gas fields, Sankofa field and Gye Nyame field both located in the Offshore Cape Three Points exploration block. For ease of reference in the following the reference to the "Sankofa gas field" will encompass both fields.

[3] The plateau period is set for 14 years from start-up of production and the license expires in 2036.

non-associated gas with an oil field that is expected to generate critical foreign currency resources for Ghana through oil sales in the export market. The project will therefore help address Ghana's current macroeconomic challenges by bringing in much needed dollar-based revenues to the country's constrained fiscal balances.

4. **World Bank Guarantees, along with IFC lending and MIGA Political Risk Insurance, will support the development of the largest foreign direct investment opportunity in sub-Saharan Africa in recent times.** The World Bank Group (WBG) support will underpin US$8 billion of foreign private investment in the economy. The project will be structured in a manner that prudently reduces Ghana's fiscal support at a time when macroeconomic uncertainty is affecting the investment climate. The WBG is expected to support the GoG and private parties to ensure timely completion of the project. MIGA and IFC are preparing to support one of the private participants in the project whilst World Bank support has been requested for the project as a whole by the two private participants.[4]

5. **Investing in gas development and gas-to-power generation and improving efficiency of the power distribution utility in parallel are critical for improving electricity service delivery in Ghana.** For Sankofa gas to be fully absorbed, the GoG's power sector generation program needs to be quickly rolled out. The proposed operation is part of a suite of the WBG and other donor interventions along the energy value chain to support investments in generation and transmission, increase efficiency and improve payment discipline from end-users. This includes a plan to concession out the distribution utility (supported by IFC Advisory Services and the Millennium Challenge Corporation (MCC). The WBG is actively engaged in the entire value chain within the gas and power sectors and brings a unique added value in accompanying Ghana in transforming its power sector to spur economic growth and re-establish macroeconomic stability.

A. Country Context

6. **Ghana, with a population of about 25 million and GDP per capita of US$1,730[5], has experienced strong and broadly inclusive growth over the past two decades.** There have been significant improvements in poverty and social indicators and the country is transitioning to lower middle-income status. The economy has outperformed most of the developing sub-Saharan countries. Nevertheless, about one quarter of the population lives below the poverty line, over 8 percent in extreme poverty, and six to seven million jobs will need to be created in the next two decades to absorb new entrants into the labor market. Success in addressing these challenges will critically depend on complementing extractive industries with diversified private sector-led growth in labor intensive industries.

7. **Oil and gas developments significantly complement the country's efforts to move to middle income status.** Ghana's economy is expected to maintain robust growth over the medium term, bolstered by improved oil and gas production, increased private-sector investment, improved public infrastructure development, and sustained political stability. Oil reserves are estimated at around two billion barrels, and there have been 24 new oil and gas discoveries since the Jubilee

[4] MIGA insurance and IFC lending are not part of the operation proposed in this PAD. The World Bank Board approval for the proposed operation is being sought prior to the subsequent Board consideration of the separate but possibly joint IFC and MIGA package.
[5] IMF 2014, Article IV Consultation – Staff Report. Preliminary estimates.

discoveries in 2007. Oil production increased gradually from between 70-80,000 barrels per day (b/d) in 2012 to 120,000 b/d in 2014. In 2012, oil production earned the country approximately US$3 billion, accounting for about 22 percent of total value of exports and around 5 percent of total government revenue. Over the medium term, financing of Ghana's Growth and Poverty Reduction Strategy is critically dependent upon the revenues generated from royalties from hydrocarbon exports.

8. **The escalating cost of the public sector wage bill, rising interest rates, and energy constraints have had a negative impact on public finances and the supply side of the economy**. The public payroll rose from less than 8 percent of GDP before 2010 to 12 percent in 2011 and then slid to 10.5 percent by 2014. Meanwhile, load shedding in the energy sector increased the structural cost of production as firms were forced to either cut output or supplement their power supply with costly diesel generators. The Government initially attempted to absorb some of the increase in electricity cost due to the heavy dependency on expensive liquid fuels through fuel subsidies, but the rapidly widening fiscal deficit made this policy unsustainable. Interest rates rose as the Government's financing requirements increased, compounding public expenditures and constraining the supply of credit to the private sector. The impact of power shortages on the economic growth rate in 2014-15 is estimated to be at least a 2 percent reduction in GDP growth.

9. **The GoG has embarked on a program to restore fiscal discipline and has entered into a three-year arrangement with the IMF under a recently approved Extended Credit Facility.**[6] The facility will reinforce fiscal discipline and enhance the effectiveness of public expenditures, enabling the government to advance its development objectives without compromising its ability to service future debt obligations. The joint IMF and World Bank development policy support is expected to address structural vulnerabilities in Ghana's macroeconomic management. Restoring fiscal prudence and reasserting budgetary control are prerequisites for sustainable growth. Institutional reforms necessary to address macro-fiscal imbalances will be supported by a planned series of IDA development policy operations (DPOs)[7]. The governance reviews of the sector regulatory bodies and key energy sector state-owned enterprises (SOEs) to be undertaken as part of the DPO-supported measures are expected to lead to reforms/restructuring of the energy SOEs, which in turn should lead to improved performance and better service delivery. Under the IMF Facility, the GoG has committed to clear the outstanding stock of payment arrears to SOEs over the coming three years. About a quarter of outstanding arrears would be repaid in 2015.

10. **The energy sector is inextricably linked to Ghana's macroeconomic performance through multiple channels, namely through the real sector, the fiscal accounts and the balance of payments.** Recent studies estimate the fiscal shock arising from the impact of the energy shortages at a minimum of 2 percentage points of GDP, with a protracted impact over several years. By having a more stable gas supply, fiscal shocks will be mitigated or will at least be more under the control of Ghanaian authorities. In addition, the proposed Sankofa intervention does not raise any funding obligations for the GoG and thus has no negative impact on the IMF's

[6] Approved by the IMF Board of Executive Directors on April 3, 2015.
[7] The first in the series of IDA Development Policy operations is the Macroeconomic Stability for Competitiveness and Growth Credit and Policy Based Guarantee, which was approved by the Board of Directors on June 30, 2015.

debt sustainability assessment. In fact, the proposed intervention will have macro-positive impacts that will bring much needed hard currency revenues to the country.

11. **The balance of payments impact of developing the SGP will allow a reduction in liquid fuel imports for power generation by US$200 million per year and US$5 billion over the life of the project and bring in about US$3 billion from oil sales and royalties.** The Sankofa oil field is expected to produce an average of 30-40,000 b/d of oil during 2017-2022, equivalent to approximately US$1 billion per year at current WBG oil price projections. Hence, the impact of the Sankofa development on the balance of payments is critical to reducing pressure on the currency, which in turn will enhance debt sustainability given the composition of public debt.

12. **The SGP will complement the World Bank's and IMF's macroeconomic and fiscal programs by supporting the GoG's strategy[8] to leverage new domestic gas and oil resources to develop the manufacturing sector and higher value agriculture**. This strategy will require significant investments in infrastructure and removal of the main bottlenecks to economic growth, including inadequate and unreliable electricity supply and lack of affordable bank financing for the private sector. The SGP will help unlock such infrastructure investments by catalyzing Foreign Direct Investment (FDI) in the country and setting a significant precedent in the international investment markets.

B. Sectoral and Institutional Context

13. **The energy sector in Ghana includes the petroleum and electricity sub-sectors and, given the high dependency on oil and gas of the electricity sub-sector, they are strongly interlinked**. The commercialization of Ghana's natural gas resources is driven by the power sector's need for fuel. The current volumes of proven reserves in Ghana's domestic gas fields are sufficient for domestic use of gas for the medium term. The power sector critically depends on additional associated and non-associated gas resources becoming available as an alternative and relatively less expensive fuel source to improve electricity services and reestablish the sector's financial equilibrium. At the same time, monetization of Ghana's domestic gas resources depends on the ability of the electricity sector to consume and pay for the gas.

Ghana's Oil and Gas Sector

14. **Three commercial oil and gas developments have been or are being developed and are being monetized out of several offshore deep water discoveries announced in Ghana since 2007.** The Jubilee field, discovered in 2007, has total recoverable reserves of roughly 600 million barrels of oil and is currently producing around 100,000 b/d. The second commercial oil development is the TEN project (an integrated development of the Tweneboa, Enyenra, and Ntomme fields). TEN is planned as a 76,000 b/d development with ultimate recovery of roughly 240 million barrels. In addition, TEN is expected to supply 50 million cubic feet per day (MMcfd) of gas beginning in 2018.[9] Tullow Oil is the operator of both Jubilee and TEN. The third confirmed

[8] Ghana Shared Growth and Development Agenda II (2014-17)

[9] The Special Chamber of the International Tribunal of the Law of the Sea (ITLOS) in Hamburg on April 25, 2015 ruled that although Ghana was not required to suspend exploitation activities in respect of which drilling had already taken place, Ghana should suspend new drilling activities in the TEN field. ITLOS also ordered a number of additional provisional measures which both Ghana and Côte d'Ivoire are required to comply with, including

development is the Offshore Cape Three Points (OCTP) block, which includes the non-associated gas fields of Sankofa and Gye Nyame ("Sankofa gas field") as well as the Sankofa East oil field. The OCTP fields are developed by Eni Exploration and Production Ltd ("Eni Ghana") a subsidiary of Eni S.p.A. of Italy ("Eni") and Vitol Group of the Netherlands ("Vitol") (together "Private Sponsors"). To support the development of the gas fields, a gas processing and transportation project from the Jubilee site to the Aboadze power complex near Takoradi in Western Ghana has been recently commissioned. About 100 MMcfd of associated gas from Jubilee is expected until the Sankofa gas field comes on line in 2018.

15. **Prospects for attaining contractual levels of natural gas import from Nigeria through WAGP remain uncertain.** WAGP has experienced severe supply shortages in Nigeria and interruptions in deliveries have compromised its contractual ability to supply Ghana with 120 MMcfd of firm gas. Shortages occur when domestic Nigerian gas/supply demand pressures take priority over exports. Over the last several years, unavailability of firm capacity of gas on a long-term basis from Nigeria and from Ghana's domestic gas fields have led to an additional cost of up to US$30 million per month of light crude oil (LCO) to avoid major load shedding.

16. **Ghana's petroleum sector is in the process of being realigned to ensure an efficient management of the domestic oil and gas discoveries and to ensure that domestic gas can be aggregated and sold domestically.** Institutional responsibility for managing the oil and gas sector is divided into three mandates. The Ministry of Petroleum has policy-making and oversight responsibility for the sector. The Petroleum Commission is the upstream regulator with responsibility for, *inter alia*, qualifying licensees, approving exploration and development plans, and implementing local content regulations. The Ghana National Petroleum Corporation (GNPC) is the national oil company with responsibility for commercializing upstream oil and gas. The Ghana Negotiating Team (made up of GNPC, Petroleum Commission, Ministry of Petroleum) upon instruction from the Minister for Petroleum negotiates the petroleum agreements with International Oil Companies (IOCs). GNPC holds the country's carried and participating interests under each petroleum agreement. The Ghana National Gas Company (GNGC) was established in 2012 with a mandate to implement the Jubilee gas infrastructure and to act as gas aggregator/marketer. However, the GoG has recently announced that GNGC will be incorporated as a subsidiary of GNPC, thus giving GNPC the responsibility for aggregation, transportation and commercialization of gas.

17. **Ghana's 2011 Petroleum Revenue Management Act (PRMA) provides a solid system for collection, allocation and management of petroleum revenues.** Under the PRMA, all royalties, taxes, and participating interests are to be deposited into a consolidated account. From the consolidated account, GNPC receives a priority distribution equal to its equity finance costs plus a portion of the revenue from carried and participating interests (CAPI).[10] The remaining oil revenue is distributed between the current-year budget (limited to 70 percent of revenue), the

continued cooperation until ITLOS issues its final decision on the maritime boundary dispute. https://www.itlos.org/fileadmin/itlos/documents/cases/case_no.23_prov_meas/C23_Order_prov.measures_25.04.2015_orig_Eng.pdf

[10] The current level of CAPI contributions to GNPC is set by Parliament at 30 percent of the net cash flow from the carried and participating interests after deducting the equity financing cost of GNPC.

Ghana Stabilization Fund, and the Ghana Heritage Fund. The PRMA establishes governance, oversight as well as disclosure requirements and defines the eligible categories of investment for petroleum revenues. It prohibits using oil revenues as collateral for debts and guarantees. The PRMA is designed to ensure that the oil and gas revenues that accrue to the Ghana are primarily used for protecting the future of Ghana's public and the macroeconomic health over the medium term.

Ghana's Electricity Sector

18. **Access to electricity in Ghana, at about 75 percent, is well above other countries in sub-Saharan Africa.** Electricity consumption per capita was 344 kilowatt hours (kWh) per capita in 2011. Ghana unbundled its power sector into separate generation, transmission, and distribution utilities, one of the first countries in sub-Saharan Africa to do so. Ghana was also one of the first countries in sub-Saharan Africa to attract private investment through independent power projects (IPPs). Ghana's high-voltage power grid is interconnected with neighboring countries (Cote d'Ivoire, Togo, Benin and, in the near future, Burkina Faso). Already an electricity exporter, Ghana is well positioned to further develop its role as electricity exporter and energy 'bank' in the sub-region. While fuel shortages and macroeconomic shocks have adversely impacted the sector in the past few years, the Ghanaian power sector remains one of the most advanced in Africa.

19. **Ghana's power sector has separate (state-owned) generation, transmission, and distribution utilities.** The Volta River Authority (VRA) manages hydropower assets as well as part of the thermal generation capacity. IPPs account for 15 percent of installed generation capacity. The transmission system is owned and operated by the Ghana Grid Company (GRIDCo). The distribution of electricity is carried out by the Electricity Company of Ghana (ECG), with about 2.6 million customers that accounts for about 90 percent of retail power sales, and the Northern Electricity Distribution Company (NEDCo), a subsidiary of VRA, which handles the remaining 10 percent. The Ministry of Power is responsible for formulating, implementing, monitoring, and evaluating energy sector policies, while the Energy Commission (EC) and the Public Utilities and Regulatory Commission (PURC) regulate the industry, as the technical and economic regulators respectively.

20. **Traditionally, hydropower has been the main source of energy in Ghana, but it is increasingly being complemented by thermal generation.** Ghana has an installed power generation capacity of about 2,400 MW, made up of 1,400 MW of hydropower plants, just over 1,000 MW of gas/oil fired thermal facilities, and a small portion (2.5 MW) of grid-connected solar. Approximately 800 MW of additional thermal generation capacity are currently under construction by public utilities and independent power producers. Total power generation was 13TWh in 2014. Electricity demand at peak is currently about 2,000 MW. Electricity demand is projected to grow by an average 5.8 percent per year in the coming decade.

21. **The financial health of the power sector has deteriorated in recent years.** The increasing dependency on liquid fuels to run thermal power plants over the past several years has increased the cost of power generation and has required considerable government subsidies due to lags in tariff adjustments. Thermal generation has been mostly run on LCO in the past decade. Developing natural gas resources is therefore critical to reduce generation costs in Ghana and ease the pressure on electricity tariffs, which would require a substantial increase if the system

continues running on LCO. Therefore, while tariffs will need to be adjusted to account for currency depreciation, switching the primary generation fuel from LCO to domestic gas would permit a substantially lower tariff increase in future.

22. **Increasing receivables, particularly from public sector consumers for unpaid electricity consumption have impacted ECG's financial performance, which in turn had a negative influence on the sustainability of the entire energy sector value chain.** As public finances were squeezed, receivables from public sector consumers to ECG increased to GHS820 million (US$256 million) at the end of 2014. Concurrently, ECG's short-term liabilities to its suppliers (in particular VRA) increased to GHS 3.4 billion (US$1.1 billion) at the end of 2014. ECG is not seen as a creditworthy offtaker by independent power producers, which has been a major obstacle to reaching financial closure on new IPPs needed to ensure sufficient generation capacity to meet growing electricity demand. More recently, a constrained fiscal environment is also reducing the government's ability to provide sovereign guarantees on behalf of its SOEs.

23. **The GoG is taking a number of parallel actions in order to start a virtuous cycle of increasing revenues and reducing costs.** The large 2013 tariff increase, followed by more modest adjustments in 2014 has already had a positive effect on the financial equilibrium of the sector. Short-term measures and medium-term reforms in the distribution sub-sector have begun and will help to improve revenue collection, operational efficiency, and attract private financing. A new cash management system for the electricity sector, which is at an advanced stage of preparation by PURC, will bring greater predictability to the flow of funds in the power sector. As Ghana has developed most of its hydropower resources, its main avenue for reduction of generation costs is the development of domestic gas.

24. **The GoG has started to reduce the stock of payment arrears to ECG for its electricity consumption.** Under the MCC Compact II program, the GoG has committed to settle its arrears and maintain public sector receivables to less than two months of sales by end-2017. In addition, the IMF's Extended Credit Facility will reinforce fiscal discipline by applying a ceiling to the contracting and guaranteeing of new non-concessional external debt by the GoG and public enterprises, including GNPC, GNGC, VRA, GRIDCo, and ECG. The budget support received through the IMF's Facility and the IDA DPOs will assist the GoG in partially paying off its arrears for electricity consumption. In turn, the payment of government arrears to ECG will enable ECG to reduce its debts to suppliers, VRA, and IPPs.

25. **ECG is rolling out a number of improvements in its commercial operations and the GoG has started a process to seek a private operator for ECG under a long-term concession.** In the short term, ECG is rolling out a new company-wide commercial management system to be completed by September 2015. This will be complemented by the installation of more prepayment meters and the introduction of advanced metering infrastructure to remotely record consumption of large customers. These measures are being implemented under the IDA-supported Ghana Energy Development and Access Project (GEDAP)[11] and are expected to lead to better revenue collection performance from ECG's private sector clients over the 2015-17 period. Introduction of

[11] Initially approved in 2007 for an amount of US$90 million. A first additional financing of US$70 million was approved in 2010, and a second additional financing of US$60 million was approved in April 2015.

prepayment metering in publicly-owned premises is being pursued vigorously and state bodies are being cut off for non-payment of electricity bills.

26. **In early 2015, the GoG announced its intention to introduce private sector participation in ECG, through a long-term concession contract with a competitively selected private operator.** The introduction of private sector participation is a condition of the MCC Compact II, which the Parliament of Ghana approved in 2014. The GoG expects the private operator to invest substantial resources in ECG. The MCC has committed to provide US$340 million in complementary grant funds to ECG for investments to support the private sector participation process. The tendering, selection, and finalization of the concession contract is expected to take two to three years.

27. **A sector-wide revenue management scheme to bring greater predictability to the flow of funds in the power sector will shortly be introduced.** It will oblige ECG to distribute predetermined shares of its monthly revenue to other sector entities on whose behalf it collects revenues from retail customers. The new scheme will remove ECG's discretionary authority to distribute sector revenues to other entities on a non-transparent and variable basis. It is an important measure to restoring payment discipline and predictable cash flows within the sector.

28. **Three commercial gas field developments, Jubilee, TEN and Sankofa will help reduce power generation costs and facilitate further extension of electricity supply.** The aggregated costs of gas as a combination of the three individual field prices will offer Ghana a substantially lower-priced fuel source for thermal generation compared to LCO. The Jubilee associated gas field has been producing gas since late 2014. The TEN associated gas field is currently under development and is expected to supply 50MMcfd of gas from 2018[12]. The third confirmed development is the non-associated Sankofa gas field, which could produce 180MMcfd[13] from mid-2018, and which is supported through this project. As Sankofa gas is non-associated, it will provide base-load gas supply to power up to 1,000 MW of power generation capacity. The timely development of the Sankofa gas field will be a critical measure in this suite of positive steps to make the Ghana energy sector financially sustainable in the coming years.

29. **Increased gas supply will enhance the GoG's prospects of attracting private sector financing for power generation by removing a major constraint to financial closure of potential IPPs.** Several developers have shown interest in investing in the power sector. An additional 2,500 MW of gas-fired power plants are either committed or in advanced stages of planning. In the past few years, lack of fuel has been a binding constraint for IPP developers, which will only move forward to financial closure once they have secured domestic gas to reduce the fuel supply risk. If all the committed and planned capacity additions take place, dependable generation capacity will meet demand (including a small reserve margin) by 2019.

[12] Please see footnote 9 in connection with the ongoing maritime dispute affecting TEN.
[13] The volume agreed under the GSA is 171MMcfd but the Sankofa and Gye Nyame fields are expected to be able to produce up to 180MMcfd.

C. Higher Level Objectives to which the Project Contributes

30. **The proposed project is part of the GoG's turnaround strategy for the energy sector and contributes to Ghana's macroeconomic recovery.** The proposed project also supports the development objectives set out in Ghana's second Shared Growth and Development Agenda (GSGDA II) for 2014-17. The GSGDA II emphasizes the need for structural economic transformation to accelerate poverty reduction and achieve the strategy's overarching objective, "a stable, united, inclusive and prosperous country with opportunities for all." Specifically, the project will contribute to three of the seven thematic areas of the GSGDA II, namely ensuring and sustaining macroeconomic stability, enhancing competitiveness of Ghana's private sector, and oil as well as gas development.

31. **The proposed project is consistent with the most recent World Bank Group Country Partnership Strategy (CPS) FY13-FY16 for Ghana.** It will contribute to Pillar 2: "*Improving Competitiveness and Job Creation*", where the WBG support will promote more efficient delivery of infrastructure services. The project supports the World Bank Group's twin goals of ending extreme poverty and boosting shared prosperity by 2030. The project is in line with the WBG's 2013 Energy Directions Paper, which plans for a scale up of the WBG's engagement in natural gas as a flexible, low costs, and cleaner fuel.

32. **The proposed Bank guarantees are part of a broad suite of the WBG instruments supporting the energy value chain in Ghana, which are anchored in a broad sectoral dialogue with the authorities.** The Bank is supporting the main power distribution company, ECG, through GEDAP. IFC, through its sub-national finance program, is providing a corporate loan to GRIDCo to support construction of an electrical substation and transmission lines and to refinance some of GRIDCo's existing debt. In addition, IFC Advisory Services is currently advising the GoG on its planned concessioning of ECG. The World Bank, IFC, and MIGA are all preparing support to the roll out of the GoG's priority IPP program. Moreover and as noted earlier, both MIGA and IFC are expected to support one of the partners in the proposed SGP. The WBG support to the sector will improve energy services for end-users, but will also contribute to restoring investors' confidence in the energy sector in Ghana. The energy sector support will be complemented by the series of IDA DPOs and the IMF's Extended Credit Facility, which will reinforce fiscal discipline and provide budget space for the GoG to settle its arrears for electricity consumption.

33. **The project is well positioned to benefit from an IBRD Enclave Guarantee.** As GNPC will generate foreign exchange revenues through oil sales and given the existing framework regulating the management of petroleum revenues (PRMA), the project has been deemed eligible for an IBRD Enclave Guarantee operation in combination with IDA Payment Guarantee. The IBRD Enclave Guarantees are proposed to be availed for the benefit of the Private Sponsors. The availability of an IBRD Enclave Guarantee will strategically free up IDA exposure in Ghana. This additional IDA exposure will be available to support the development of IPPs in Ghana that will consume gas from the Sankofa project.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

34. The Project's Development Objective (PDO) is to increase the availability of natural gas for clean power generation by leveraging private capital investment.

B. Project Beneficiaries

35. The direct beneficiaries of the proposed project are: (i) the GoG, which will earn substantial revenues from the additional gas to be sold over the next 18 to 20 years, helping to improve the country's macro-fiscal stability and energy sector situation; (ii) the OCTP Private Sponsors; and (iii) the private lenders that are providing loans to the Private Sponsors.

36. The indirect beneficiaries are consumers of electricity, who will see the frequency and duration of power outages reduced. The project is also expected to have a positive climate change benefit, since the greenhouse gases (GHG) released by burning natural gas for electricity generation will be significantly lower than those from the liquid fuel currently being burned.

C. PDO Level Results Indicators

37. The proposed PDO indicators are:
a) The quantity of gas supplied to power plants (MMcfd);
b) Private sector capital mobilized (amount, US$) and
c) Indirect beneficiaries/female (number/percent)

38. The project's intermediate indicators relate to the commissioning of the Project on time and budget. The intermediate indicators include:
a) Gas production capacity achieved by the Project (MMcf/month) and
b) Commissioning of the project completed on time and budget (yes/no)

III. PROJECT DESCRIPTION

39. **The proposed SGP supports the development of the offshore Sankofa gas field within the OCTP block in Western Ghana, which will be developed by two private sponsors (Eni and Vitol) together with GNPC.** The proposed US$700 million World Bank Guarantees support will provide ongoing mitigation of GNPC offtake and payment risks and long-term political risks in Ghana. The impact of the Sankofa development on the balance of payments is critical in reducing the pressure on the Ghanaian currency, which in turn will enhance debt sustainability given the composition of public debt. The Sankofa gas will replace expensive, polluting, liquid fuels currently used by the Ghanaian power sector as well as enable new generation capacity to be constructed. The proposed natural gas project will also ensure the development of two non-associated oil fields.

40. **The WBG support to the project will underpin US$8 billion of foreign private investment in the economy.** Overall, the development of the OCTP oil and gas block is the largest foreign direct investment opportunity in sub-Saharan Africa in recent times. The project will be structured in a manner that prudently reduces Ghana's fiscal support at a time when macroeconomic uncertainty is affecting the investment climate. The proposed Sankofa

intervention does not raise any funding obligations for the GoG and thus has no negative impact on the debt sustainability analysis.

A. Project Design

41. **The Sankofa gas field's non-associated gas reserves can provide 180 MMcfd of gas-to-power base-load supply for nearly 14 years.** This is sufficient to supply up to 1,000 MW of power generation. The Sankofa gas field is planned to come on line in the first half of 2018, when gas from the other Ghanaian gas fields (Jubilee and TEN[14]) is expected to be well into plateau level production, and which is expected to start declining in 2020.

42. **The production from the Sankofa gas field will be used to fuel current and future thermal generation facilities needed to alleviate Ghana's persistent power deficit.** Ghana's current installed thermal capacity is 1,015 MW and new capacity of over 2,500 MW is planned to come online between now and 2020. Gas from Sankofa will be delivered to Sanzule (in Western Ghana) then tied-in with the recently-completed GNGC pipeline from Atuabo (see map) and shipped to Takoradi commingled with Jubilee and TEN gas. In Takoradi, where the gas will be consumed, thermal capacity is projected to increase from 500 MW to nearly 2,000 MW as a result of the GoG's priority IPP development program. Gas demand from the current and planned thermal plants is estimated to reach 373 MMcfd by 2020. Even after development of the Sankofa gas field, a gas deficit will persist at a national level necessitating development of liquefied natural gas (LNG) or other additional supply in the long-term. The rapid expansion of domestic gas supply at Takoradi during the critical 2018-2019 period is likely to outpace gas demand from IPPs in Takoradi during the same period with the result that Sankofa and the other domestic gas projects might not be fully absorbed. For this reason, it is critical to establish an interconnection between the GNGC pipeline and WAGP to deliver excess gas in Takoradi via "back-flow" of WAGP to the existing cluster of power plants in Tema in Eastern Ghana, where a gas deficit is expected to persist.

43. **Eni Ghana is the operator of the OCTP block holding a 44.4 percent participating interest, with Vitol holding 35.6 percent and GNPC 20 percent.** GNPC's 15 percent share of development costs is carried by Eni and Vitol at no cost whilst its additional 5 percent interest will be financed by the partners and repaid with the proceeds from oil liftings and its share of gas sales. The Private Sponsors will develop the OCTP through their local subsidiaries and in the form of an unincorporated Joint Venture ("JV") in association with GNPC. In addition, the technical development of the different fields (oil and gas) with regard to their expected commercial operation dates is sequenced, and for this reason the joint development of the oil and gas components of OCTP is referred to as Phase 1 (oil) and Phase 2 (natural gas). The proposed Bank support would only apply to the OCTP's Phase 2 development and related commercial agreements. The oil development structure under the OCTP's Phase 1 will not benefit from Bank support (details in Annex 2).

44. **The OCTP will use a shared floating production storage and offloading unit (FPSO), which can process both oil and natural gas.** The non-associated gas development will consist of five wells linked to the FPSO. A subsea pipeline will carry the gas from the FPSO to an onshore

[14] See footnote 9

receiving facility at Sanzule in Western Ghana. From there, a connection will be made to GNGC's 20-inch pipeline that connects the Jubilee field with thermal generation plants at Aboadze, near Takoradi (see Figure 1 in Annex 2).

B. Project Cost and Financing

45. **The total cost of the Phase 1 and 2 developments over the lifetime of the OCTP is US$7.9 billion, including the 20-year lease cost of the FPSO and the investments currently planned in 2026 and 2028 required to maintain gas production at the plateau level.** Because oil production is expected to start in the third quarter of 2017, part of the investment will be self-financed by oil revenues. The investment costs (CAPEX) required to be financed until the start of operation of the oil and gas fields within the OCTP will be US$3.9 billion (for both the oil field development and Sankofa non-associated gas)[15], US$1 billion of which has already been spent in exploration and pre-development costs. GNPC will be the offtaker of the Sankofa gas and will resell it to the downstream power sector. The currently negotiated offtake gas price under the Gas Sales Agreement ("GSA") between the Private Sponsors and GNPC is US$9.80/MMBtu. This price includes the GoG's substantial fiscal take from Sankofa. The GoG's policy is to maximize the resource rent it can extract from the use of non-renewable resources, while keeping the Sankofa gas price competitive enough compared to other imported fuel oil resources, which don't provide such government rent opportunity. The net cost of gas to Ghana is estimated at US$6.60/MMBtu, which is much lower than the current prices for gas imports from Nigeria (US$8/MMBtu), LNG imports (US$10/MMBtu), or liquid fuel alternatives (US$12/MMBtu)[16].

46. **The Private Sponsors, the GoG, and GNPC recently executed the GSA and related commercial agreements.** The GSA was signed in June 2015. Prior to the execution of the commercial agreements the sponsors and the GoG signed the Heads of Agreements (HoA) in December 2014. At that time the sponsors had also taken their final investment decision (FID) and placed firm orders for long-lead time equipment, including the FPSO. Prior to their FID, the Private Sponsors also signed a Security Package Term Sheet, subsequently approved by the Parliament of Ghana, which also defines the key security structure and parameters for the development of the Sankofa gas field. Since then the security documentation has been further negotiated and is currently finalized.

47. **Financing Structure.** The Private Sponsors envisage financing their share of the project costs during construction through a mix of equity, shareholder loans, and commercial debt. Eni currently plans to finance its share of the OCTP through US$2.2 billion of equity and shareholder loans only. Vitol is expected to structure its US$1.7 billion share of financing requirements through a mix of equity, shareholder loans, and a limited recourse commercial debt financing, which may also be sourced partly from International Financial Institutions (IFIs) including IFC. Vitol is expected to leverage its investment in the project with commercial and IFI debt. GNPC's 15 percent share of development costs is carried by Eni and Vitol at no cost whilst its additional 5 percent interest will be financed by the partners and repaid with the proceeds from oil liftings and its share of gas sales.

[15] The operational leasing costs of about US$4 billion will then be financed through internal cash generated during the lifetime of the OCTP.

[16] International comparisons of similar greenfield non-associated gas projects are difficult, due to site specific conditions such as geology, water depth, location etc.

C. Lending Instrument: Guarantees

48. **The security package agreed by all parties includes a comprehensive set of risk mitigation structures but limited government support aimed at enhancing the creditworthiness of GNPC as offtaker of the Sankofa gas for the duration of the GSA.** The Bank has worked with the GoG, GNPC, and the Private Sponsors of the project to make sure that principles of due efficiency and effectiveness have been applied in the design and use of the World Bank Guarantees. The amount requested by the GoG to be used for both Payment and Loan Guarantees amounts to a total of US$700 million, US$500 million of which will be provided by IDA for the payment guarantee (US$125 million in IDA allocation) and US$200 million will be provided by IBRD for the enclave loan guarantees.

49. **The security package consists of different layers of recourse and intervention.** These include the payment of designated GNPC receivables into segregated accounts, liquidity reserves in the form of a cash reserve escrow account, and a letter of credit backstopped by an IDA Payment Guarantee(s)[17], a notional amount of IBRD Enclave Loan Guarantees and a limited Sovereign Guarantee. MIGA guarantees are expected to be supporting termination payments for financiers and private equity partners at the partner company levels. The different elements of the package are as follows:

50. **The first layer of the security package is a designated payment mechanism that channels receivables of GNPC through a Designated Account structure**. For this payment structure, cash flowing to GNPC from the power sector gas sales and GNPC's share of Net CAPI[18] are used in priority to pay for the Sankofa gas. Under this mechanism, all revenues from the on-sale of gas from Sankofa, Jubilee and TEN as well as GNPC's share of Net CAPI shall be deposited into a Government Disbursement Account (GDA) from which the GSA payments, GNPC's debt service and the replenishment of the Jubilee and TEN escrow accounts will be made on a pari passu basis. Following these disbursements, the remaining funds are expected to be used to replenish the Sankofa escrow reserve cash account, if needed, and residual funds are released to GNPC.

51. **The second layer of security, benefiting the Private Sponsors, will be in the form of a reserve escrow account to be funded by GNPC**. This security consists of an escrow reserve account funded by GNPC for an equivalent of 4.5 months of gas sales which will be available only if the proceeds from the above prior payment mechanism are not sufficient. Such amount could be reduced to 3.5 months in the absence of any events of default under the GSA during the first 5 years of operation.

[17] It is currently envisioned that only one single LC for the joint benefit of Vitol Ghana/Eni Ghana will be issued and therefore only one IDA Payment Guarantee with a total principal amount of US$500 million will be required. If following ongoing negotiations, it is determined that it will be more beneficial to have two separate LCs in favor of each of Vitol Ghana/Eni Ghana, two IDA guarantees will need to be provided. However in the case of several IDA Guarantees the cumulative IDA Guarantee principal amount will not exceed US$500 million for all IDA Guarantees combined.

[18] GNPC receives a priority distribution from the Ghana Petroleum Holding Fund (PHF) equal to its equity finance costs plus a portion of the revenue from carried and participating interests, called CAPI.

52. **The third layer of payment security is a letter of credit backstopped by IDA and to be issued by a commercial bank at the request of GNPC**. This security will only be accessible to the Private Sponsors, once the first two security layers have been exhausted. This payment security is to be issued in the form of a Letter of Credit (LC) from a commercial bank. The amount of the principal of the LC is set at US$500 million and such an amount is estimated to cover close to one year of gas sales under the GSA. The LC would be available to cover the risks of non-payment by GNPC of its payment obligations under the GSA and will be backstopped by the proposed IDA Payment Guarantee. The Payment Guarantees would directly backstop the obligations of GNPC to repay the commercial bank for amounts drawn by Eni Ghana and Vitol Ghana under LC(s) issued by such commercial bank to guarantee the payment obligations of GNPC under the GSA following the occurrence of certain guaranteed events and per the terms of the relevant agreements (GSA and an IDA Guarantee Support Agreement).

53. **The fourth layer of security will include certain payment obligations on the part of the Sovereign.** The project and its related security structure arrangements have been designed to reduce the contingent liabilities to the GoG. It should be noted that the GoG has no direct funding obligation for the investments into this US$8 billion project, which are all assumed by the private sector. Under the base case scenario, the power sector revenues and existing security structure will prevent that there would ever be a call on the GoG's Sovereign Guarantee. Even under certain sensitivity assumptions made, the first three layers of the project's security package (payment mechanism through designated accounts, the escrow reserve account and the US$500 million LC described above are expected to shield the GoG from having to step in for several years. The team's simulated sensitivities show that only in a situation whereby payment rates of the project's gas bills were continuously below 50 percent for 6 consecutive years and after full exhaustion of the security package, the GoG subsequently would be liable for the gas payments under the GSA. The gas payments to the Private Sponsors are expected to be US$600 million per year on average over the life of the GSA.

Box 1: Proposed use of IBRD resources – the case for the Sankofa IBRD Enclave Guarantees

The proposed IBRD Enclave Guarantee of US$200 million represents the second deployment of this instrument following the authorization of this instrument by the Board of Executive Directors in April 1997. The first IBRD enclave guarantees were approved for the Southern Africa Regional Gas Project, approved by the Board of Executive Directors in 2003.

The proposed SGP (and the non-associated OCTP oil fields) meet the requirements as set out for deployment of IBRD Enclave Guarantees under the applicable policy – OP10.00 and OP3.10, as noted below.

- Project eligibility. The SGP is part of an integrated oil and gas project - OCTP- as both oil and gas will be produced from the same FPSO unit. Crude oil and gas-condensate (a byproduct of gas extraction) are expected to be sold on the international markets in foreign currency (in US Dollars). These foreign exchange revenues are estimated to total US$14 billion over the operating period of the SGP; US$1bn of which will be paid to the GoG in the form of royalties and US$3.3 billion to GNPC as per its CAPI in the project. The security package agreement includes provisions that state that GNPC's oil and gas receipts will be paid into an offshore escrow account for foreign exchange revenues and into a domestic escrow account for domestic revenues in GHS.

- Enhancing the creditworthiness of the Project to meet IBRD Requirements. The Security structure described under this Section III C. demonstrates that IBRD will be fifth loss in the proposed structure and only after other layers of the security package have been fully exhausted — thus meeting the enhanced creditworthiness requirement for IBRD enclave operations. Furthermore, due diligence indicates that under the assumption that GNPC pays only 50 percent of its downstream gas bills from the power sector, the first date of expected loss to IBRD will be in 2031 (after 13 years of operations); the probability of IBRD's shareholder loan guarantee being called is low as this guarantee would only be triggered if: a) there is a default on the GSA payments, and b) revenues from both oil and gas are not sufficient to service the shareholder/commercial loans to the relevant project companies.

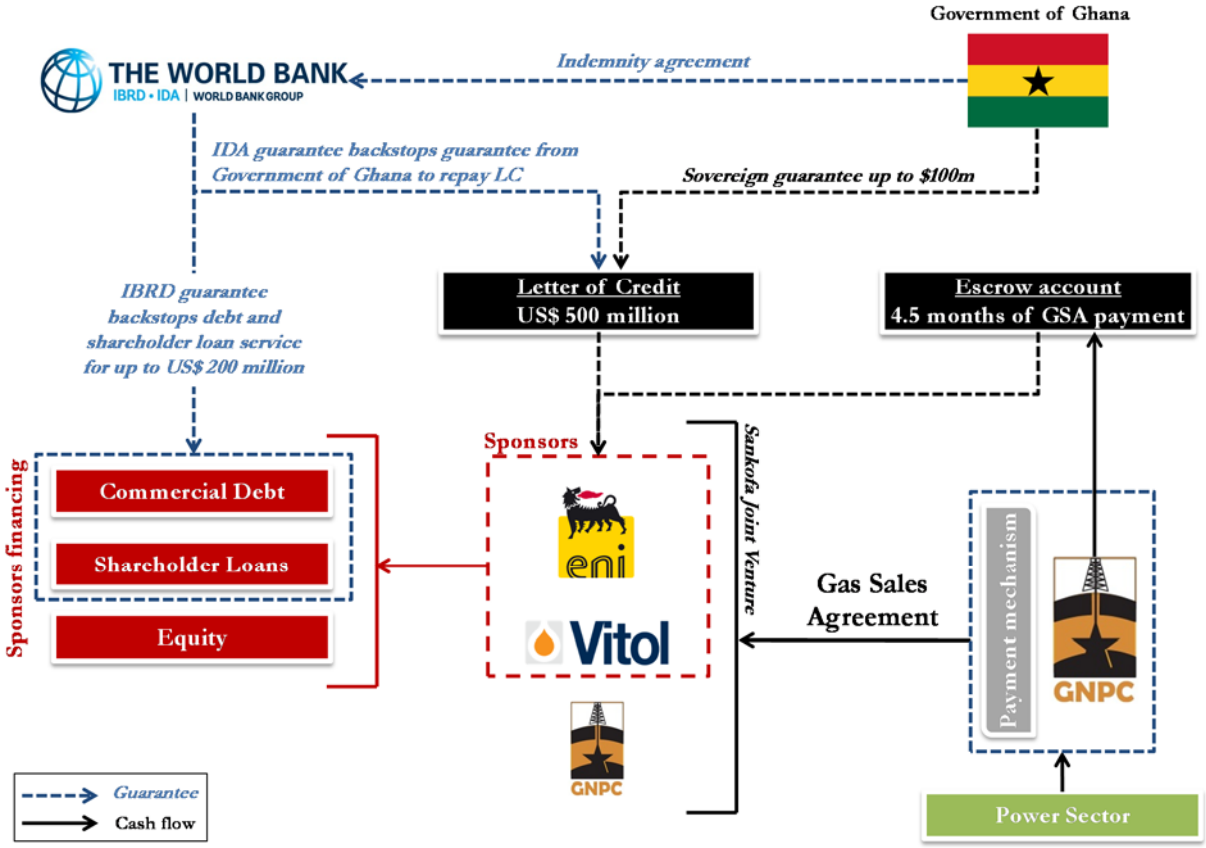
- IBRD Security. Per policy, IBRD requires additional security to provide enclave guarantees in an IDA-only country. In addition to the above mentioned project level security structure, IBRD has agreed to an additional set of measures to meet this requirement. In the event of a call on the IBRD guarantee, IBRD will typically be expected to seek repayments on demand. However, if IBRD chooses to provide terms (a 'new loan') to GNPC/GoG, IBRD will have pari-passu access to GNPC's project related Net CAPI dollar based revenue streams (under the project based GDA) to repay any project related IBRD 'new-loan' obligations. IBRD would therefore be able to capture the foreign exchange revenues to GNPC before they are actually paid to GNPC in order to credit enhance its post default 'new-loan'. In addition GNPC will further covenant that IBRD will have first priority on any oil funds received outside this structure.

54. **Additional support within this security package on behalf of the GoG will be availed through the IBRD Enclave Guarantees**. Up to three IBRD Enclave Guarantees are envisaged, in the form of Loan Guarantees to protect lenders (primarily shareholders and possibly commercial lenders) to Eni Ghana/Vitol Ghana against debt service default of principal and interest, caused by the non-performance by GNPC and the GoG of their payment obligations towards Eni Ghana/Vitol Ghana under the relevant transaction documents (including the Sovereign Guarantee, the Multi-Party Deed and/or other GSA security package documents). Payment defaults would have to relate to payment obligations only in connection with the purchase of gas and could include termination payments on the part of GNPC and/or the GoG under the GSA or any of the GSA security package documents. This structure has been explicitly designed to ensure that IBRD support is maintained over the long-term to ensure that the project benefits from this notional, but critical "halo" effect

of the Bank's presence in the transaction. Box 1 above provides further details for the rationale and eligibility of proposing an IBRD Enclave Guarantee under this project.

55. The indicative contractual arrangements for the Sankofa guarantees are illustrated in figure 1 below. Annex 3 and 6 provide more details of the proposed payment guarantee and loan guarantee structures and costs.

Figure 1: World Bank Guarantee Support Structure



Source: World Bank team

56. **Rationale for using World Bank Guarantees**. This operation is the first under the GoG's recently formulated new approach to infrastructure financing support. In his November 2014 budget speech, the Minister of Finance highlighted the importance of using alternative financing instruments for infrastructure investments, mainly the insurance and guarantees of IFIs such as the World Bank. The increased future use of risk mitigation instruments increasingly replacing Sovereign Guarantees would help to boost private sector participation in the energy sector and the economy.[19] The Private Sponsors have been unsuccessful in seeking commercial insurance in support of the payment security structure proposed under the project and as last resort have sought guarantees support from the Bank.

[19] The Budget Speech of the Budget Statement and Economic Policy of the GoG for the 2015 Financial Year presented to Parliament on November 19, 2014 by the Minister of Finance.

57. **The proposed structure also underpins the GoG's effort to enhance domestic gas production and in turn increase power generation resulting from the gas resources from the Sankofa gas field.** The World Bank Guarantees would help to mobilize much needed private investment in Ghana's local gas production, thereby helping to address the problem of the unavailability of thermal power generation and to providing fuel that is cheaper than LCO. The availability of the proposed risk mitigation through World Bank Guarantees was considered a key condition, albeit implicit, for the signing of the Heads of Agreements, the GSA and related security document term sheets. The principal advantage of the proposed World Bank Guarantees is that through a limited[20] security support, provided to the Private Sponsors and their private lenders in the form of World Bank Guarantees, the Private Sponsors are ready to undertake a far larger investment. The US$700 million World Bank Guarantee support will leverage substantially larger gas payment flows over the terms of the contract (20 years) and facilitate an investment in the OCTP block of up to US$7.9 billion by the private sector.

58. **World Bank Group Support**. The Private Sponsors have already taken FID and are continuing to invest to date. As of mid-June 2015 the Private Sponsors' estimate of investment made with little recourse amounts to over US$1 billion. The World Bank Guarantee support therefore is critical to make the project financially sustainable for the Private Sponsors and to allow them continuing their ongoing investments in the project. The GoG is currently advised by two international legal/transaction advisory firms with world-class expertise and a track record in upstream and downstream petroleum and power sector projects. Once the World Bank Guarantees supported security package has been approved and implemented, IFC plans to finance Vitol Ghana with IFC investment (A and possibly B) loans between US$300 million to US$600 million on the strength of the OCTP block oil revenues, a corporate guarantee of Vitol primarily for construction completion, and gas related revenues. IFC is a part of a larger limited recourse commercial debt financing package, which is planned to take out part of Vitol Ghana's equity financing. Vitol has recently also applied to MIGA for complementary coverage of debt political risk insurance of up to US$450 million to support the project. MIGA is being primarily used by Vitol to attract commercial lenders for its financing of Vitol Upstream Ghana Limited by backstopping GSA termination payments.

D. Lessons Learned and Reflected in the Project Design

59. **Lessons learned and incorporated in the project design include the World Bank's experience with upstream gas and other energy Guarantee projects.** This includes the Cote d'Ivoire Foxtrot Gas Field, Mauritania Gas to Power, West African Gas Pipeline (WAGP), and other energy projects worldwide.

60. From the above mentioned transactions several lessons can be derived:

(a) *Attention should be paid to both supply and demand-side risks*. A key lesson from WAGP is that both supply-side and demand-side risks need to be carefully assessed and their potential impact quantified. The SGP design not only paid attention to correctly identify commercial risk mitigation for payment obligations for the gas purchased, but

[20] Equivalent to a number of months of GSA payments in addition to a limited longer term Debt Guarantee cover.

supply side risks such as the need for interconnection facilities have been assessed and mitigated.

(b) *Capital intensive energy infrastructure projects should have strong commercial underpinnings*. The main lesson from WAGP is the importance of sound commercial terms in the value chain so that the gas sales maintain their competitiveness during the life of the project. The due diligence of the SGP has proven that even in a low oil price scenario, the agreed commercial terms generate significant value to all stakeholders.

(c) *Economic and financial evaluations should assume a wide range of commodity prices and other variables*. Based on the WAGP experience and the recent movements in the oil price, an extensive sensitivity analysis has been carried out, especially to assess the cumulative impacts of different risks and variables.

(d) The availability of reliable and plentiful natural gas is crucial both to adequate power supply and the financial health of the power sector. Over the past five years, the Ghanaian power sector has been handicapped by insufficient and irregular deliveries of pipeline gas from Nigeria, with adverse consequences both for power supply as well as sector finances. Gas is key to restoring financial sustainability to the sector and ensuring that it does not hold back economic growth.

(e) *A Bank Guarantee can boost investor confidence in the power sector thereby mitigating sector-related financial and institutional weaknesses, provided the WBG has a strong program of support and sectoral dialogue with the authorities*. This is the case in Ghana, as the WBG is broadly engaged with a large portfolio, and has been deeply involved in several power sector financing and reform operations. A World Bank Guarantee does not directly address the financial viability of the energy sector. However, it can be used as an instrument in a broader suite of the WBG support, and contribute to restoring investors' confidence in a country and a sector.

(f) *The World Bank Payment Guarantee structure has a proven record of mobilizing private investment through efficient mitigation of the liquidity risks due to failure of meeting ongoing payments*. The Bank Guarantee with an LC facility puts in place a cost-efficient security instrument to lower the counterpart credit risks. In the case of a payment delay, the LC structure provides the project with liquidity and valuable time to sort out irregularities while still allowing for debt service to avoid default. In this way the Bank's Payment Guarantee backstopped LC structure ensures the continuous operation of the gas field to provide stable gas supply to the power sector during the disruption period.

61. **The project design not only incorporates best practice experience from other projects, but further builds on previous experiences through the harmonization of the risk mitigation package, minimizing support to the extent appropriate for the GoG, given creditworthiness issues affecting the energy sector**. Synergies between the World Bank Guarantees and the MIGA PRI are expected to encourage other private investments in the country by demonstrating that the GoG can offer a tested credit enhancement framework to attract investors, both in energy as well as other infrastructure sectors.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

62. **The SGP is being developed by Eni, Vitol, and GNPC.** As Eni is the operator of the project, a Joint Operating Agreement establishes the respective rights and obligations of each of the Private Sponsors while the Petroleum Agreement governs the parties' (OCTP JV) relationship. A Heads of Agreement for the Commercialization of Non-Associated Gas was signed by the GoG (Ministry of Finance and Ministry of Energy and Petroleum), GNPC, Eni Ghana, and Vitol Upstream Ghana Ltd. to acknowledge the key principles that have been agreed to develop the OCTP oil and gas fields.

Government Stakeholders:

63. **GNPC.** GNPC was set up in 1983, and became operational in 1985. It is Ghana's national oil company, with the mandate to explore, develop, produce and dispose of petroleum. It holds stakes in all petroleum licenses in Ghana including the Jubilee (13.64 per cent), TEN (15 per cent) fields and OCTP/Sankofa Gye-Nyame (20 percent). GNPC's revenues are regulated by the PRMA. In 2014, GNPC's share of Net CAPI was US$129 million and it had accumulated US$240 million in cash, largely earmarked for investments. GNPC has also been appointed by the Government as the national midstream gas company responsible for gas aggregation, transportation, and commercialization.

Private Sponsors:

64. **Eni.** Eni S.p.A. is an Italian multinational oil and gas company listed on the Milan and New York stock exchanges owned at 30 percent by the Italian government. In 2013 it produced 1.6 million barrels of oil equivalent per day and had sales of EUR 115 billion. Eni S.p.A. employs over 82,000 people worldwide and is one of the largest international oil company operators in Africa with more than 11,500 employees on the African continent and its African upstream operations generated almost 55 percent of its annual production for 2013. Eni's local subsidiary Eni Ghana Exploration and Production Ltd is the operator of the OCTP project (including the SGP) and holds a 44.4 percent stake in the OCTP block.

65. **Vitol.** The Vitol Group is a privately held company founded in Rotterdam in 1966 with its largest operations in Geneva, Houston, London, and Singapore. It is privately held by its employees. The group's turnover in 2014 was US$270 billion, making it the largest independent oil trader in the world. In addition to its share of the OCTP block, Vitol also holds licenses for oil and gas fields in Cote d'Ivoire (CI-508 and CI-202 Gazelle). Through its 40 percent subsidiary, Vivo Energy, established in 2011, Vitol distributes and markets Shell-branded fuels and lubricants in Africa. It currently operates in 16 African countries, employs 2,200 people, and owns 1,470 service stations. Vitol will hold a 35.6 percent stake in the OCTP/SGP through its local subsidiary Vitol Upstream Ghana Limited ("VUGL").

66. **OCTP Petroleum Agreement.** The petroleum agreement covering the OCTP block was signed by Vitol and GNPC in June 2006. In 2009, Eni acquired a majority participating interest in the OCTP block and assumed operatorship. The Petroleum Agreement expires in 2036. As per normal practice in the oil and gas industry, the partners conduct business via an unincorporated joint venture governed by a joint operating agreement (JOA). Under the terms of the petroleum

agreement, oil production is subject to a 7.5 percent royalty while gas production is subject to a 5 percent royalty. The agreement allocates a 20 percent participating interest to GNPC. The agreement also levies a supplemental royalty ("Additional Oil Entitlement") on investors once cumulative real internal rate of return exceeds 12.5 percent. Under the terms of the Petroleum Income Tax Law, investors are also subject to a 35 percent tax on income after deductions for capital allowances, operating costs, and financing costs. More information about the Private Sponsors and the key contractual agreements can be found in Annex 3.

B. Results Monitoring and Evaluation

67. **Overall monitoring of project outcomes and results indicators will be done by the SGP's Private Sponsors.** The Private Sponsors and the GoG will be responsible for preparing and submitting relevant reports to IDA and IBRD, as required under IDA and IBRD's Project Agreements and under IDA and IBRD's Indemnity Agreements. Annex 1 presents the project's results framework that defines specific results to be monitored.

C. Sustainability

68. **Long term physical sustainability of the investments over the 20 year life of the project is ensured by the Sankofa Private Sponsors, whose international experience and industry reputation are sound**. In the unlikely event that GNPC is temporarily unable to meet its share of operations and maintenance (O&M) costs, the Private Sponsors would be in a position to pre-finance these, so risks to maintenance are minimal.

69. **Financial sustainability of the project is exposed to the risk of power sector payment arrears for gas**. As explained in the following Section V.B this risk can be mitigated, in part by the guarantee package that is the basis for the World Bank's intervention in support of the project.

70. **Access to a reliable and stable supply of local gas from Sankofa at a reasonable cost will also improve the power sector's financial sustainability**. This will be achieved by eliminating the exposure to the vagaries of erratic gas supply from Nigeria and crude oil price fluctuations, both of which make cost-recovery in the power sector a constantly moving target.

V. KEY RISKS AND MITIGATION MEASURES

A. Risk Ratings Summary Table

Risk Category	Rating
1. Political and Governance (Country Level)	High
2. Macroeconomic	High
3. Sector Strategies and Policies	High
4. Technical Design of Project or Program	Moderate
5. Institutional Capacity for Implementation and Sustainability	Low
6. Fiduciary	Low
7. Environment and Social	High
8. Stakeholders	Substantial
9. Other	N/A
OVERALL	**High**

B. Overall Risk Rating Explanation

71. The overall risk of the proposed operation is rated ***High*** for reasons explained in the following paragraphs.

Country-level Risks

72. **Political and Governance Risks.** While the GoG's sector strategies and policies are generally appropriate, political and governance factors might impact their consistent and timely implementation. The GoG's institutional capacity is sufficient to implement and sustain the project and related sector reforms. However, the follow-through on sector reforms has been uneven in the past years. The GoG faces significant political pressures, and the 2016 election could shift policy priorities in favor of short-term goals. Furthermore, a change in government could raise the possibility that national strategies might be revised. Continuous engagement with the authorities and close collaboration with the IMF and other development partners will help mitigate these risks and ensure the consistent implementation of the reform agenda.

73. **Macroeconomic Risks.** Macroeconomic risks arise, *inter alia*, from Ghana's long-standing difficulties in restraining inflation and maintaining a stable exchange rate. While all gas sales and purchase contracts upstream of GNPC will be U.S. Dollar-denominated, the latter may bill in Ghanaian Cedis to non-IPP consumers, in which case the exchange risk will be passed onto those consumers. In addition, the recently approved IMF program and the planned series of IDA DPOs will provide for additional actions at the macroeconomic level that aim to improve Ghana's fiscal and inflationary situation.

Energy Sector Risks

74. **Downstream Power Sector Payment Risk**. The key power sector risk to the project is the continued weak financial performance of various utilities, most particularly ECG, whose low

collection rate impacts the entire energy supply chain. A possible leadership vacuum during the period until a private concessionaire is selected to manage ECG increases risks of leakage and poor revenue collection. Other key risks are: (i) tariffs that are below full-cost recovery and adverse changes in exchange rate and oil prices; and (ii) the poor fiscal position of the government that has resulted in the build-up of large public sector payment arrears to ECG. The lack of adequate cash flow in the sector has forced VRA to rely on the government to pay for imported liquid fuel, with significant implications for the national budget, while also accumulating payment arrears to Nigeria Gas (N-Gas).[21] ECG also has accumulated payment arrears to IPPs.

75. ***Mitigation–The GoG's commitment to Power Sector Reform and Donor Presence.*** The GoG is pursuing a number of reform measures and initiatives that aim at a turn-around of the current power sector situation (see Sector Context above). The GoG is committed and is strongly supported in these measures by a number of donors. For instance, the selection of a private firm to operate the power distribution utility, ECG under a long-term concession contract is supported by the MCC and is a condition for receiving financing under the MCC Compact II signed in 2014. The World Bank supports the GoG's reform measures and efforts to improve ECG's operational efficiency through the IDA-financed GEDAP. The GEDAP is funding a new commercial management system, improved revenue collection, and a bulk metering program to improve ECG's financial performance and reduce non-technical losses. Additional financing of US$60 million equivalent for GEDAP was approved by the Bank's Board in April 2015. The additional financing is seen as a critical measure to support the interim period until a private investor has been selected. In addition, the World Bank (through its series of DPOs) and the IMF (through its Extended Credit Facility) have included triggers in their programs that require measures to reduce energy subsidies to be implemented.

76. ***Supplementary Mitigation–SGP Security Package Relying on Upstream Revenue Streams.*** The largest part of the cash flow available to the Private Sponsors ultimately originates in sales of electricity to end users. Revenues from about 50 percent of total power sales in Ghana are passed on by ECG to its suppliers, predominantly VRA and IPPs. This fraction is expected to rise in the coming months, as the PURC-led revenue distribution mechanism is introduced. However, the Private Sponsors have negotiated a security package with GNPC which contains as its main mitigation measure to first and foremost rely on GNPC's upstream revenue in the form of its Net CAPI receivables. The principal goal pursued by the sponsors with this structure is to gain time before the project's revenue stream becomes heavily dependent on the downstream power sector revenues. The Bank team has run a number of simulations that show that in any scenario, the World Bank-backed security package will not be fully exhausted before a number of years have passed since the first payment default occurred, and even if GNPC only receives half of the payments from the power sector for the total gas produced by the Sankofa gas field and excluding any Net CAPI revenues (see Annex 3 for details).

Project Risks

77. **Sankofa Gas Offtake Capacity Risk.** The market for Sankofa gas will be power plants owned by VRA and various IPPs. Jubilee and TEN[22] together produce about 150 MMcfd. This

[21] VRA has ten months of payment arrears for gas from Nigeria and will need financial support from the GoG to clear these.

[22] Production of TEN assumes resolution of the ongoing legal proceedings described in Footnote 9 above.

more than satisfies gas demand from VRA's three existing generation plants at Aboadze (totaling 660 MW of steam cycle Gas Turbines). For Sankofa's gas to be fully absorbed, an additional 700 MW of open cycle generation capacity (1,200 MW combined cycle) would be needed at Takoradi in the absence of an interconnected pipeline system between Takoradi and Tema. Given the implementation challenges facing IPPs, there is a risk that the needed additional generation capacity in Takoradi will not all be in place by the time Sankofa gas production is expected to begin in the first quarter of 2018.

78. ***Mitigation–WAGP Back-flow.*** Preliminary technical analysis by WAPCo, Eni, and GNGC suggests that a simple pipeline connection at Aboadze between the GNGC pipeline and WAGP would allow up to 140 MMcfd[23] of Western Region gas supply (to back-flow eastwards from Aboadze to Tema. Any gas delivered to Tema would find a ready market, given that 1,500 MW of existing and planned generation capacity at Tema does not have reliable gas supply. The potential volume of backflow would be more than sufficient to absorb the Sankofa gas volumes, assuming that part of the Sankofa gas would also be utilized in Takoradi for a number of IPPs. The investment amounts for the physical interconnection are under US$10 million and could be financed by GNPC and/or WAPCo. The time required to complete the physical interconnection between the two pipelines is very short (less than a year). The Jubilee investors are also interested in the backflow arrangements to maximize gas production, which is currently constrained by lack of sufficient offtakers at Aboadze. Commercial and technical discussions about a possible GNGC/WAGP pipeline interconnection are underway. WAGP is an open access pipeline system and WAPCo, as a transporter, is keen to see greater throughput in this currently under-utilized asset. However, VRA's payment arrears for Nigerian gas need to be cleared first to ensure that WAPCo will proceed with such an arrangement. VRA is a shareholder in WAPCo, and Chevron and Shell are shareholders of both WAPCo and the Special Purpose gas shipping company N-Gas. Therefore a resolution of the current arrears is likely to be feasible in the short term.

79. ***Mitigation– GoG Priority IPP Program*:** The GoG is currently negotiating a number of thermal IPP projects. The GoG's priority thermal IPPs, which are all proposed to be situated in Takoradi, have a cumulative installed generation capacity of up to 2,025 MW. These projects are at different stages of development, but all are scheduled to begin operating between 2017 and 2019, when the Sankofa gas field will reach its plateau volume. Table 1 below summarizes the status of the IPPs proposed by the GoG for the Takoradi area as well as the fast-track emergency power rental that has been arranged to alleviate current shortages.

[23] The actual back-flow volume from Aboadze to Tema will depend on the amount of gas injected on the other side of the pipe from Nigeria.

Table 1: Planned New Power Generation projects in Takoradi

Plant/Developer	MW	Assumed Start
Amandi	240	2018
Jacobsen	360	2018
EDF/VRA	200	2017
Ghana1000	375	2018/19
Globeleq	375	2019
Karpower 2	225	2016
APR Emergency power rental	250	2015/16

Source: World Bank Team due diligence

80. **Three of the IPPs have already signed power purchase agreements (PPAs) and at least one of the projects aims for a financial closure before the end of 2015.** To support the GoG in its efforts to advance the various IPPs, the Bank team has engaged in discussions with a number of private investors developing those projects. The GoG has requested IDA to consider supporting some of those priority IPPs (depending on the country's IDA financing envelope and through a separate Guarantee intervention). In addition IFC is currently in discussions with some of those investors and has already received concept approval for support to two of the priority IPPs. MIGA has received a request to support at least one of the five projects. The Bank and IFC teams are currently coordinating their efforts to ensure a coordinated WBG approach.

81. **Project Preparation and Implementation Risk.** The project has taken several years to reach the current advanced state of preparation due to the complexity of reaching agreements among stakeholders with different incentives, as well as the nature of the technical studies needed to ensure a successful outcome. Financing and procurement of all parts of the SGP itself are well advanced and measures have been taken to mitigate construction risks. Environmental and social risks will also need to be managed carefully, as described in Section VI below. The proposed structure of the World Bank Guarantees is well established and tested around the world.

82. **Sankofa/GNGC Facility Interconnection Risk**. Two-stage compressors will be required in order to effect the interconnection between the Sankofa gas production facilities and GNGC's pipeline running to Aboadze. The first stage compression facility (comprising 2 compressors, one running and one back up) is needed to boost the pressure of the Sankofa gas to 50 bar. After this first stage compressor, the Sankofa gas will be commingled with the Jubilee/TEN gas flowing from Attuabo and a second stage compression facility[24] will be needed to boost the pressure up to 100 bar and to deliver the combined gas stream to Aboadze. GNPC, GNGC and Eni Ghana /Vitol are in broad agreement regarding the physical configuration of these two stage compressors, and there are very low technical risks involved. However, there is no agreement yet as to how the cost of the third compressor will be shared and/or financed[25]. Any delay in the midstream infrastructure

[24] With three compressors: two running and one back up to process Sankofa + Jubilee + TEN, or two compressors: one running and one back up to manage the gas from Sankofa only.
[25] The third one to be installed in the second stage is estimated to cost US$50-60 million.

implementation could lead to a situation whereby the natural gas from the Sankofa gas field cannot be transported to Takoradi once the upstream facilities and offshore pipeline are complete.

83. ***Mitigation– SGP Private Sponsors Expect to Implement and Potentially Finance both Compressor Stations.*** Commercial negotiations are currently underway between the Private Sponsors and GNPC, which likely will lead to one of two outcomes:

i. ENI/Vitol implement and finance the shared compressor in return for a fee on the non-Sankofa gas volumes that flow through the compressor; or

ii. GNPC/GNGC finances its quota part of the compressor by using part of the proceeds from a US$350 million corporate loan currently under negotiation between GNPC and Trafigura (an international oil trader). In either case, the Private Sponsors will insist through the GSA that the interconnection procurement and financing is secured in time to ensure that the interconnection of the Onshore Receiving Facilities (ORF) with the rest of GNPC/GNGC gas transportation system in the Western Region are in place when the Sankofa gas field starts operation.

84. ***Additional Project Risk Mitigation–Agreed Project Milestones in Project Documentation.*** The Private Sponsors have agreed on contractual milestones with the GoG and GNPC that the gas to power system as a whole (i.e., gas interconnection, tie-ins, power plants, etc.) is in place by the time of first gas production of the SGP. Incentives are therefore aligned between the public and private sector partners to ensure that the interconnection is undertaken by GNPC. Appropriate covenants are also being put in place in the Bank's legal documentation with the GoG and GNPC under Indemnity and Project Agreements to ensure that interests are aligned towards ensuring that there is enough offtake available and gas infrastructure is operational to take Sankofa gas (see list of non-standard conditions in the data sheet)

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

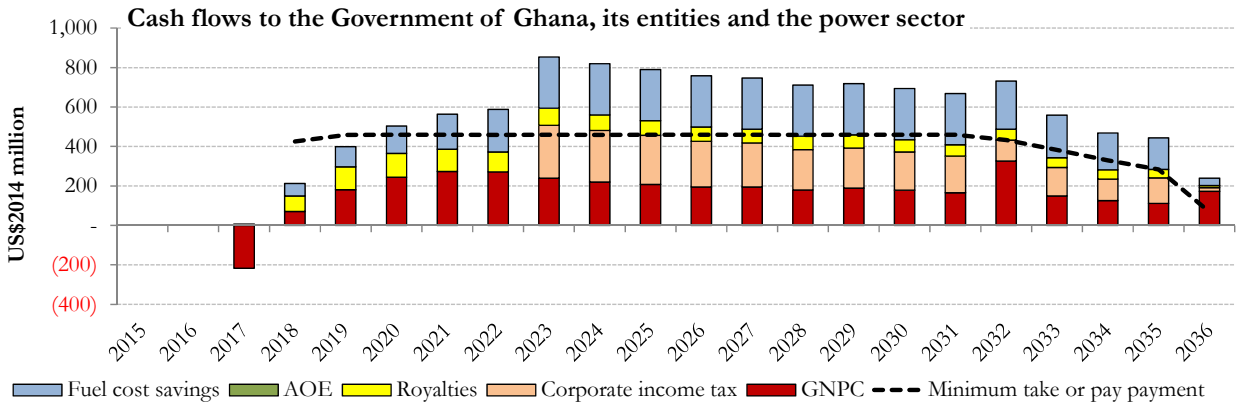
85. **The economic and financial analysis uses the World Bank's January 2015 oil price forecast and cost and production estimates provided by the Private Sponsors of the project.** Using the World Bank's January 2015 forecast, the weighted average oil price during the production period of the Sankofa gas will be US$68/barrel (real basis, 2014). The gas price that has been assumed is US$9.80/MMBtu as agreed in the GSA. The real discount rate that has been used to calculate the net present value (NPV) generated by the project is 10 percent.

86. **The sponsors have spent over US$1 billion to date in exploration and development costs since 2009 and are expected to carry all the costs during the construction phase.** The long construction period (first disbursements were in 2009 and first oil is expected for the second half of 2017) and the low price of oil explain why their nominal financial internal rate of return (FIRR) of 14 percent is in the low range of industry standards. An increase (decrease) of the oil price by US$10/barrel increases (decreases) the FIRR by 1.3 percentage point. The stability of the

revenues from gas allows the FIRR to remain above 10 percent, even if a low long term oil price scenario materializes, but it caps the upside of the sponsors' returns.[26]

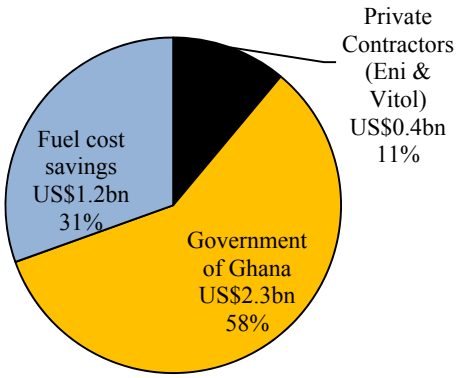
87. **The economic rate of return (ERR) of the project is estimated at 20.2 percent and the economic NPV at US$4 billion for the base case scenario.** The benefits of the project are in the form of (i) oil, gas, and condensate revenues for the GoG, GNPC and Private Sponsors and (ii) contribution to better and cheaper energy services in Ghana. Fuel cost savings to the power sector through the displacement of LCO until 2021 and the displacement of LNG starting in 2022 are used as a proxy for the contribution to better and cheaper energy services. Close to 90 percent of the economic benefits of the project are expected to be captured directly or indirectly by Ghana through revenues for the government and GNPC (US$2.3 billion) and through fuel cost savings (US$1.2 billion). Additional indirect economic benefits of the Sankofa gas field include (a) economic growth as energy services improve due to increase stability of supply of gas, and (b) reduced carbon emissions.

Chart 2: Sankofa Gas Project Financial/Economic Benefit Stream



88. **The financial and economic rates of return of the project are heavily dependent on the oil price assumptions**. A sensitivity analysis shows that the economic NPV of the project would increase up to US$8.2 billion and the ERR up to 28.5 percent with an oil price of US$100/barrel (US$ 2014 money) and decrease to US$2.5 billion and 13.6 percent with an oil price of US$50/barrel (2014 money). However, the NPV remains positive for the GoG in any scenario as a result of the limited investment from GNPC during the construction phase, and as a result of royalties and corporate income tax revenues generated

Breakdown of Sankofa Economic NPV @10%: US$4.0bn



[26] In addition to other mechanisms, such as Additional Oil Entitlements, which trigger payments to the GoG when the sponsors reach specific FIRR thresholds.

by the project. Further details on the project's economic and financial assessment are included in Annex 4.

B. Technical

89. **The project's technical design has been reviewed as part of the preparation process and has been found to be appropriate and to follow international oil and gas industry best practices.** The field development plan prepared by Eni adheres to professional standards in the oil and gas industry and is supported by geological, geophysical, and engineering analyses performed to a high standard. Moreover, given the depth of Eni's financial and technical resources, project management risks are considered low. The primary focus of the Bank's technical review was to identify any factors that could compromise the ability of the project to operate safely and assure delivery of the minimum 171 MMcfd[27] sales volumes under the GSA.

90. **Eni's volumetric estimates have been conducted in conformity with normal practice, incorporating appropriate risk factors.** The estimated recovery factors (78 percent for gas and 27 percent for oil) are in line with normal industry experience. Although Base Case and P50 reserves are 26 percent greater than take-or-pay (ToP) sales volumes by a comfortable margin, the P90 low-case reserves of 929 billion cubic feet (BCF) are 23 percent greater than only 96 percent of ToP volumes over the life of the total ToP volumes over gas sales agreement. Overall, gas reserve risk is assessed as low. The Private Sponsors have commissioned a highly-regarded reserve auditor (DeGolyer and MacNaughton) to provide an independent reserve estimate.

91. **Well productivity is expected to be high.** The Campanian reservoirs from which the non-associated sales gas will be produced are characterized by high porosity (20-30 percent) and very high permeability (>1 darcy), so the productivity of each well will be very high. At the very outset of gas sales, there will be only two active gas producing wells, but each well would have the capacity to fulfill the entire ToP volume. As more wells are drilled and for the duration of the plateau gas sales period, the active producing wells will have substantial excess capacity to support the ToP volumes. Well tests conducted during appraisal did not indicate any unexpected compartmentalization of the reservoir that would act as a barrier to gas flow. Nevertheless, in the event of less-than-expected productivity or mechanical problems in producing wells, supplemental wells could be drilled to maintain ToP volumes. Production interruptions could also be covered by temporarily redirecting associated gas from re-injection to the sales gas stream.

92. **The proposed drilling and completion design are low risk.** No abnormal pressures or temperatures were encountered in the earlier exploration and appraisal wells. There is a wide margin between pore pressure and formation fracture pressure so no aggressive casing design or cementing program is needed. Nevertheless, due to the deep water environment and environmental exposure, Eni will designate these wells as "critical" wells employing the post-Macondo protocols regarding blowout preventer design and maintenance, real-time monitoring and independent verification.

93. **The FPSO design and sub-sea production systems conform to normal industry practice.** The Sankofa FPSO is being designed with extra riser slots in the event that additional

[27] Field production of 180 MMcfd with an agreed downtime of 5 percent.

wells need to be drilled later in the project. Although balcony-style FPSOs can be vulnerable to changes in current or wind conditions during tanker loading operations, meteorological and ocean conditions at the Sankofa location are benign. Eni has extensive experience operating and loading balcony-style FPSO's. The sub-sea gas pipeline will not be buried; however it will not lie in an active shipping lane, so the risk of anchor damage to the pipe is considered low. FPSO compression will incorporate 50 percent redundancy (two active and one backup compressor), and the onshore receiving facility will have 100 percent redundancy (one active and one backup compressor). Further details on the technical parameters of the project can be found in Annex 2.

C. Financial Management

94. **As operator of the Joint Venture, Eni Ghana is responsible for preparing the annual budget.** Eni has already a financial management system in place, including accounting, reporting, auditing, and internal controls. The system is operated by qualified staff in Ghana. As the vehicle structure that has been chosen by the contractors is an unincorporated Joint Venture, all the contracts signed on behalf of the Joint Venture will be signed by Eni Ghana.

95. **The budgeting process will follow Eni S.p.A. guidelines (Management System Guidelines - Financial Management), which apply globally for all Eni S.p.A. owned entities and subsidiaries.** The budget proposals and plans are reviewed in a multi-stage process; for OCTP (including the Sankofa gas field), Eni will have the responsibility to draft the budget proposals on behalf of the OCTP partners, and subsequently the proposal will be reviewed and cleared by all partners, including GNPC. The jointly approved budget will be the basis on which the OCTP partners will be asked to pay for their share of capital and production costs.

96. **Each OCTP member is free to finance its share of the OCTP investments through its own equity, shareholder loans, or debt to meet cash calls that Eni Ghana will make.** The funds will be channeled to a dedicated bank account in Ghana from which Eni Ghana will pay the various contractors responsible for the investments on behalf of the Joint Venture members. Further details can be found in Annex 3.

D. Procurement

97. **The World Bank's operational policies on Investment Project Financing (OP/BP 10.00), including Bank Guarantees, require that procurement of works, goods, and services for a supported project must be carried out with due regard to principles of economy and efficiency.** The petroleum agreement covering the OCTP block was signed by Vitol and GNPC in June 2006. This occurred during the 2004-2008 period when GNPC negotiated petroleum agreements covering 12 deepwater blocks in the Western (Tano) Basin, including the blocks where the Jubilee and TEN fields were subsequently discovered. In 2009, Eni acquired a majority participating interest in the OCTP Block and assumed operatorship. The petroleum agreement expires in 2036. As the operator of the OCTP block, Eni Ghana is currently responsible for leading the procurement process of the main contract packages and lead items to be selected and contracted for the OCTP/ SGP.

98. **The procurement for the OCTP project is divided into 14 packages.** The procurement for each package follows a two-stage process: 1) technical evaluation mainly based on a pass/fail criterion and 2) commercial evaluation mainly based on a lowest-cost criterion, which is modified

in some instances by other considerations such as delivery leader time and local content. For each of the technically demanding, high-value packages such as the FPSO, sub-sea production system, and flexible risers, the initial vendor list comprised three or more companies recognized as industry leaders in the respective sector. Some others oilfield products such as compressors and tubulars are being procured based on Eni's headquarters global corporate framework agreements.

99. **The procurement process for the OCTP project has been designed to comply with Ghana's local content regulations**. Equipment and services packages have been sub-divided in a manner calculated to enhance opportunity for local vendors. Eni is assuring that vendors are adhering to the minimum local content and local ownership criteria and is performing extensive due diligence on local partners. Even in the case of the FPSO, where no shipyard facilities exist in Ghana for fabrication, the vendor has agreed to fabricate components equivalent to 13 percent of the vessel weight in Ghana. Vendor lists and contract awards are reviewed and approved by the Petroleum Commission, the sector regulator responsible for administering Ghana's oil and gas local content regulations.

100. **In response to the recent drop in oil prices, oil service and supply costs have declined sharply, by 20-30 percent for some products.** Eni has captured some of this cost reduction by asking bidders to re-submit prices. For the long lead items already contracted such price revisions have already been taken into account. Further details on the procurement strategy followed by the Private Sponsors for this project can be found in Annex 3.

E. Environmental and Social Performance Standards

101. **This project follows the World Bank Performance Standards and is rated as a Category A Project.** Six of the eight Performance Standards (PS) are applicable to the project. PS7 is not triggered as there are no Indigenous Peoples in the project-affected area, and PS8 is not triggered because the site boundaries were modified at the community's request to exclude a cemetery that is the only physical cultural property identified at the ORF location.

102. **Regarding resettlement, significant efforts have been made by all involved stakeholders to avoid the displacement of populations.** The western and northern boundaries of the site have been changed to exclude two areas used and not reclaimed by the GNGC pipeline corridor contractor. At the request of Sanzule community the southern boundary of the area has been move to north (in order to allow future expansion of the village if any) and the southeastern limit of the site was also altered to exclude a small cemetery, the only cultural heritage thus far discovered, and to allow the village room to expand northward. In addition, the developer has narrowed to the east the pipeline corridor from the shoreline, to avoid the relocation of 13 homes used by fishermen, who are identified as a vulnerable group. As a result of these changes, there will be no physical displacement associated with the development of the project, and the amount of land to be acquired has been reduced from 104 to 96 hectares. Only economic displacement is expected. Nevertheless, Performance Standard 5 on Land Acquisition and Involuntary Resettlement is triggered to ensure that resettlement activities as they relate to economic displacement and livelihood restoration are implemented with appropriate disclosure of information and participation of stakeholders. The lease agreements have been signed with the Elders/Stool on April 2, 2015. The final consent and associated registration of the lease were obtained by the Lands Commission on June 8, 2015.

103. **A Livelihood Restoration Plan (LRP) is being prepared.** The LRP will focus on impacts related to onshore economic displacement, with particular attention to vulnerable groups. The LRP will also focus on income generation practices, including near shore and offshore fisheries, production systems, work-related mobility patterns and practices in the impacted zone, and population influx-management. The appropriate interventions under the LRP will be designed in close collaboration with beneficiaries, local authorities, and local Community Based Organizations (CBOs), women and youth groups. The economic and social development activities to support youth and women will be discussed at the local level during consultations. The proposed interventions will require documentation similar to Resettlement Plans: implementation schedule, effective organizational responsibilities, program for consultation and participation, a Grievance Redress Mechanism (GRM), a schedule for monitoring and independent evaluation and audit, and a budget. As best practice, an exit plan will be prepared for the project. It is currently expected that the LRP will be completed by September 30, 2015.

104. **The March 2015 draft of the Environmental, Social, and Health Impact Assessment (ESHIA) was disclosed on IFC's website on March 23, 2015.** During the month of May, 2015, IFC disclosed four additional annexes to the ESHIA that present the details of modeling for air quality, noise, and visual impacts, and refinement of the modeling done for cuttings dispersal. At the same time, IFC disclosed three sub-plans to the ESHMP: the final Oil Spill Contingency Plan, the Waste Management Plan, and the Health, Safety, and Environment Plan. The ESHIA addresses the impacts of all components of the project and all its stages, from pre-construction to decommissioning. The preparation process included extensive stakeholder consultation, and the resulting comments are taken into account in the March 2015 draft. Eni made the draft ESHIA available to stakeholders and project-affected people at a consultation on March 31, 2015 and posted a link to the draft on its website on April 3, 2015. Ghana Environmental Protection Agency (EPA) made a copy available at its Western Region office in Sekondie on April 20, 2015, and published the draft ESHIA nationally on May 30, 2015. Eni provided copies for public inspection at the Western Region Coordinating Council (May 12, 2015), the Ellembelle District Assembly (May 13) and the Paramount Chief's Palace in Atuabo (May 13, 2015). EPA conducted a formal public hearing on the project in Sanzule on May 29, 2015.

105. **The findings of the ESHIA indicated that acquisition of land for the ORF would cause economic displacement of farming, with an estimated 184 farmers potentially affected.** A survey updating affected plots and farmers conducted after the reduction of the original footprint indicated that there are currently 336 small farm plots or fishponds on the land acquired, affecting 238 individual farmers. Of the affected farmers 199 are eligible for compensation while the remaining 39 established their farms or fishponds after the cut-off date. The LRP is being prepared to manage this impact. All other potential environmental, social, health, and safety impacts of the planned construction activities and normal operation are of low to medium significance and can be readily mitigated. The ESHIA identified three positive impacts of high significance: increased government revenues, opportunities for employment and skills development, and local contracting opportunities to provide goods and services (e.g., maintenance, food supply, security) to the project. The ESHIA includes an Environmental, Social, and Health Management Plan (ESHMP) with mitigation and monitoring measures for all impacts with the exception of those that will be addressed in the LRP.

106. **Given the nature of the project, the ESHIA also addressed potential impacts of unplanned events.** It considers several scenarios, of which the worst case is the accidental release of a large quantity of oil at the FPSO, and evaluates risk and consequences as a function of severity of impact and probability of occurrence. An oil release is a low-probability event, but with potentially far-reaching consequences. The ESHIA presents an extensive list of design and procedural measures to minimize the risk of an oil release, and the Oil Spill Contingency Plan (OSCP) annexed to the ESHIA includes response actions to minimize damage should such an accident occur. The impacts on community safety of an accident at the ORF resulting in fire or explosion are also assessed in the ESHIA, and a dedicated emergency response plan will be prepared and disclosed to the community before first gas at the ORF.

107. **Cumulative and trans-boundary impacts are also covered in the ESHIA**. The potential cumulative impacts considered significant are greenhouse gas emissions, oil spills, land take (particularly of farmland) for facilities related to oil and gas development and other infrastructure, pressure on natural resources (especially fisheries) as a result of population influx triggered by the developments, and related impacts on livelihoods of farmers and fisher-folk. The GHG emissions and large oil spills would also cause trans-boundary impacts.

108. **Throughout ESHIA preparation, extensive stakeholder engagement and consultation have provided a better understanding of the perspectives and concerns of the different stakeholder groups involved as well as the planned interventions and their implications**. Stakeholders at the national, regional and community levels have been involved. The project continues to engage the Ghana EPA, relevant ministries and national agencies, and GNPC. Regional and District Governments, District Assemblies, local chiefs, women, youth, chief fishermen in the communities, and immigrant fishermen are among those that among have participated in the consultations.

F. World Bank Grievance Redress

109. Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit www.worldbank.org/grs. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

Annex 1: Results Framework and Monitoring

Ghana: Sankofa Gas Project

Project Development Objectives (PDO): *Increase the availability of natural gas for clean power generation by leveraging private capital investment.*

PDO Level Results Indicators	Core	Unit of Measure	Baseline Project start (2014)	Cumulative Target Values								Frequency	Data Source/ Methodology	Responsibility for Data Collection	Description (indicator definition etc.)
				2015	2016	2017	2018	2019	2020	2021	2022				
PDO INDICATORS															
Quantity of gas supplied to power plants		MMcfd	0	0	0	0	158	171	171	171	171	Yearly	Private Sponsors	Private Sponsors and the GoG	
Private sector capital mobilized		US$ millions	800	1,400	2,600	3,900	5,000	7,900 [28]	7,900	7,900	7,900	Yearly	Private Sponsors	Private Sponsors	
Indirect Project Beneficiaries[29]	☒	Number (million)	0	0	0	0	11.3	11.5	11.7	11.9	12.2	Yearly	ECG	GoG	By promoting the Sankofa gas field expansion project, the WB Guarantees will provide indirect benefits to all ECG costumers.
Female Beneficiaries	☒	%	0	0	0	0	50	50	50	50	50	Yearly	ECG	GoG	Based on share of female population as per the WB Development Indicator (est. 2013)
INTERMEDIATE RESULTS															
Gas production capacity achieved by the project		MMcfd	0	0	0	0	158	171	171	171	171	Monthly	Private Sponsors	Private Sponsors and the GoG	
Commissioning of project according on time and budget		Yes/No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yearly	Private Sponsors	Private Sponsors and the GoG	

[28] At first gas, expected in 2018, the Private Sponsors would have begun payments under a long term operational lease arrangement for the FPSO which is currently valued at US$2.9 billion over the lifetime of the operation. Such lease fee commitment has already been made and as per industry practice is an investment capex that is accounted for as additional to the initial US$5 billion investment mobilized through equity and debt during the construction phase.

[29] Direct Project Beneficiaries has been substituted with indirect project beneficiaries based on the nature of the proposed Guarantees operation. The number of indirect beneficiaries is therefore calculated based on ECG's number of customers (with average household size of 4 persons) assuming a 2 percent increase per year.

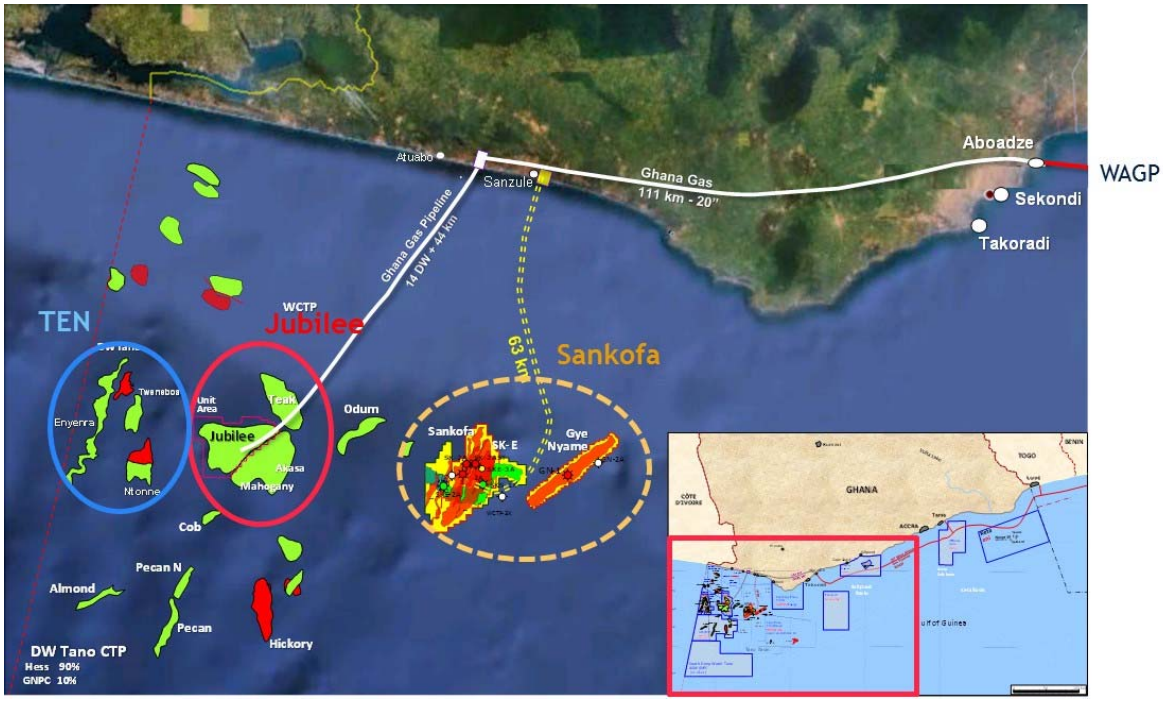
Annex 2: Detailed Project Description

Ghana: Sankofa Gas Project

Overview:

1. The SGP, as defined for the proposed World Bank support, refers to the development and subsequent production of two offshore natural gas fields within the OCTP block. The OCTP block, comprising the Sankofa and Gye Nyame non-associated gas fields (together the "Sankofa gas field") and the separate Sankofa East oil field (estimated total reserves of over 100 million barrels of oil), is located 60km offshore in Western Ghana in water depths of 500-1,000 meters (see Figure 1 below for graphic overview). The OCTP block will be developed by two private investors, Eni S.p.A. of Italy ("Eni") and Vitol Group of the Netherlands ("Vitol") together with GNPC of Ghana.[30] The total development cost for the OCTP block is estimated at US$7.9 billion over the life of the project.

Figure 1: OCTP Fields – Geographic and Technical Outline



Source: Eni Ghana

2. The Sankofa gas field is Ghana's only significant accumulation of non-associated gas. Since this resource can be produced as baseload supply without any linkage to oil production, it represents an important alternative fuel resource for Ghana's thermal power generation sector, which is currently dependent on imported light crude oil. The Sankofa gas field's expected production of 180 MMcfd over the nearly 14-year "plateau period" would be sufficient to supply close to 1,000 MW of gas fired power generation plants at a lower cost than imported crude oil or LNG.

[30] Additional details on the three developing entities and their shareholders is provided in Annex 3.

3. Production from the Sankofa gas field and the Sankofa East oil field will come from separate reservoirs that will be developed according to different schedules. Oil and gas will both flow through a shared FPSO. The Phase 1 oil development is expected to begin commercial operation in mid-2017 and the Phase 2 gas development in the first half of 2018. Separate commercial arrangements will be entered into for the oil field and the natural gas production. The proposed World Bank Guarantees will only support the commercial arrangements of the natural gas fields' development.

Origination of the Production License and Shareholding Structure

4. The petroleum agreement covering the OCTP block was signed by Vitol and GNPC in June 2006. This occurred during the 2004 - 2008 period when GNPC negotiated Petroleum Agreements covering 12 deepwater blocks in the Western (Tano) Basin, including the blocks where the Jubilee and TEN fields were subsequently discovered. In 2009, Eni acquired a majority participating interest in the OCTP Block and assumed operatorship. The petroleum agreement expires in 2036. Per normal practice in the oil and gas industry, the partners conduct business via an unincorporated joint venture governed by a joint operating agreement (JOA).

5. The first exploration well on the block was drilled in 2009 and resulted in discovery of the Sankofa gas field. In 2011, both the Sankofa East oil field and Gye Nyame gas fields were discovered. In total, eight exploration and appraisal wells were drilled between 2009 and 2013. As in the case of Jubilee and the other Tano Basin discoveries, the discoveries on the OCTP block are Cretaceous-age channel sand deposits accumulating light oil and gas/condensate in stratigraphic traps.

6. In 2013, the exploration phase under the petroleum agreement ended and Eni/Vitol submitted declarations of commerciality on Sankofa, Sankofa East, and Gye Nyame. The partners also submitted a proposed a plan of development ("PoD") under which the oil accumulations and gas accumulations would be developed separately. The Minister for Energy and Petroleum rejected this concept, insisting on an integrated oil and gas development. During 2013-2014, commercial and technical discussions took place, an integrated (oil and gas) PoD was resubmitted and on December 30, 2014. The revised integrated PoD, was approved by the Minister for Energy and Petroleum.

7. Eni is the designated operator of all the fields in the OCTP block and holds a 44.4 percent participating interest. Vitol holds a 35.6 percent participating interest, and GNPC holds 20 percent. GNPC's participating interest of 15 percent is fully carried by Eni and Vitol through the exploration and development phases. In January 2015, GNPC exercised its option to take an additional five percent fully-paid (but financed by the private sponsors) participating interest (Table 1). More details on the shareholding structure and contractual arrangements are provided in the following Annex 3.

Table 1: OCTP Participating Interests

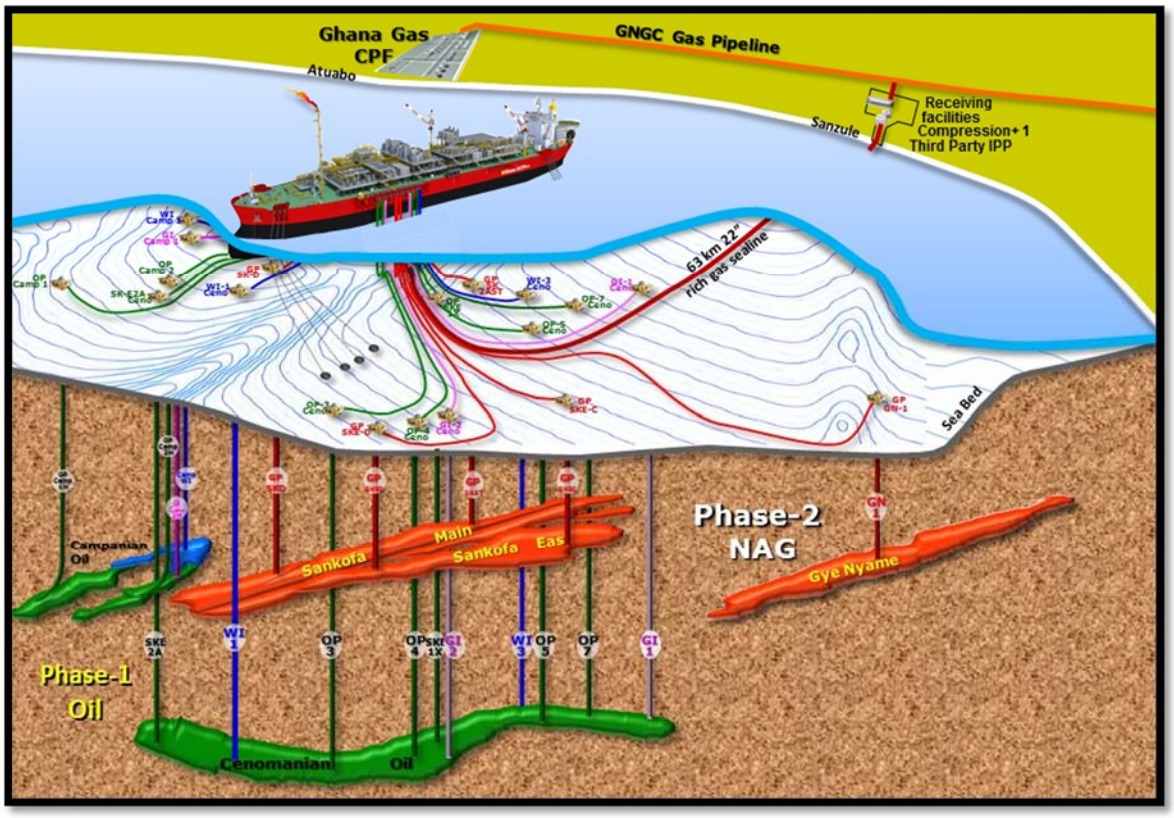
Shareholder	Shareholding
Eni	44.444%
Vitol	35.556%
GNPC	20.000%*
Total	100.000%

** 15% carried and 5% paid but financed by Private Contractors*

Technical

8. Oil and gas will be produced via a floating production and storage unit (FPSO). The OCTP FPSO will be a new-converted double-hull oil tanker (Very Large Crude Carrier - VLCC) anchored using spread mooring in around 1,000 meters water depth and connected via double riser balconies to the subsea wells through wellheads, manifolds, pipelines and riser systems. The FPSO will have a minimum storage capacity of 1.4 million barrels. Figure 2 shows the general concept of the FPSO and related infrastructure.

Figure 2: OCTP Integrated Project - Phases 1 and 2 Schematic Layout



Source: Eni Ghana

9. The development of the OCTP will be carried out in two parallel phases. The PoD calls for field development to be conducted in two phases. The Phase 1 oil development will consist of 14 subsea wells (eight oil producers, three water injection wells, and three gas injection wells) drilled to a depth of up to 4,000 meters below sea level and tied back to the FPSO via flexible risers. First production for Phase 1 is projected for August 2017, and peak production will be 45,000 b/d. The Phase 2 non-associated gas (NAG) development will consist of five gas producing wells tied back to the FPSO. The NAG production is expected to begin in the first half of 2018. After reaching plateau production rates in 2019, the project is expected to produce 180 MMcfd for nearly 14 years before entering the decline phase. The associated gas from the Phase 1 oil wells will be re-injected to maintain pressure in the oil reservoirs, but will also be used to generate power on the FPSO and

to supplement NAG production in the event of short-term production problems. The installations are being designed to meet zero gas flaring standards, as well as zero discharge of produced water.

10. The NAG production will be processed on the FPSO for condensate recovery and dew-point control. Then a 63km, 22-inch subsea pipeline will carry dry sales gas from the FPSO to an onshore receiving facility (ORF) to be built at Sanzule, 10km east of GNGC's gas processing facility located at Atuabo. At Sanzule, the ORF will interconnect with GNGC's 20-inch pipeline connecting the Atuabo processing plant with thermal generation plants at Aboadze, near Takoradi. The GNGC pipeline currently carries gas from the Jubilee field and will also carry gas from the TEN development once gas production begins (expected in 2018). Figure 3 shows the expected interconnection points in a schematic form.

Figure 3: OCTP Non-associated Gas Development – Onshore Receiving Facility

Source: Eni Ghana

11. The ORF will house two stages of compressors. A first stage compressor will compress the OCTP gas up to 50 bars, after which the OCTP gas will be commingled with the Jubilee/TEN gas arriving from Atuabo. A second stage of compressor will have the capacity to take the combined gas stream up to 100 bars, the maximum operating pressure of the GNGC pipeline.

12. Under the base case POD, total recovery over the life of the project is estimated at 1,071 billion cubic feet of gas as well as commercially viable amounts of condensate and crude oil.

Project Costs and Financing

13. The development of the OCTP will require an investment of US$3.9 billion up to the end of 2017 (for both the oil field development and the Sankofa NAG).[31] The Private Sponsors currently envisage financing the total project costs for the OCTP development through a mix of equity, shareholder loans, and commercial debt. The sponsors took their final investment decision in December 2014. Vitol plans to replace its equity financing with project finance debt subject to

[31] The total cost of the Phase 1 and 2 developments over the lifetime of the project is US$7.9 billion, including the 20-year lease cost of the FPSO. Because oil production is expected to start in Q3 2017, part of the investment will be self-financed by oil revenues.

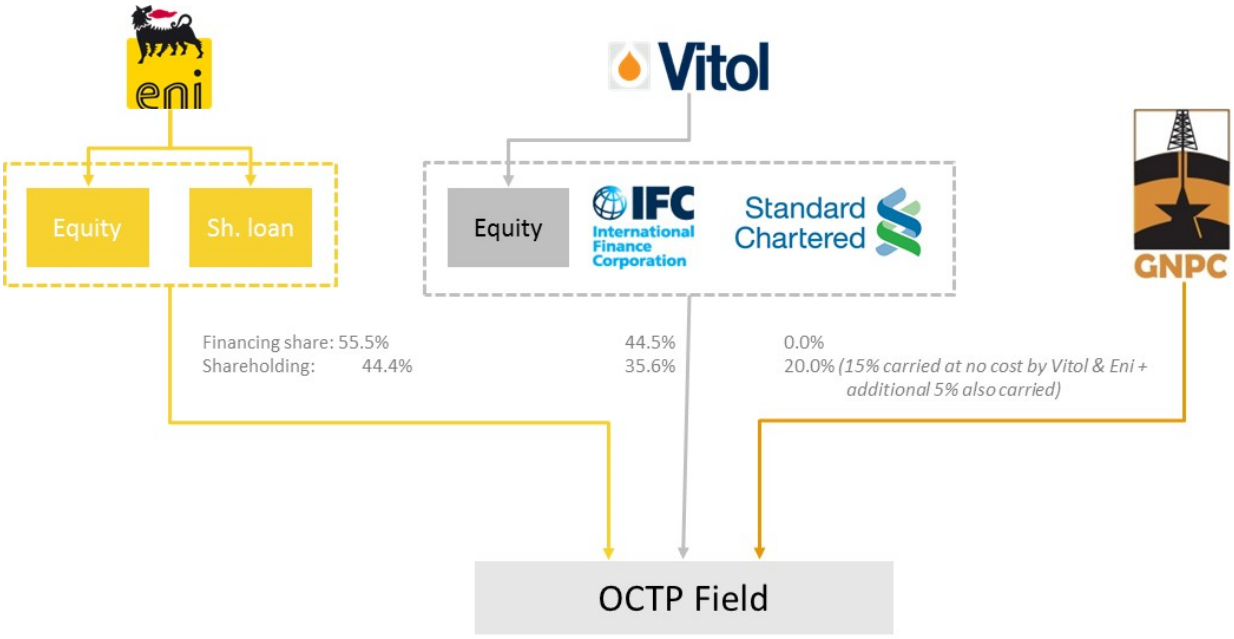
approval of the World Bank guarantees by the World Bank's Board of Directors while ENI will keep its current financing plan, which is a combination of equity and shareholder loans.

14. Vitol is likely to structure its financing share within a mix of equity, shareholder loans, and a limited recourse commercial debt financing, which may also be sourced partly from IFIs including IFC. GNPC is expected to finance its funding share through equity proceeds only. The currently expected financing structure is summarized in Table 2 and Graph 1 below. Further details on the OCTP's finances and cost details can be found in Annex 4.

Table 2: OCTP Use of Funds and Source of Funds:

Uses at the end of 2017		Sources at the end of 2017	
Capex	$3.9bn	Eni	$2.1bn
Cash	-	Vitol	$1.7bn
		EBITDA & other	$0.1bn
Total	**$3.9bn**	**Total**	**$3.9bn**

Graph 1: OCTP Financing Structure



The Proposed World Bank Guarantees

15. The proposed World Bank Guarantees will be provided through the following two structures: (1) Payment Guarantee(s) [32] provided by IDA, and (2) Loan Guarantees provided by IBRD through an enclave structure.

IDA Payment Guarantee

16. The proposed IDA Payment Guarantee will cover the risks of non-payment by GNPC of its payment obligations under the GSA for a total coverage of up to US$500 million. The IDA Payment Guarantee will backstop payments under a revolving letter of credit (LC) to be issued by a commercial bank (the "LC Bank") to Eni Ghana/Vitol Ghana, at the request of GNPC. The LC would cover GSA-related payment obligations described above, once they become due and payable per the terms of the GSA. In case GNPC fails to make timely payments under the GSA, Eni Ghana/Vitol Ghana (through an agent on their behalf) will have the right, to draw down on the LC for the corresponding amounts. Upon a draw under the LC, the amounts drawn will be converted into a twelve month loan to GNPC from the LC Bank. GNPC will have an obligation, under a Reimbursement and Credit Agreement (to be concluded between GNPC and the LC Bank) to repay such loan within a one year period. Once GNPC has repaid the loan, the LC would be reinstated in the amount repaid. However, in case GNPC fails to repay the loan, the LC Bank would have direct recourse to the IDA Payment Guarantee for the drawn and unpaid amounts plus any accrued interest under the Reimbursement and Credit Agreement, in accordance with the Guarantee Agreement (to be concluded between IDA and LC Bank). In other words, the IDA Payment Guarantee would backstop GNPC's obligations towards the LC Bank. Should IDA be required to make a payment to the LC Bank, the IDA Payment Guarantee support would be permanently reduced by the amounts paid by IDA under the Payment Guarantee.

17. A payment under the IDA Payment Guarantee would trigger the obligation of the GoG to repay IDA in accordance with the terms of the Indemnity Agreement (to be concluded between IDA and Ghana). The Indemnity Agreement will require Ghana to repay IDA on demand, or as IDA may otherwise direct.

18. The LC will become effective on the gas production start date (as per the terms of the GSA). The term of the LC is expected to be up to the term of the GSA plus some additional months to cover any remaining monthly payment obligations post termination. However in case the LC Bank is not able to issue the LC for the required period, a rollover provision would be included in the IDA Payment Guarantee to account for such risk. In addition, in case of termination of the Guarantee Agreement by IDA because of reasons attributable to the LC Bank, IDA will also have the ability to re-issue the Payment Guarantee with a new LC Bank issuing a new LC substantially in the same terms and conditions as the original LC but for the remaining period of the GSA.

19. The LC Bank will be chosen on the basis of a competitive process, which will be handled by GNPC with the input of Eni Ghana/Vitol Ghana. While the LC Bank selection will be made by

[32] It is currently envisioned that only one single LC for the joint benefit of Vitol Ghana/Eni Ghana will be issued and therefore only one IDA Payment Guarantee with a total principal amount of US$500 million will be required. If following ongoing negotiations, it is determined that it will be more beneficial to have two separate LCs in favor of each of Vitol Ghana/Eni Ghana, two IDA guarantees will need to be provided. However in the case of several IDA Guarantees the cumulative IDA Guarantee principal amount will not exceed US$500 million for all IDA Guarantees combined.

GNPC, the World Bank will assist GNPC with qualitative evaluation of the competing banks and ensure that the selected bank has the needed expertise and an experienced team to handle the transaction. The LC Bank will be selected from a shortlist of Banks meeting the following criteria: (i) a strong experience in the field of structured finance and trade finance activities; (ii) creditworthiness acceptable to address the long term drawdown needs over the LC tenure; and (iii) competitive pricing of the LC[33]. IDA expects the LC Bank selection to be launched over the summer of 2015.

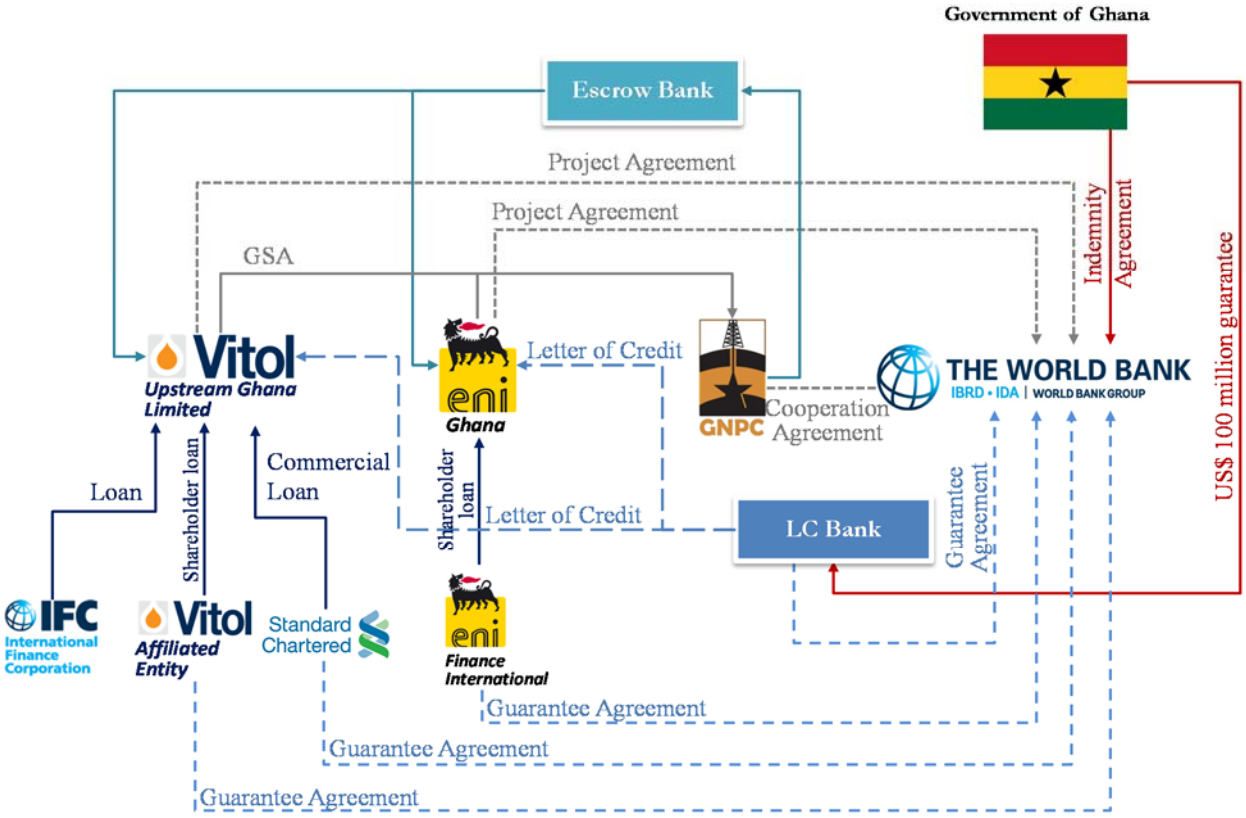
IBRD Enclave Loan Guarantees

20. It is envisaged that up to three IBRD Enclave Guarantees would be issued in the form of Loan Guarantees to protect lenders (primarily shareholders and possibly commercial lenders) to Eni Ghana/Vitol Ghana against debt service default of principal and/or interest. Protection would be availed against defaults caused by the non-performance of GNPC and the GoG of their payment obligations towards Eni Ghana/Vitol Ghana under the relevant transaction documents (including the GSA, the Sovereign Guarantee, the Multi-Party Deed and/or other GSA Security Package documents). Payment defaults would have to relate to payments only in connection with the purchase of gas pursuant to the obligations of GNPC and/or the GoG under the GSA and the security package documents as applicable. This structure has been designed to ensure that IBRD support is maintained over the long-term to ensure that the project benefits from this notional but critical "halo" effect of Bank's presence in the transaction. The total coverage of all IBRD Guarantees on a cumulative basis would be up to US$ 200 million.

21. The IBRD Enclave Loan Guarantees are non-accelerable; therefore principal and interest on the IBRD guaranteed loans would be covered by IBRD only as and when it becomes due and payable. For any payment under the Loan Guarantees, IBRD would seek reimbursement from the GoG under the Indemnity Agreement to be signed (for those IBRD Enclave Guarantees) between the IBRD and Ghana, similar to what was explained under the Payment Guarantee above. The Indemnity Agreement will require Ghana to repay IBRD on demand, or as IBRD may otherwise direct. Graph 2 outlines the planned World Bank Guarantees structure.

[33] The L/C Bank must be an Eligible Financial Institution. An Eligible Financial Institution is a financial institution, bank, trust, fund or other entity (other than an export credit agency or other governmental, quasi-governmental or multilateral agency) that is regularly engaged in or established for the purpose of making, purchasing or investing in loans or other financial assets and that (i) is commercially operated; (ii) is not ineligible to be awarded an IBRD or IDA-financed contract pursuant to the World Bank Sanctions Procedures; and (iii) is not sanctioned pursuant to a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations.

Graph 2: Guarantee Agreements



Required Documentation

22. At this stage, the following contractual arrangements/instruments are considered:

For the IDA Payment Guarantee:

- GNPC will enter into a *Guarantee Support Agreement* with Eni Ghana/Vitol Ghana under which GNPC will agree to apply for and make available an LC issued by a LC Bank and that may be drawn by Eni Ghana/Vitol Ghana following the occurrence of certain guaranteed events.
- At the request of GNPC, an LC Bank will issue the *Letter of Credit*.
- GNPC will enter into a *Reimbursement and Credit Agreement* with an LC Bank under which GNPC will agree to reimburse to the LC Bank any amounts drawn by Eni Ghana/Vitol Ghana under the LC together with accrued interest.
- IDA will enter into an *IDA Guarantee Agreement* with the LC Bank under which it will agree to repay the LC Bank any amounts not repaid by GNPC under the Reimbursement and Credit Agreement.
- Eni Ghana and Eni S.p.A. will enter into a *Project Agreement* with IDA.
- Vitol Ghana and Vitol Holding B.V. (Rotterdam) will enter into a *Project Agreement* with IDA.
- GNPC will enter into a *Cooperation Agreement* with IDA.

- The GoG will enter into an *Indemnity Agreement* with IDA whereby it will agree to repay/indemnify IDA for any payments made under any of the *IDA Guarantee Agreement(s)*.

For the IBRD Enclave Loan Guarantees:

(a) IBRD Enclave Guarantee in support of a loan from Eni Finance International SA. to Eni Ghana

- Eni Ghana will enter into an *IBRD Guaranteed Loan Agreement* with Eni Finance International SA.
- IBRD will enter into an *IBRD Guarantee Agreement* with Eni Finance International.
- Eni Ghana and Eni S.p.A. will enter into a *Project Agreement* with IBRD.
- The GoG will enter into an *Indemnity Agreement* with IBRD whereby it will agree to repay/indemnify IBRD for any payments made under the IBRD Guarantee Agreement with ENI Finance International.

(b) (i) IBRD Enclave Guarantee in support of a loan from a commercial lender to Vitol Ghana

- Vitol Ghana will enter into an *IBRD Guaranteed Loan Agreement* with the commercial lender.
- IBRD will enter into an *IBRD Guarantee Agreement* with the commercial lender.
- The GoG will enter into an *Indemnity Agreement* with IBRD whereby it will agree to repay/indemnify IBRD for any payments made under the IBRD Guarantee Agreement with commercial lender to Vitol Ghana.

(ii) IBRD Enclave Guarantee in support of Loan from Vitol SA (Geneva) to Vitol Ghana

- Vitol Ghana will enter into an *IBRD Guaranteed Loan Agreement* with the commercial lender.
- IBRD will enter into an *IBRD Guarantee Agreement* with Vitol SA (Geneva).
- The GoG will enter into an *Indemnity Agreement* with IBRD whereby it will agree to repay/indemnify IBRD for any payments made under the IBRD Guarantee Agreement with Vitol SA (Geneva).

(iii) Vitol Ghana and Vitol Holding B.V. (Rotterdam) will each enter into a Project Agreement with IBRD for all IBRD Enclave Guarantees in support of Vitol Ghana.

(iv) GNPC will enter into a Cooperation Agreement with IBRD for all IBRD Enclave Guarantees. Detailed terms and conditions of the proposed IDA and IBRD Enclave Guarantees support can be found in Annex 6.

Annex 3: Implementation Arrangements

Ghana: Sankofa Gas Project

Regulatory Oversight/ Legal Framework

1. The project will be under the supervision of Ghana's Petroleum Commission. The Petroleum Commission is Ghana's upstream petroleum regulator and is mandated to regulate, manage and coordinate all activities in the upstream petroleum industry. The Petroleum Commission was established in July 2011 by an Act of Parliament (Act 821).

2. Revenues from petroleum royalties and GNPC's Carried and Participating Interests (CAPI) in the Ghanaian oil and gas fields are regulated by the Petroleum Revenue Management Act (PRMA). The PRMA was approved by the Parliament in March 2011 (Act 821). Its objective is to provide the legal framework for the collection, allocation, and management of petroleum revenues. It sets the rules defining the allocation oil receipts between GNPC, the GoG, and funds established to support the future development of Ghana.

Project Institutional and Implementation Arrangements

3. The project is developed by Eni Ghana Exploration & Production Ltd ("Eni Ghana"), Vitol, and GNPC under the governance of the OCTP Petroleum Agreement. As Eni Ghana is the designated operator of the project, a Joint Operating Agreement has been signed by Eni Ghana and Vitol to establish the respective rights and obligations of each of the parties in their capacity as contractor of the project. A *Heads of Agreement* for the Commercialization of Non-Associated Gas was signed by GoG (Ministry of Finance and Ministry of Energy and Petroleum), GNPC, Eni Ghana, and Vitol Upstream Ghana Ltd. on December 12, 2014. This agreement acknowledges the key principles that have been agreed by all parties to develop the OCTP oil and gas field.

ENI

4. Eni S.p.A. is an Italian multinational oil and gas company listed on the Milan and New York stock exchanges. The Italian government owns a 30 percent share in the company. Eni operates in a wide range of activities, including oil and gas, electricity generation and sale, petrochemicals, oilfield services construction, and engineering industries. In 2013 it produced 1.6 million barrels of oil per day and had sales of EUR115 billion.

5. Eni employs 83,000 people worldwide and is one of the largest international oil company operators in Africa with an established presence dating back to the 1950s. It currently employs more than 12,000 people on the African continent and its African upstream operations generated almost 55 percent of its annual production for 2013.

6. Through its local subsidiary, Eni Ghana Exploration and Production Limited, Eni will be the operator of the block, holding a 44.4 percent participating interest in the project.

Vitol

7. The Vitol Group is a privately held company founded in Rotterdam in 1966. It has over 40 offices worldwide with its largest operations in Geneva, Houston, London, and Singapore. It is held by its employees and no employee has more than a 5 percent interest in the company's assets. The Group's turnover in 2014 was US$270 billion, making it the largest independent oil trader in the world.

8. In 2014 it shipped 268 million tons of crude oil and products, traded more than five million barrels of crude and products a day, chartered 6,053 ship voyages, and had 200 ships at sea at any one time. In addition to its share of the OCTP Project, Vitol also holds licenses for oil and gas fields in Cote d'Ivoire (CI-508 and CI-202 Gazelle).

9. Through its 40 percent subsidiary Vivo Energy, established in 2011, Vitol distributes and markets Shell-branded fuels and lubricants in Africa. It currently operates in 16 African countries, employs 2,200 people, and owns 1,470 service stations.

10. Through its local subsidiary, Vitol Upstream Ghana Limited ("Vitol"), Vitol will hold a 35.6 percent participating interest in the project.

GNPC

11. GNPC, was set up in 1983 and commenced operations in1985. Its mandate is to explore, develop, produce and dispose petroleum. It holds a 13.6 percent stake in the Jubilee field (which started production in 2010), a 15 percent stake in the TEN field currently under development, and is holding a total 20 percent stake in the OCTP field (15 percent carried by the Private Sponsors). GNPC's revenues are allocated through the PRMA (the law that governs the management of petroleum revenues), which is revised and approved by Parliament every three years. GNPC collects petroleum royalties on behalf of the GoG and is currently allowed by the PRMA to keep 30 percent of the petroleum receipts deriving from its participating stakes in oil and gas projects. After it is paid for its share of capital and production costs, the rest is then paid into the Petroleum Holding Fund.

12. See Annex 7 for a detailed financial analysis of GNPC.

OCTP Ownership Structure

13. Eni's shareholding in the OCTP will be held by Eni Ghana, a company registered in Ghana and a 100 percent subsidiary Eni International BV (registered in The Netherlands), which administers and holds all overseas investments of Eni S.p.A., the Group's shareholding company in Italy.

14. Vitol's shareholding in the OCTP will be held by the Vitol Upstream Ghana Ltd. ("VUGL"), a company registered in Ghana. VUGL is 100 percent owned by Atlantic Energy Bermuda Ltd., which is 90.88 percent owned by Vitol Exploration and Production Ltd., another Bermuda registered company that belongs to Vitol's Holding S.a.r.l. in Switzerland. The remaining 9.12 percent of Atlantic Energy Bermuda Ltd. is owned by Moonstone Corporation Ltd., also a Bermuda registered company.

Procurement

15. Eni Ghana is leading this project on behalf of its OCTP partners - Vitol and GNPC – and as such is responsible for the procurement of the main contract packages as well as of the other contracts for the OCTP project.

16. The procurement process for any contracts and packages follows Eni S.p.A.'s guidelines (Management System Guidelines - "MSG" - Procurement), which are globally applicable for any investments of Eni worldwide. The Eni MSG procurement guidelines require a multi-stage process involving several predefined activity milestones. The process is owned and managed by the investing entity, which in the case of OCTP is Eni Ghana Exploration and Production Ltd.

17. The first step in this process is the purchase requisition, which is submitted by the contract requesting unit within Eni Ghana. The review and authorization of procurement requests ultimately is anchored with the Managing Director of Eni Ghana or a first report to him in the organization, according to a predefined Delegation of Authority. Any decision process follows a checks and balances system established by Eni Ghana in line with Eni S.p.A.'s corporate guidelines.

18. The second step is the design of a bidding strategy, which is led by the Procurement Department of Eni Ghana and which involves a multi-disciplinary team within the investing unit, in this case Eni Ghana. Depending on the size (amount) and criticality of the contracts, the bidding Strategy is authorized by different levels in the organization of Eni Ghana, according to a predefined Delegation of Authority. Above some thresholds, the strategy is also concurred by Eni S.p.A. Eni Ghana may also use the vendor list that Eni S.p.A. maintains.

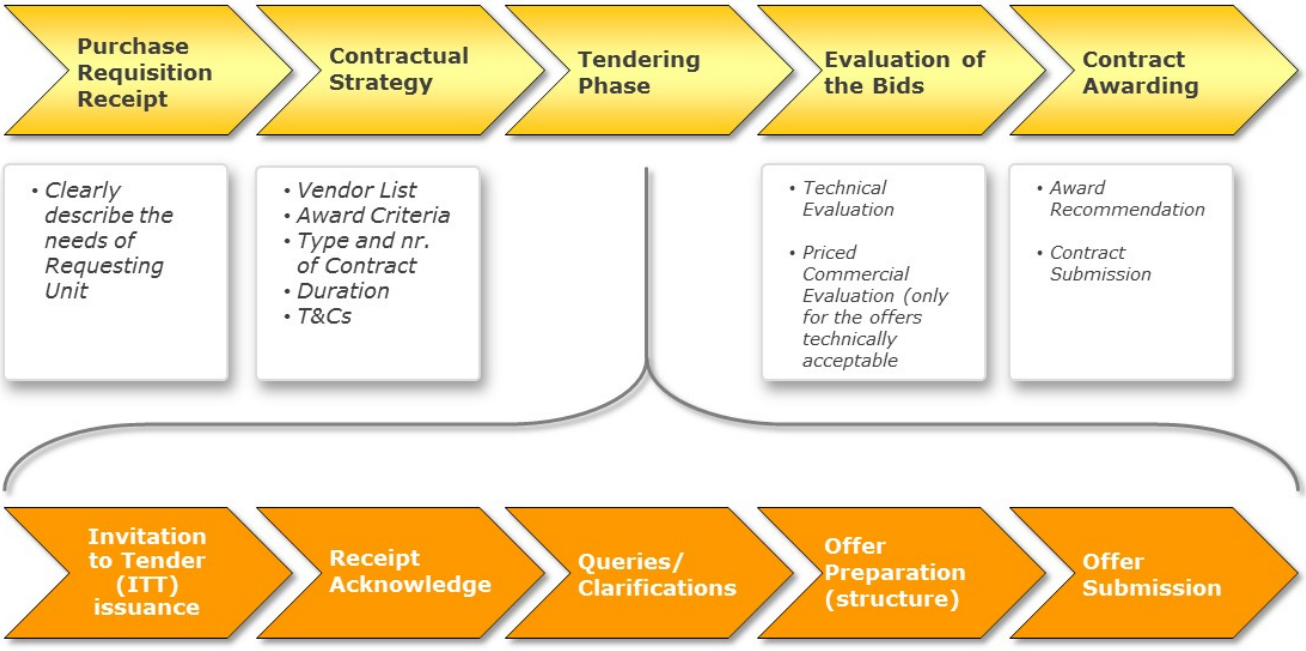
19. Following the clearance of the proposed vendor list, the third step - the contract tendering process - is launched. For specific cases, the tender is anticipated by a request for Expression of Interest ("EOI") to the potential vendor List. Vendors who submit an EoI and that meet the criteria are then invited to tender.

20. The evaluation of bids represents the fourth step in the process. The evaluation for each contract package follows a two-stage evaluation process: (i) technical evaluation with a criterion which generally is pass/fail but that in some specific cases (according to what established in the bidding strategy) may be different (scoring system); and (ii) commercial evaluation which is based on the criterion pre-established in the contractual strategy and that generally is the lowest price. For items such as FPSO and the Subsea Production System, the price has been corrected by delivery date and local content considerations.

21. The final and fifth step in the procurement process is the contract award and contract execution. The contract award has to be cleared by the Procurement Manager and is then submitted to Eni Ghana's Managing Director for contract signing, or any other person with necessary Power of Attorney.

22. The entire process is documented through Eni's corporate management system. The different steps are summarized in Graph 1 below.

Graph 1: Eni Procurement Processing Steps



Source: Eni Ghana

23. The procurement process for the OCTP project has been designed to comply with Ghana's local content regulations. In particular Vendor Lists and Contracts are subject to Petroleum Commission Approval, in line with the provisions of LI2204. Moreover, equipment and services packages have been sub-divided in a manner calculated to provide maximum opportunity for local vendors. Eni is performing extensive due diligence on local partners. Even in the case of the FPSO where no shipyard facilities exist in Ghana for fabrication, the vendor has agreed to fabricate components equivalent to 2,200 Tons in Ghana along with several other initiatives to develop local content (i.e. hiring, training).

24. Procurement for the OCTP project is divided into fourteen main contract packages. Three long lead time contracts have already been procured and contracted. For each of the technically demanding, high-value packages, such as the FPSO, sub-sea production system, and flexible risers, the initial vendor list comprised three or more companies recognized as industry leaders in the respective sector. Some generic oil field products, such as compressors and tubulars, are being procured using Eni's global corporate framework agreements with headquarter-approved suppliers.

25. In response to the recent drop in oil prices, oil service and supply costs have declined sharply, by 20-30 percent for some products. Eni has captured some of this cost reduction by asking bidders to re-submit prices. The long lead items have now all been contracted including price adjustments and price revisions as offered by the contractors and before contract signing.

Financial Management

26. As operator of the Joint Venture, Eni Ghana is responsible for preparing the annual budget and already has financial management systems, including accounting, reporting, auditing, and internal controls, and relevantly qualified staff in Ghana. As the vehicle structure that has been chosen by the contractors is an unincorporated Joint Venture, all the contracts signed on behalf of the Joint Venture will be signed by Eni Ghana.

27. The budgeting process will follow Eni S.p.A. guidelines (Management System Guidelines – Financial Management). Every year Eni Ghana will prepare the budget for the year to come with the best information available and will then convert it into a cash budget (by taking into account billing terms) to calculate the cash calls for each of the JV partners. The annual budget will then be submitted to the other partners of the JV for approval. Vitol and GNPC will have the opportunity to review, audit, question, comment, and eventually approve the budget for the year. The approved budget will be the basis on which the JV partners will be asked to pay for their share of capital and production costs. In addition to the review of the budget by Vitol and GNPC. The internal audit department of Eni S.p.A. will also review the budget regularly. The budget will be revised several times during the year to take into account actuals and new estimates. Every quarter Eni Ghana will have to share with its partners actuals for the past three months, twelve months, and the total cumulative spend since the start of the project.

28. Once the budget has been approved, each JV member is free to finance its share of the joint venture investments through its own equity, shareholder loans, or debt in response to cash calls that Eni Ghana will make. The funds will be channeled to a dedicated bank account in Ghana from which Eni Ghana will pay the various contractors responsible for the investments on behalf of the JV members

Key Contractual agreements and Security Package[34]

Key Contractual Agreements

29. **Heads of Agreement for the Commercialization of Non-Associated Gas (HoA).** The HoA between with the GoG (Ministry of Finance and Ministry of Energy and Petroleum), GNPC, Eni Ghana, and Vitol Upstream Ghana Ltd. was signed on December 12, 2014 and was recently amended. This agreement acknowledges the key principles that have been agreed by all parties to develop the OCTP oil and gas fields. Following the signature of this agreement, GNPC had the authority to finalize the negotiation of both the GSA and the security package.

30. **Gas Sales Agreement (GSA).** The Private Sponsors of the project and GNPC have signed the GSA in June 2015. This agreement defines the terms under which the Private Sponsors will sell gas to GNPC over an estimated 19 year period (13.5 years of plateau and 5.5 years of expected decline period). The price that has been agreed by the parties is US$9.80/MMBtu (2014 U.S. Dollars) and the annual quantity is 62 Bscf. The contract includes a Take or Pay (ToP) clause that states that GNPC has to pay for 90 percent of the agreed quantity of gas whether it is able to take it or not.

31. **Fiscal Support Agreement.** In order to reduce the price of gas that was originally sought by the Private Sponsors of the project, the GoG has agreed to a fiscal package aimed at enhancing the profitability of the project while reducing the price of gas. Under this agreement the Private Sponsors of the project are allowed to claim tax deductibility for interests on shareholder loans. The Private Sponsors will also be allowed to amortize anticipated decommissioning/abandonment costs on a unit of production basis. These various mechanisms aim at reducing the taxable income of the private partners during operations.

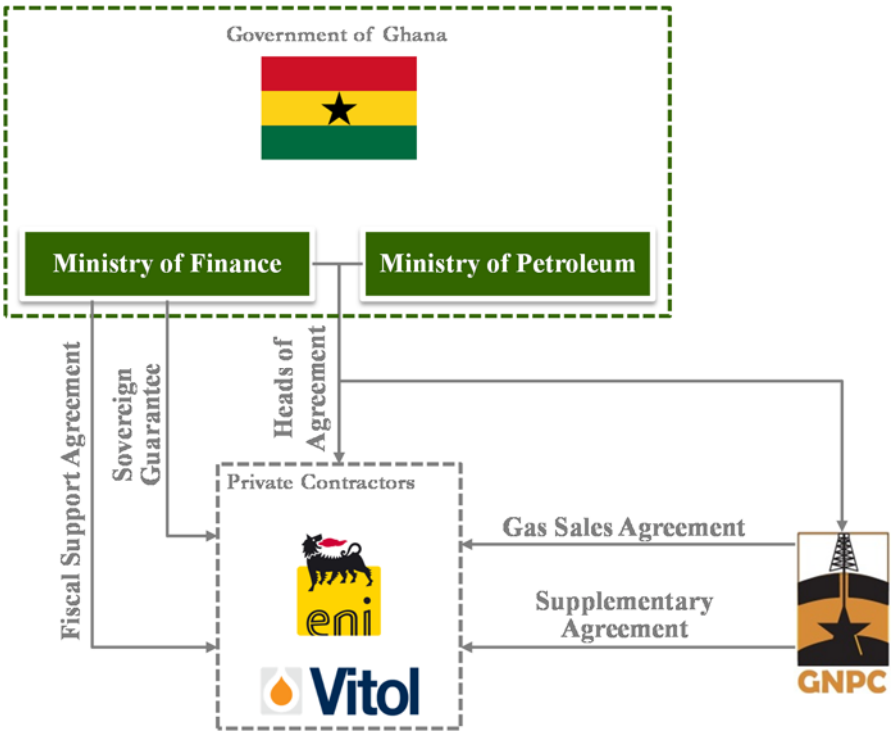
32. **Supplementary Agreement.** In addition to the Fiscal Support Agreement, GNPC and the Private Sponsors of the project have also agreed to a mechanism which resulted in a decrease of the price of gas during the negotiation phase. Under this mechanism the Private Sponsors will

[34] Subject to change until finalization of negotiations.

over-lift oil at the beginning of the contract and GNPC will over-lift the same volume of oil at the back end of the contract.

33. **Sovereign Guarantee.** The GoG agreed to issue a sovereign guarantee in favor of Eni and Vitol for the duration of the GSA. This agreement memorializes the GoG undertakings regarding the project.

Chart 1: Contractual Arrangements OCTP



Source: World Bank Team

Security Package

34. The security package agreed by all parties includes a comprehensive set of instruments aimed at enhancing the credit worthiness of GNPC as offtaker of the OCTP gas for an estimated period of 19 years. The World Bank has worked with the GoG, GNPC, and the Private Sponsors of the project to make sure that principles of efficiency and effectiveness have been applied in the design and use of World Bank guarantees.

35. The first layer of the security package is the payment mechanism that has been agreed to make sure that money flowing from the power sector and GNPC's share of Net CAPI are channeled through certain designated accounts and used in priority to pay for the Sankofa gas. Under this mechanism, all revenues from the on-sale of gas from Sankofa, Jubilee, and TEN as well as GNPC's share of Net CAPI shall be deposited into a Government Disbursement Account (GDA) from which the GSA payments, GNPC's debt service, and the replenishment of the Jubilee and TEN escrow accounts will be made on a *pari passu* basis. Following these disbursements, the remaining funds are used to replenish the Sankofa escrow reserve account if needed, and eventually the funds are released to GNPC.

36. In the event where, despite the implementation of the payment mechanism, a payment shortfall would occur, an additional package of instruments to secure the payments to the Private Sponsors has been agreed. The agreed security package is broken down as follows:

i) **GNPC reserve escrow account**: This security consists of a reserve escrow cash account funded by GNPC for an equivalent of 4.5 months of gas sales which will be available only if the proceeds from the above prior payment mechanism are not sufficient. The account has to be funded by GNPC prior to first gas.

ii) **GNPC Letter of Credit backstopped by IDA Payment Guarantee**: This security will only be accessible to the Private Sponsors, once GNPC reserve escrow account has been exhausted. This payment security is to be issued in form of a Letter of Credit (LC) from a commercial bank. The amount of the LC is set at US$500 million and such an amount is estimated to cover close to one year of gas sales under the GSA. This security layer will be backstopped by IDA.

iii) **Sovereign Payment Obligations:** Once the IDA backed LC has been drawn to certain thresholds the GoG will have a residual liability under the Sovereign Guarantee. In the current base case scenarios, the different security layers described above should shield the GoG from having to step in for several years, even in the scenario in which only 50 percent of the gas bills are paid by the power sector. Only if such situations were not fixed after several years of prolonged default payments or if payment rates were dramatically below 50 percent, would the GoG be liable for the gas payments under the GSA.

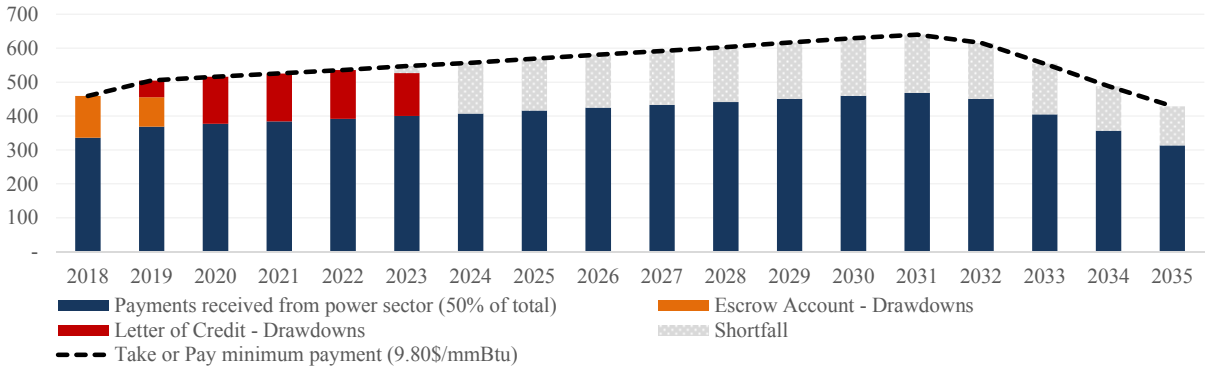
iv) **World Bank IBRD Enclave Loan Guarantee**: Once the former security layers are exhausted and a payment default remains under the GSA that leads to a debt service payment default by the Private Sponsors to their lenders the proposed US$200 million IBRD Enclave Loan Guarantees would become available for the benefit of the Private Sponsors' lenders.

Mitigation of the Power Sector Downstream Risk through Security Package

37. The largest risk for GNPC is that the power sector may not be able to pay for the gas in full, or that not enough gas fired power stations are operating when the Sankofa gas will come online. Simulations that assume partial payment of power sector gas bill assess the robustness of the security package against this risk. The simulation assumes that GNPC's only revenues to pay for the gas come from the power sector and that only 50 percent of the bills are paid. In this case, the escrow account and the letter of credit alone (including the above mentioned limited LC replenishment obligation by the GoG) allow the Private Sponsors to be paid for six years at the minimum ToP volume. Therefore, in this downside scenario there would still be six years from the first drawdown from the escrow account to fix the power sector's financial problems before the security package is fully exhausted (see Chart 2).

Chart 2

Payment mechanism assuming 50% default of the power sector an no other source of revenues



Source: World Bank Team

38. GNPC can not only rely on the power sector to pay its gas bills to the Sankofa Private Sponsors, but can also use the share of the Net CAPI that it receives per the PRMA before the security package is called upon. It can therefore be assumed that at the assumed power sector payment levels, there would be an even lengthier period for the GoG to resolve the power sector's financial problems before the World Bank's guarantees are called upon.

Annex 4: Financial and Economic Analysis

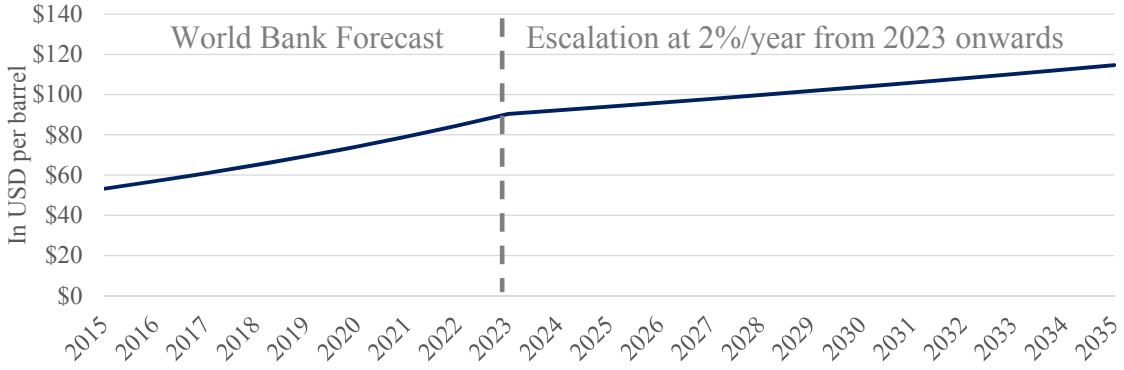
Ghana: Sankofa Gas Project

Financial Analysis

Assumptions

1. **Oil Price.** The World Bank's internal oil price forecast dated January 2015 has been used. Since this price forecast stops in 2023, it has been assumed that after that date the oil price would grow in line with U.S. Consumer Price Index (CPI) at two percent per year (see Graph 1).

Graph 1: Oil Price Assumption



Source: World Bank

2. **Gas Price.** The gas price agreed in the GSA is US$9.80/MMBtu. The gas price formula includes an annual escalation linked to the Henry Hub price and to the change in the US CPI as well as a capping mechanism related to Brent oil price. Also included is an option for GNPC to decrease the gas price by US$0.55/mmBtu per US$100 million contributed by GNPC to the funding of the gas sealine.

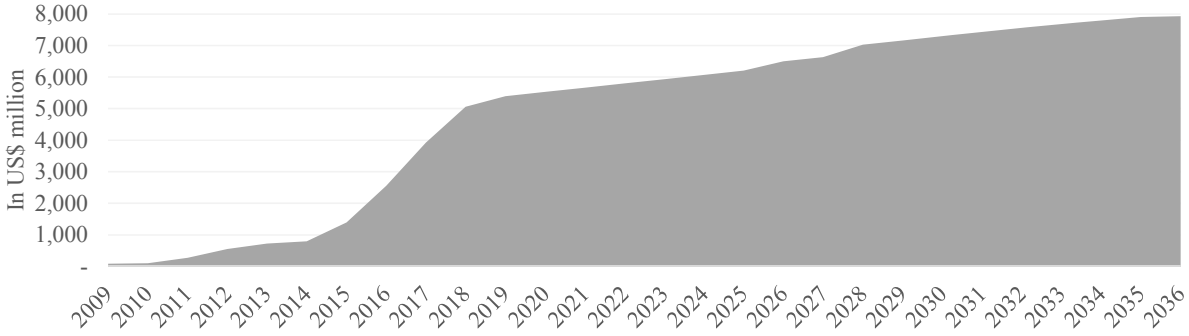
3. The assumed gas price is US$9.80/MMBtu, escalated every year with the U.S. CPI. Unless both the Brent and the Henry Hub prices rise significantly from current level, the gas price formula is such that the price should not deviate more than ten percent from the base case in most scenarios.

4. **Capital cost.** The total capital cost of the project is estimated at US$7.9 billion dollars. This cost estimate includes both Phase 1 (oil) and Phase 2 (gas) costs and is based on tenders already received by the Private Sponsors for specific contracts (FPSO, Subsea Pipeline System, drilling costs) and on cost estimates for other contracts. However, since the FPSO lease payments are spread over a 20-year period and have a total cost of US$2.4 billion, the actual capital cost to first oil is US$3.9 billion (2017) and US$5.1 billion to first gas (2018), both including exploration costs. The US$7.9 billion total cost can be broken down between Phase 1 (oil) for US$3.9 billion and Phase 2 (gas) for US$4.0 billion. Costs that could be clearly identified to Phase 1 or Phase 2 have been allocated accordingly, while costs that were common to both phases (such as the FPSO) have been pro-rated using the production mix of oil and gas (in millions of barrels of oil equivalents) as the allocation key.

Table 1: Total Capital Cost Breakdown

Investment summary	
Capital Costs	$7.3bn
Exploration Costs	$0.6bn
Total Development Costs	**$7.9bn**
Development Costs to first oil (2009 - 2017)	$3.9bn
Additional Development Costs to first gas (2018)	$1.1bn
Capital costs during operations (2019 - 2036)	$2.9bn
Total Development Costs	**$7.9bn**

Graph 2: Cumulative Capital Cost Spend Curve

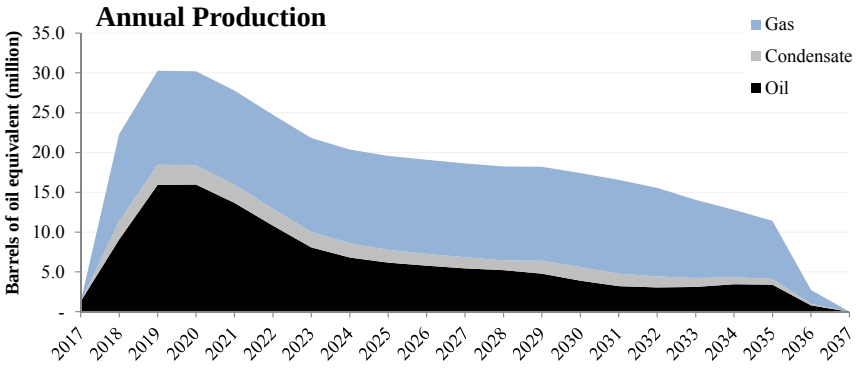


Source: World Bank, based on information received from Eni and Vitol

5. **GNPC Stake.** GNPC has exercised its right to increase its stake in the JV from 15 percent (carried at no cost) to 20 percent and it has been assumed that this cost would be financed by the Private Sponsors of the JV during construction, as permitted in the OCTP Petroleum Agreement. GNPC would then repay its 5 percent incremental share of the capital costs with revenues from oil liftings (40 percent of the receipts would be used to repay the carried interest). The interest rate GNPC would pay on this loan from Eni and Vitol would be Libor plus 100 basis points, which is a very competitive financing cost. Since GNPC's base 15 percent participating stake in the project will be carried at no cost by the Private Sponsors of the project, GNPC will not have to repay it. Thus the Sankofa related disbursements for GNPC during the construction phase are limited to the funding of the escrow account in 2017 before first gas.

6. **Oil and Gas Production.** While oil production is expected to start in the second half of 2017, gas production is expected to start in mid-2018. Both production volumes are expected to reach their peak in 2018-2019 – while oil production is expected to decline after its peak, it is anticipated that the gas production will be able to maintain its plateau level for nearly 14 years. To maintain the gas production at the plateau level, the JV expects to have to invest in additional compression capacity in 2026 and 2028; these investments are already planned and accounted for in the total project cost and in the financial and economic analysis. The level of production that has been assumed includes both proven and probable reserves. The graph below shows the annual production profile for oil, gas, and condensate expressed in millions of barrels of oil equivalents (MMboe).

Graph 3: Oil and Gas Production Curves



Source: Eni and Vitol

7. **Key Assumptions.** The Table 2 below summarizes the key assumptions of the financial model used in the following financial and economic analysis.

Table 2: Base Case Assumptions Summary

Base Case Assumptions	
Oil price	World Bank January 2015 Forecast
Capital Cost	$7.9bn
GNPC - Total interest in the project	20%
GNPC - 5% additional interest	Financed by the private sponsors

Operating Performance

8. **Revenues.** Royalties have to be deducted first from the gross receipts generated by the sale of oil, gas, and condensate. The level of royalties for oil is 7.5 percent and for gas and condensate five percent. The revenues net of royalties are then shared pro rata between the partners of the JV, i.e., 44.4 percent for Eni, 35.6 percent for Vitol, and 20 percent for GNPC. The Private Sponsors get 74 percent of the total oil revenues (i.e. 80 percent of 92.5 percent, the volume net of royalties) and 76 percent of gas and condensate revenues, while the GoG, through both royalties and GNPC's CAPI, gets 26 percent and 24 percent for oil and gas, respectively.

9. **Operating Expenditures.** In line with the understanding reached with the Ghanaian authorities, the FPSO lease rentals are treated as capital developmental expenditures and the relevant costs are depreciated in the income statement. The FPSO's operating and maintenance costs are recorded as operating expenditures in the income statement and are estimated at more than US$100 million per year. Other operating expenditures include the costs to operate the ORF at US$15 million per year. During operations, GNPC will contribute to operating costs at its 20 percent participating interest level.

10. **Non-cash Charges.** For tax purposes, the Private Sponsors are allowed to depreciate the capital expenditures over a five-year period using a straight line method, but for accounting purposes it has been assumed that the depreciation would follow a unit of production method over the life of the asset. This difference in depreciation methods for tax and accounting purposes

explains why a deferred tax liability accumulates in the early years of the project when the tax depreciation is higher than the accounting depreciation.

11. The Table 3 below shows the income statement of the JV for the Private Sponsors from the start of oil production (2017) until 2024 when oil production in already in decline while gas production is at its plateau level.

Table 3: Income Statement of the Private Sponsors' Joint Venture from 2017 to 2024

In USD million (nominal)	2017	2018	2019	2020	2021	2022	2023	2024
Revenues from Oil	81	590	1,106	1,184	1,083	914	730	628
Revenues from Gas	-	672	738	754	768	783	800	814
Revenues from Condensate	-	151	176	180	182	181	177	165
Gross revenues	**81**	**1,412**	**2,020**	**2,118**	**2,034**	**1,879**	**1,707**	**1,608**
Oil royalties	(7)	(44)	(83)	(89)	(81)	(69)	(55)	(47)
Gas royalties	-	(34)	(37)	(38)	(38)	(39)	(40)	(41)
Condensate royalties	-	(8)	(9)	(9)	(9)	(9)	(9)	(8)
Gross revenues after royalties	**74**	**1,327**	**1,891**	**1,982**	**1,905**	**1,762**	**1,604**	**1,512**
GNPC share of revenues	**-**	**(156)**	**(286)**	**(396)**	**(381)**	**(352)**	**(321)**	**(302)**
Private Contractors Oil Revenues	74	546	911	876	801	676	540	465
Private Contractors Gas Revenues	-	510	561	573	584	595	608	619
Private Contractors Condensate Revenue	-	115	134	137	139	138	134	126
Private Contractors Revenues	**74**	**1,171**	**1,606**	**1,586**	**1,524**	**1,409**	**1,283**	**1,209**
FPSO O&M	(23)	(107)	(117)	(123)	(125)	(126)	(129)	(130)
Onshore Receiving Facility (ORF)	(2)	(12)	(13)	(16)	(16)	(16)	(17)	(17)
Abandonment costs	-	-	-	-	-	-	-	-
GNPC share of opex	5	24	26	28	28	28	29	29
Total opex	(20)	(95)	(104)	(111)	(113)	(114)	(116)	(118)
EBITDA	**53**	**1,076**	**1,501**	**1,475**	**1,411**	**1,296**	**1,167**	**1,092**
Abadonment costs provision	(9)	(58)	(102)	(102)	(88)	(69)	(52)	(44)
Accounting depreciation (Capex)	(38)	(339)	(638)	(659)	(584)	(480)	(375)	(333)
Gain/Loss on ROB	-	-	-	-	-	-	-	-
EBIT	**6**	**679**	**761**	**713**	**739**	**746**	**740**	**716**
Corporate income tax	(2)	(237)	(267)	(250)	(259)	(261)	(259)	(250)
Of which Tax payable	*-*	*-*	*-*	*-*	*-*	*-*	*(318)*	*(318)*
Of which Deferred tax	*(2)*	*(237)*	*(267)*	*(250)*	*(259)*	*(261)*	*60*	*68*
Net Income	**4**	**441**	**495**	**463**	**481**	**485**	**481**	**465**

Source: World Bank

Cash Flow Analysis

12. **Revenue Generation.** As mentioned above in the operating performance analysis, the Private Sponsors of the JV will get a 74 percent share of the gross oil revenues and a 76 percent

share of the gross gas revenues. After netting operating costs from the revenues, it is estimated that during the early years the project will generate a gross margin (or EBITDA - Earnings Before Interests Tax Depreciation and Amortization) of US$1.5 billion for the Private Sponsors and that this margin will decrease to US$1 billion per year during the gas plateau period.

13. **Capital Costs.** The Private Sponsors have already spent more than US$1 billion to date on the project. Since GNPC has exercised its right to increase its stake by an additional five percent up to 20 percent (the first 15 percent is carried at no cost by the Private Sponsors) which will be financed by the private sponsors, Eni and Vitol will have to finance the whole capital cost of the project until the start of operations. Only after oil production has started will GNPC repay the Private Sponsors for this additional five percent (US$200 million).

14. **Corporate Income Tax.** As a result of the fiscal support agreement that has been agreed by the GoG with the Private Sponsors and the fact that the asset is depreciated over a five-year, straight line method, the Joint Venture is not expected to pay any corporate income tax before 2023, or five years after the start of operations. This period would be significantly reduced should the oil price recover its pre-2015 prices at more than US$100/barrel.

15. Table 4 shows the cash flows for the Private Sponsors of the project during the entire life of the project, or from 2009 to 2037.

Table 4: Free Cash Flows to Private Sponsors

In USD million (nominal)	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
EBITDA	-	-	-	-	-	-	-	-	53
Net Capex	(83)	(15)	(176)	(278)	(171)	(73)	(595)	(1,163)	(1,367)
Corporate income tax	-	-	-	-	-	-	-	-	-
Free Cash Flows	**(83)**	**(15)**	**(176)**	**(278)**	**(171)**	**(73)**	**(595)**	**(1,163)**	**(1,314)**

In USD million (nominal)	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**
EBITDA	1,076	1,501	1,475	1,411	1,296	1,167	1,092	1,058	1,043
Net Capex	(1,081)	(272)	(41)	(96)	(128)	(128)	(128)	(128)	(278)
Corporate income tax	-	-	-	-	-	(318)	(318)	(307)	(293)
Free Cash Flows	**(5)**	**1,229**	**1,434**	**1,316**	**1,167**	**720**	**646**	**622**	**472**

In USD million (nominal)	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**
EBITDA	1,032	1,023	1,041	1,002	954	663	809	764	696
Net Capex	(128)	(374)	(128)	(128)	(128)	(122)	(115)	(109)	(105)
Corporate income tax	(287)	(269)	(273)	(265)	(258)	(151)	(209)	(163)	(195)
Free Cash Flows	**616**	**379**	**640**	**609**	**568**	**390**	**486**	**492**	**396**

In USD million (nominal)	**2036**	**2037**
EBITDA	113	(834)
Net Capex	(25)	-
Corporate income tax	(29)	-
Free Cash Flows	**59**	**(834)**

Source: World Bank

Profitability for sponsors

16. **Key Indicators.** The nominal post tax FIRR for the Private Sponsors is estimated at 14 percent. The nominal payback occurs in 2021 while the discounted payback occurs in 2028. The previous calculations include both exploration costs as well as the carry of GNPC's additional five percent interest.

17. **A reasonable level of value creation for the Private Sponsors.** The FIRR and economics of the project are in the low range of industry standards. This low value creation level can be explained in large part by the currently depressed oil environment. While oil was the main driver of value creation when its level was above US$100/barrel in the years preceding 2015, now that the oil price has dropped and forecasts have been revised accordingly, gas is driving the profitability of the overall project. Under the World Bank oil price forecast scenario, the NPV of oil revenues accounts for 44 percent of the Private Sponsors' revenues, while gas accounts for 46 percent of revenues (and condensate 9 percent). These percentages would be 52 percent for oil and 37 percent for gas assuming a flat oil price of US$100/barrel (in US$ terms of 2014) throughout the period. The stability of the gas revenues provided to the sponsors through the GSA is what makes the project financially viable and bankable to the Private Sponsors.

18. **Sensitivity Analysis.** The GSA signed between the Private Sponsors and GNPC enhances the stability of the project cash flows for the Private Sponsors, but also limits their upside potential. An increase (decrease) of the oil price by US$10/barrel increases (decreases) the FIRR by 1.3 percentage point. The stability of the revenues from gas allows the FIRR to remain above 10 percent, even if a low long term oil price scenario materializes (oil price below US$42/barrel).

19. **Payback.** Because of the shape of the oil recovery curve (where production peaks in 2019 and 2020), the sponsors' payback is quick, with the nominal payback as soon as 2021 and the discounted payback in 2028.

Government financial revenues

20. **Direct Revenues to GoG/GNPC**: The total NPV of the GoG's direct revenues and GNPC's CAPI is estimated at US$2.3 billion. This is five times higher than the NPV for the Private Sponsors (US$0.4 billion). The direct benefits from the project will be in the form of: (i) royalties (7.5 percent on oil and condensate, 5 percent on gas); (ii) corporate income tax payable by the Private Sponsors of the Joint Venture during the operating phase of the project; (iii) potential Additional Oil Entitlements, which are triggered if the Private Sponsors' FIRR reaches specific thresholds; and (iv) GNPC's CAPI. Indirect benefits to the GoG will mainly be in the form of lower electricity production costs for the power sector.

21. **Income Tax Revenues**: In the early years (first five years most likely), the GoG is not expected to receive any income tax as a result of: (i) expected low oil prices; (ii) the tax depreciation of the assets, which is calculated using a five-year, straight line method; and (iii) the fiscal package that has been agreed between the Private Sponsors and the GoG. The GoG is not expected to receive revenues from Additional Oil Entitlements as the FIRR of the Private Sponsors never reaches the first threshold which triggers them. The NPV of the income tax that will be

payable by the private sponsors for both the oil and the gas phases is estimated at US$0.7 billion and the royalties at US$0.5 billion.

22. **GNPC Revenues from Project Shareholding**: GNPC's participating stake in the project (20 percent) should create an NPV of US$1.1 billion of while requiring a limited initial investment. GNPC's five percent additional (paid) interest in the project being financed by the other partners during the construction phase, the disbursements of GNPC are limited to the funding of the escrow account before first gas. GNPC has to fund the escrow account (4.5 months of gas payments, or approximately US$210 million) per the agreed security package and that GNPC has to contribute to five percent of the capital costs of the project and 20 percent of the operating costs. For the purpose of this analysis it has been assumed that GNPC would fund the 4.5-month escrow account in 2017 before first gas. Because GNPC has a 15 percent interest carried at no cost and that its additional five percent interest is carried by the private sponsors during the development phase, GNPC's NPV is much less volatile than that of the sponsors as there are limited negative cash flows during the development phase (see Table 5).

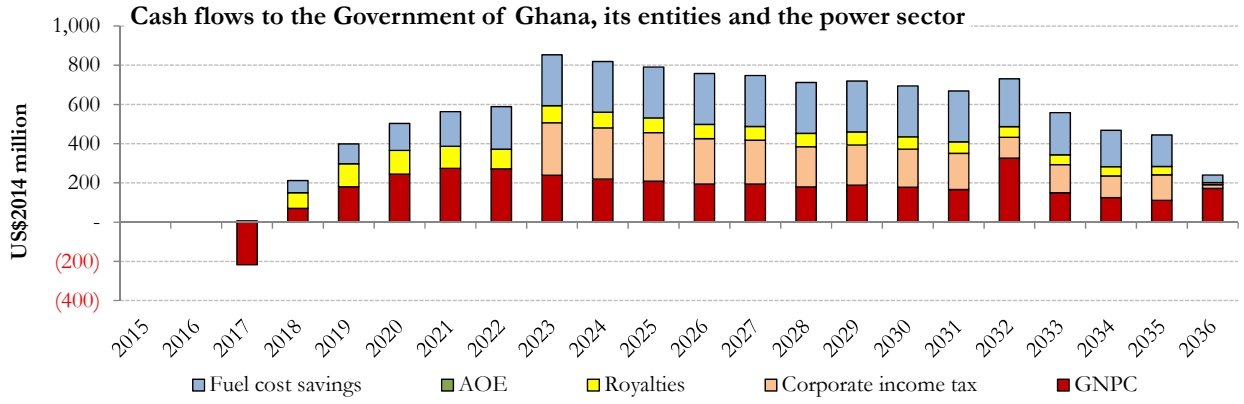
Table 5: Sensitivity of GNPC's NPV to the oil price

Oil price in $2014/barrel	$40	$45	$50	$55	$60	$65	$70	$75	$80	$85	$90	$95	$100	$105	$110
NPV - GNPC	$0.7bn	$0.8bn	$0.8bn	$0.9bn	$1.0bn	$1.0bn	$1.1bn	$1.1bn	$1.2bn	$1.3bn	$1.3bn	$1.4bn	$1.4bn	$1.5bn	$1.6bn

Source: World Bank

23. Graph 4 and Table 6 below illustrate the annual breakdown of the direct and indirect cash flows to Ghana in real USD 2014 terms which are derived from the SGP.

Graph 4: Cash Flows to Government of Ghana, its Entities and the Power Sector



Source: World Bank

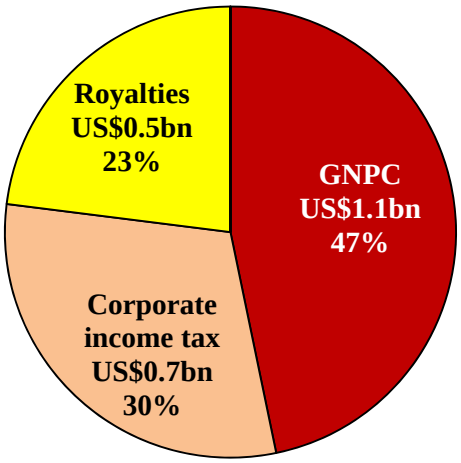
Table 6: Direct Cash Flows to Government of Ghana and GNPC from 2017 to 2036

In USD million (2014 money)	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Royalties										
Oil royalties	12	68	119	120	103	81	61	51	46	43
Gas royalties	-	31	34	34	34	34	34	34	34	34
Condensate royalties	-	12	13	12	12	11	10	9	8	7
Total Royalties	**12**	**111**	**166**	**166**	**148**	**125**	**104**	**94**	**88**	**84**
AOE	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**33**	**46**
Corporate income tax	**-**	**-**	**10**	**206**	**178**	**346**	**338**	**316**	**297**	**277**
GNPC cash flows	**(228)**	**88**	**308**	**405**	**394**	**338**	**284**	**258**	**243**	**227**
Total Government cash flows	**(216)**	**198**	**484**	**777**	**720**	**809**	**727**	**667**	**661**	**635**

In USD million (2014 money)	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Royalties										
Oil royalties	41	39	36	29	24	23	23	26	25	6
Gas royalties	34	34	34	34	34	32	28	24	21	5
Condensate royalties	7	6	8	9	8	7	6	4	4	1
Total Royalties	**81**	**79**	**78**	**71**	**65**	**62**	**57**	**54**	**50**	**12**
AOE	**56**	**36**	**55**	**51**	**46**	**44**	**29**	**38**	**31**	**3**
Corporate income tax	**266**	**245**	**244**	**229**	**215**	**194**	**122**	**137**	**155**	**25**
GNPC cash flows	**226**	**208**	**218**	**204**	**188**	**175**	**306**	**145**	**130**	**183**
Total Government cash flows	**628**	**569**	**594**	**555**	**514**	**474**	**514**	**374**	**366**	**222**

Source: World Bank

Chart 1: NPV of the GoG and GNPC Revenues from Sankofa



Source: World Bank

Economic Analysis

24. An economic analysis shows that the project is expected to generate a positive economic NPV of US$4 billion (assuming a 10 percent discount rate) and an ERR of 20.2 percent in the base case.

25. **Costs.** The economic costs of the SGP are the capital costs (US$7.9 billion), the operating costs, and the funding of the escrow account.

26. **Benefits.** The benefits of the project are in the form of (i) oil, gas, and condensate revenues for the GoG, GNPC and private sponsors and (ii) contribution to better and cheaper energy services in Ghana. Revenues have been estimated in the financial analysis above. Fuel cost savings to the power sector through the displacement of LCO until 2021 and the displacement of LNG starting in 2022 are used as a proxy for the contribution to better and cheaper energy services.

27. **Additional Benefits.** Additional indirect economic benefits of the Sankofa gas field include (a) economic growth as energy services improve due to increase stability of supply of gas, and (b) reduced carbon emissions.

28. Increasing the reliability of the fuel supply in Ghana will unlock its growth potential. This indirect benefit has not been included in the economic analysis. Since each percentage point of growth in Ghana is worth US$500 million and as the SGP is key to resolving the issues faced by the power sector, its impact on Ghana's economy is likely to be even more positive than the economic analysis shows.

29. The SGP will reduce carbon emission by displacing LCO as a source of fuel. Assuming the same heat rates as in the fuel cost savings analysis (7,700 Btu/kWh for LCO fired power stations and 7,500 Btu/kWh for gas fired power stations), it has been estimated that the project would reduce carbon emission by 1.6 million metric tons of CO_2 per year while the Sankofa gas displaces LCO.

30. Table 7 below shows the economic cost and benefit cash flows of the project throughout its lifetime.

Table 7: Economic Costs and Benefits Cash Flows

In USD million (2014 money)	2009	2010	2011	2012	2013	2014	2015	2016	2017
Gross revenues	-	-	-	-	-	-	-	-	76
Capital Costs	(93)	(17)	(188)	(290)	(176)	(73)	(586)	(1,122)	(1,293)
Operating Costs	-	-	-	-	-	-	-	-	(24)
Change in escrow account	-	-	-	-	-	-	-	-	(199)
Fuel cost savings	-	-	-	-	-	-	-	-	-
Total Economic benefits	**(93)**	**(17)**	**(188)**	**(290)**	**(176)**	**(73)**	**(586)**	**(1,122)**	**(1,440)**

In USD million (2014 money)	2018	2019	2020	2021	2022	2023	2024	2025	2026
Gross revenues	1,310	1,837	1,888	1,777	1,610	1,434	1,324	1,263	1,225
Capital Costs	(1,055)	(304)	(120)	(118)	(116)	(113)	(111)	(109)	(232)
Operating Costs	(110)	(119)	(124)	(123)	(122)	(122)	(121)	(121)	(121)
Change in escrow account	-	-	-	-	-	-	-	-	-
Fuel cost savings	63	102	138	177	217	260	259	260	260
Total Economic benefits	**207**	**1,517**	**1,782**	**1,713**	**1,589**	**1,458**	**1,351**	**1,293**	**1,132**

In USD million (2014 money)	2027	2028	2029	2030	2031	2032	2033	2034	2035
Gross revenues	1,192	1,161	1,158	1,100	1,034	971	881	811	728
Capital Costs	(105)	(300)	(101)	(99)	(97)	(90)	(83)	(78)	(74)
Operating Costs	(121)	(121)	(121)	(121)	(121)	(120)	(120)	(119)	(109)
Change in escrow account	-	-	-	-	-	-	-	-	-
Fuel cost savings	259	259	260	260	259	244	216	186	160
Total Economic benefits	**1,225**	**1,000**	**1,196**	**1,140**	**1,075**	**1,005**	**894**	**800**	**706**

In USD million (2014 money)	2036	2037
Gross revenues	174	-
Capital Costs	(17)	-
Operating Costs	(72)	(531)
Change in escrow account	137	-
Fuel cost savings	39	-
Total Economic benefits	**260**	**(531)**

Source: World Bank

Sensitivity Analysis

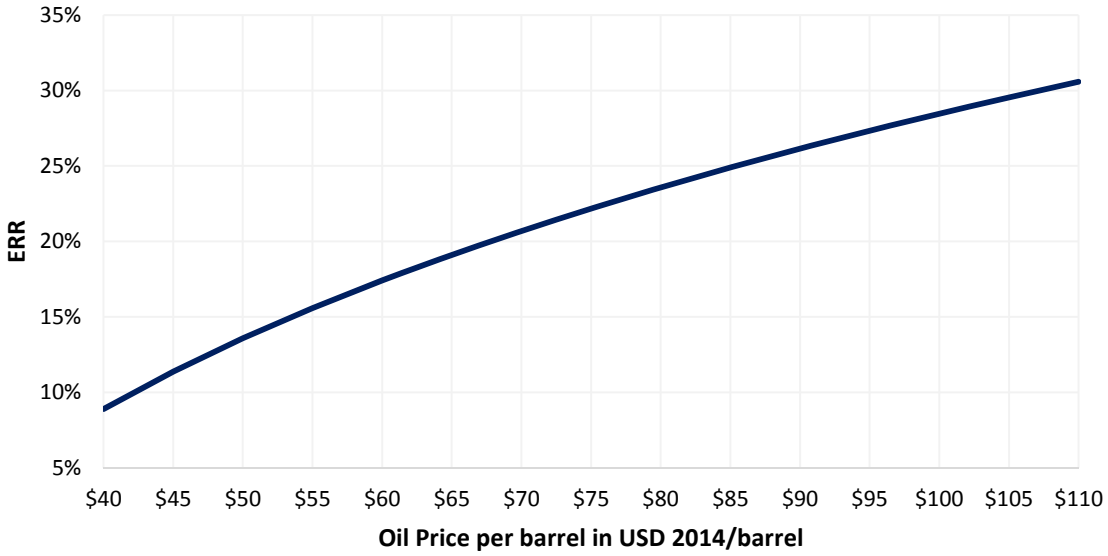
31. The sensitivity analysis shows that the ERR is robust to cost increases as well as to delays. The analysis focused on different discount rates and oil price variations as well as switching values for the key inputs of the project (see Table 8 below). Assuming a higher discount rate at 11 percent reduces the economic NPV to US$3.4 billion and a lower discount rate at 9 percent increases the economic NPV up to US$4.6 billion. A 100 basis points change in the discount rate has therefore an impact of US$0.6 billion on the economic NPV of the project. The ERR would only drop below 10 percent if the price of oil were to drop and remain below US$42/barrel (in 2014 money) for the entire life of the project. If the oil price were to recover its pre-2015 price and remain at US$100/barrel (in 2014 money), the ERR would increase to 28.5 percent.

Table 8: Sensitivity Analysis on Economic NPV and ERR

Sensitivity Analysis	NPV	*Change*	ERR	*Change*
Base Case Economic Appraisal	**$4.0bn**		**20.2%**	
+10% on Capital Cost (excl. FPSO lease)	$3.7bn	*($0.3)bn*	19.2%	*(1.0)%*
+30% on Capital Cost (excl. FPSO lease)	$3.1bn	*($0.9)bn*	17.4%	*(2.8)%*
-10% on oil reserves	$3.6bn	*($0.4)bn*	19.3%	*(0.9)%*
-10% on gas reserves	$3.4bn	*($0.6)bn*	19.0%	*(1.2)%*
-10% on oil&gas reserves	$3.0bn	*($1.0)bn*	18.1%	*(2.1)%*
+10% on operating costs	$3.9bn	*($0.1)bn*	20.0%	*(0.2)%*
1-year delay in commissioning	$3.6bn	*($0.4)bn*	18.5%	*(1.7)%*
2-year delay in commissioning	$3.3bn	*($0.7)bn*	17.4%	*(2.8)%*
Removal of sunk costs	$5.0bn	*+$1.0bn*	30.6%	*+10.4%*

Source: World Bank

Graph 5: ERR Sensitivity to Oil Price



Source: World Bank

32. Table 9 below provides the breakeven values for changes in key variables that would result in the ERR being equal to 10 percent.

Table 9: Switching Values that Result in the ERR Being Equal to 10 Percent

Assumptions	Change	Comment
Capital cost (excluding FPSO lease)	+151%	A 151% increase, or a US$ 5.5bn increase of the 2016-2019 capex would lower the ERR down to 10%
Oil reserves	(100)%	Even if oil reserves turn out to be zero, the ERR would still be slightly higher than 10% at 10.3%
Gas reserves	(67)%	A 67% reduction in gas reserves would lower the ERR down to 10%
Oil & Gas reserves	(40)%	A combined 40% reduction in both oil and gas reserves would lower the ERR down to 10%
Operating costs	+478%	A 478% increase in operating costs would lower the ERR down to 10%
Oil price	$42/bbl	A flat US$ 42/barrel (in 2014 money) price would lower the ERR down to 10%

Source: World Bank

Economic NPV Breakdown

33. Almost ninety percent of the value creation is expected to be captured by Ghana through direct revenues to the GoG and GNPC (US$2.3 billion) and through fuel cost savings (US$1.2 billion). The remaining the value will be captured by the Private Sponsors of the Joint Venture (US$0.4 billion).

Chart 2: NPV Breakdown of Total Economic Benefits

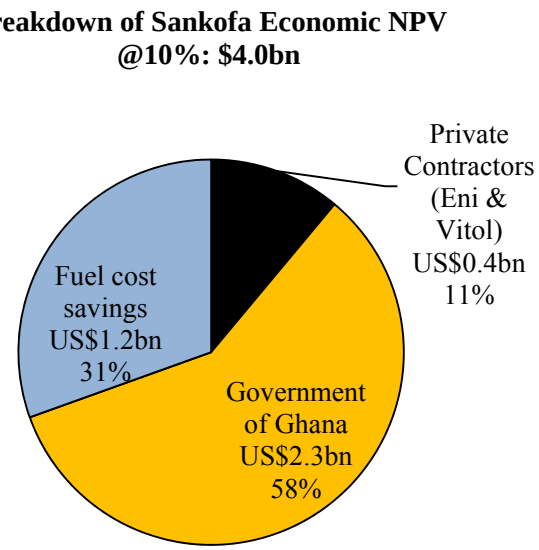


Table 10: Economic Costs and Benefits Cash Flow Breakdown

In USD million (2014 money)	2009	2010	2011	2012	2013	2014	2015	2016	2017
Private Contractors (Eni & Vitol)	(93)	(17)	(188)	(290)	(176)	(73)	(586)	(1,122)	(1,229)
Government of Ghana	-	-	-	-	-	-	-	-	(211)
Royalties	-	-	-	-	-	-	-	-	*7*
AOE	-	-	-	-	-	-	-	-	-
Corporate income tax	-	-	-	-	-	-	-	-	-
GNPC CAPI	-	-	-	-	-	-	-	-	*(218)*
Fuel cost savings	-	-	-	-	-	-	-	-	-
Total Economic benefits	**(93)**	**(17)**	**(188)**	**(290)**	**(176)**	**(73)**	**(586)**	**(1,122)**	**(1,440)**

In USD million (2014 money)	2018	2019	2020	2021	2022	2023	2024	2025	2026
Private Contractors (Eni & Vitol)	(5)	1,117	1,278	1,150	1,000	605	532	502	374
Government of Ghana	149	297	365	387	372	594	560	531	499
Royalties	*79*	*117*	*121*	*113*	*100*	*87*	*79*	*75*	*72*
AOE	-	-	-	-	-	-	-	-	-
Corporate income tax	-	-	-	-	-	*267*	*262*	*248*	*232*
GNPC CAPI	*70*	*180*	*245*	*274*	*272*	*239*	*219*	*208*	*195*
Fuel cost savings	63	102	138	177	217	260	259	260	260
Total Economic benefits	**207**	**1,517**	**1,782**	**1,713**	**1,589**	**1,458**	**1,351**	**1,293**	**1,132**

In USD million (2014 money)	2027	2028	2029	2030	2031	2032	2033	2034	2035
Private Contractors (Eni & Vitol)	478	288	477	445	407	274	335	332	262
Government of Ghana	487	452	459	435	409	487	343	282	284
Royalties	*70*	*68*	*67*	*62*	*58*	*54*	*50*	*47*	*43*
AOE	-	-	-	-	-	-	-	-	-
Corporate income tax	*223*	*205*	*203*	*194*	*185*	*106*	*144*	*110*	*129*
GNPC CAPI	*195*	*180*	*189*	*178*	*166*	*326*	*149*	*125*	*112*
Fuel cost savings	259	259	260	260	259	244	216	186	160
Total Economic benefits	**1,225**	**1,000**	**1,196**	**1,140**	**1,075**	**1,005**	**894**	**800**	**706**

In USD million (2014 money)	2036	2037
Private Contractors (Eni & Vitol)	20	(531)
Government of Ghana	202	-
Royalties	*10*	-
AOE	-	-
Corporate income tax	*19*	-
GNPC CAPI	*172*	-
Fuel cost savings	39	-
Total Economic benefits	**260**	**(531)**

Source: World Bank

Net Economic Cost of Gas for Ghana

34. **Economic Cost.** The gas price negotiated in the GSA is US$9.80/MMBtu. However, the levelized net economic cost of the gas for Ghana is estimated to be US$6.60/MMBtu (2014 money) taking into account direct and indirect revenues to the GoG generated by the SGP, assuming a cost of capital of 10 percent and a sale price of the gas for GNPC's share of gas production equal to the price negotiated. This makes the Sankofa gas the cheapest alternative to any other external fuel source at the country level. The main alternatives to the SGP are imported liquid fuel alternatives (US$12/MCF) and LNG imports (US$10/MCF). Both alternatives are more expensive than the gas price in the GSA and even more expensive when taking into the revenues generated by the SGP to the GoG. The current prices for gas imports from Nigeria (US$8/MCF) is compatible to the gas price in the GSA (but not with the net economic cost of Sankofa gas, which is significantly lower). However, due to supply constraints in Nigeria, it is unlikely that large volumes of gas imports from Nigeria will become available in the coming years.

35. **Assumptions**. The following assumption have been used to calculate the net economic cost of gas for Ghana:

i. Gross gas revenues generated by the project are calculated using data from the project sponsors (see financial analysis above);
ii. Gas royalties and income tax related to phase 2 (total income tax pro-rated with the share of gas and condensate revenues over total revenues) are deducted from annual gross gas revenues, the result from this is the net cash out to the Joint Venture for its gas production;
iii. Since GNPC is entitled to 20 percent of the gas production, GNPC's share is deducted as it is not a cash out to the private sponsors;
iv. GNPC's share of condensate revenues as well as total condensate royalties paid to the GoG are additional revenues to Ghana that should also be deducted as they are additional revenues that would not exist without the exploitation of the gas field;
v. GNPC's 20 percent stake in the project is not entirely free as it has to contribute to 5 percent of the capital costs and 20 percent of the operating costs - these contributions should be added back to the cost of gas as they represent what GNPC has to pay to get its 20 percent share of the gas;
vi. The costs of the escrow account to be funded by GNPC are factored in the analysis;
vii. Sankofa gas will displace LCO to generate power until 2021 and starting in 2022 it will displace LNG imports. The heat rate of for LCO fired power stations is 7,700 Btu/kWh. The heat rate for gas fired power stations is 7,500 Btu/kWh.
viii. The price of LNG price is set at a 15 percent discount to oil and a regasification cost of US$1.5/MMBtu.

36. Table 11 and the Graph 6 below illustrate the impact of each of the components on the net economic cost of gas to Ghana.

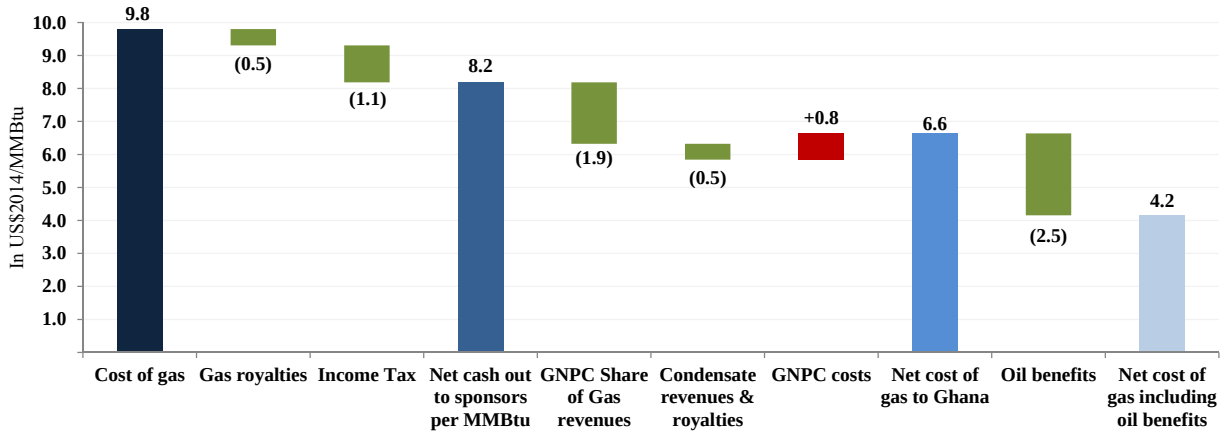
Table 11: Net Economic Cost of Gas for Ghana

Levelized cost of gas to Ghana in US$2014/MMBtu		
Cost of gas	9.8	
Gas royalties	(0.5)	*5% of the gas production*
Income Tax	(1.1)	*Gas share of income tax*
Net cash out to sponsors per MMBtu	**8.2**	
GNPC Share of Gas revenues	(1.9)	*Revenues generated by the sale of its 20% share of gas by G.*
GNPC Share of Condensate revenues	(0.4)	
Condensate royalties	(0.1)	
GNPC share of capex	+0.2	*GNPC will pay 5% of the capital costs*
GNPC Share of opex	+0.2	*GNPC will pay 20% of the operating costs*
Escrow account funding	+0.3	*GNPC has to fund a 4.5-month escrow account*
Net cost of gas to Ghana	**6.6**	
Oil benefits	(2.5)	*GNPC's CAPI, Income Tax & Royalties*
Net cost of gas including oil benefits	**4.2**	

Discount rate: 10.0%

Source: World Bank

Graph 6: Net Economic Cost of Gas for Ghana



Source: World Bank

Annex 5: Environmental and Social Performance Standards

Ghana: Sankofa Gas Project

1. This project follows the World Bank Performance Standards and is rated as a Category A Project. Six of the eight Performance Standards (PS) are applicable to the SGP. PS7 is not triggered as there are no indigenous peoples in the project-affected area, and PS8 is not triggered because the onshore receiving facility (ORF) site boundaries have been adjusted to exclude a cemetery that is the only cultural heritage identified during site surveys.

Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts

2. The Private Sponsors have prepared an Environmental, Social, and Health Impact Assessment (ESHIA). The March 2015 draft was disclosed on IFC's website on March 23, 2015[35]. Eni presented the ESHIA at a community meeting in Sanzule on March 31, 2015 and advertised the draft on the company website[36] on April 3, 2015 and with a link to IFC's website. Ghana EPA published the scoping report for the ESHIA in national media on March 9, 19, 21 and 30, 2015, and published the draft ESHIA nationally on May 30, 2015. The EPA placed a copy of the draft ESHIA for public inspection at its Western Region office in Sekondi on April 20, 2015. Eni made copies available for public inspection at the Western Region Coordinating Council in Sekondi (May 13), the Ellembelle District Assembly (May 12), and the Paramount Chief's palace in Atuabo (May 12). During May 2015, IFC disclosed three additional annexes presenting details of modeling for air quality, noise, and visual impacts, and a fourth annex that is a refinement of the cuttings dispersal modeling reported in the draft ESHIA.

3. At the same time, IFC disclosed three sub-plans to the ESHMP: the final Oil Spill Contingency Plan, the Waste Management Plan, and the Health, Safety and Environment Plan. The ESHIA addresses the impacts of all components of the project: the non-associated gas (NAG) wells, the Floating Production, Storage, and Offloading Facility (FPSO)[37], the flowlines and risers connecting the NAG wells to the FPSO, a 63-km undersea pipeline from the FPSO to the Onshore Receiving Facility (ORF) that is located near the village of Sanzule, the ORF and its ancillary facilities (temporary work camp and laydown areas, permanent accommodations, access road, and helipad), and an underground pipeline of approximately 800 m to deliver compressed gas from the ORF into GNGC's pipeline just to the North of the ORF site. The ESHIA addresses all phases of the SGP, from pre-construction to decommissioning. The preparation process included extensive stakeholder consultation, and the resulting comments are taken into account in the March 2015 draft. Additional consultation and disclosure are in progress, in accordance with the ESHIA Stakeholder Engagement Plan and Ghana EPA's regulations. Ghana EPA conducted a public hearing in Sanzule on May 29, 2015, as part of its formal review process.

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[35] http://ifcextapps.ifc.org/IFCExt/spiwebsite1.nsf/0/60279DBD070E6EB685257E110060FFEE?opendocument.g

[36] http://www.eni.com/en_IT/sustainability/news/2015-news/octp.shtml

[37] The SGP supports the commercial arrangements of the gas sales under Phase 2 of the OCTP Project. The OCTP FPSO is shared with Phase 1 of OCTP, which is the development of an oil field adjacent to the gas field, and consequently is addressed in the ESHIA for the SGP even though it was already covered in the ESHIA for Phase 1. IFC and MIGA are intending to support the OCTP Phase 1 & Phase 2, but the World Bank Guarantees are only supporting the commercial arrangements of the gas phase of the OCTP.

4. The finding of the ESHIA regarding economic displacement of farming in the ORF land acquisition area has resulted in the need for preparation of a Livelihood Restoration Plan (LRP), which will be completed by September 30, 2015. The other environmental, social, health, and safety potential impacts of the planned project activities, construction and operation, all of low to medium significance, can be readily mitigated by measures in the framework Environmental, Social, and Health Management Plan (ESHMP) and its various sub-plans (see Table 5-1 below). The LRP described below under PS 5 will provide measures to mitigate or compensate for the impacts of economic displacement of farming. The ESHIA identified three positive impacts of high significance – increased government revenues, opportunities for employment and skills development, and local contracting opportunities to provide goods and services to the project.

5. Eni Ghana will be the operator of SGP and has been leading the environmental assessment work. Eni Ghana is ISO 14001 and OSHAS 18001 certified and has in place a Health, Safety, and Environment Integrated Management System (HSE IMS) that meets or exceeds the PS1 specifications for an Environmental Social Management System. The ESHIA includes a framework ESHMP with mitigation and monitoring measures for all impacts with the exception of those that will be addressed in the LRP. The framework ESHMP will be the basis of detailed ESHMPs for construction and operation. Measures in the ESHMPs will be incorporated in the HSE IMS as appropriate. This will mainly be accomplished through incorporation of sub-plans being produced under the umbrella of the ESHMP, listed in table 5-1. The ESHMPs will be reviewed annually and updated as necessary.

6. Eni Ghana will require that its contractors adopt measures and bridging documents to ensure that their management systems are aligned with Eni HSE Policy, Eni Ghana guidelines, and procedures within the HSE IMS and the project ESHMP. Each contractor will develop its own specific implementation plans demonstrating how the contractor intends to comply with the stipulated project requirements. All contractors' plans will be reviewed and approved by Eni Ghana. Contracting parties to Eni Ghana will be monitored on implementation of relevant project's environmental, social, and health requirements.

7. Given the nature of the project, the ESHIA also had to address potential impacts of unplanned events. It considers three worst-case scenarios – a gas well blow-out, the rupture of a gas flowline or riser, and the accidental release of a large quantity of oil at the FPSO – and evaluates risk and consequences as a function of severity of impact an probability of occurrence, The first two were determined to be of low to medium risk, having impacts that would be confined to the local area and probabilities that can be reduced substantially through design standards and operational procedures that are summarized in the ESHIA. The oil release, on the other hand, is a low-probability event with potentially far-reaching consequences. The developer modelled three scenarios – well blow-outs at either of two oil wells[38], and release of large quantities of diesel oil as a result of a ship collision. The risk associated with the diesel spill is assessed as medium and that for the major oil release as high, since there could be impacts on beaches and wetlands, marine water quality, birds, marine mammals, sea turtles, and livelihoods derived from fishing. The

[38] The oil wells are not components of the SGP but were used in the modeling exercise as worst-case examples. An oil release from the FPSO would almost certainly be of lesser magnitude, but the released oil would behave in the same way in terms of movement, dispersion, dissolution, evaporation, and settling.

ESHIA presents and extensive list of design and procedural measures to minimize the risk of an oil release, and the Oil Spill Contingency Plan to be annexed to the ESHIA will include response actions to minimize damage should such an accident occur. The impacts on community safety of an accident at the ORF resulting in fire or explosion are also assessed in the ESHIA, and a dedicated emergency response plan will be prepared for the onshore facilities.

8. Cumulative and transboundary impacts are covered in the ESHIA. The ESHIA does not indicate any major environmental impact pertaining to the gas development being supported through the guarantees. However, because the FPSO would also treat oil from a separate field, an Oil Spill Contingency Plan was also prepared which adequately discusses the transboundary impacts of an oil spill and provides details on the response organization structure and roles, guidelines, and recommended practices and equipment for oil spill response. The GoG has been studying the long-term impacts of offshore oil and gas development for some time. A Strategic EA of the oil and gas sector was completed in 2013, and the government subsequently made changes to regulations on environmental and social management, including assessment and management of cumulative and transboundary impacts. The cumulative effects of the Sankofa project take into account the following activities which are known to be in development or that could reasonably be expected to be developed, namely: the Eni Ghana Oil Development (Phase 1, under evaluation); proposed TEN Development (ESHIA under evaluation); the GNGC Gas Plant at Atuabo and Pipeline (Phase 2 under construction); and the proposed Lornho Oil Service Port at Atuabo (ESHIA under evaluation). The Jubilee Field Development (in operation since 2014), Phase 1 of the GNG Gas Plant at Atuabo, and the road construction project along the GNGC pipeline ROW do contribute to the cumulative effects of changes in the AoI. However, the Jubilee Field Development has been in operation for a number of years and has already had an effect on the existing environmental and social conditions. These conditions are described in the existing baseline and therefore already considered in the impact assessment. Similarly the changes due to the road construction are already noted within the baseline description (particularly with regard to air quality levels).

9. The potential cumulative impacts considered significant are greenhouse gas emissions, oil spills, land take (particularly of farmland) for facilities related to oil and gas development and other infrastructure, pressure on natural resources (especially fisheries) as a result of population influx triggered by the developments, and related impacts on livelihoods of farmers and fisher-folk. GHG emissions and large oil spills would also cause transboundary impacts.

10. The ESHMP includes several Management Plans, some of which are complete; others will be prepared during project implementation.

Table 5-1 Management Plans under the ESHMP

Already included in the Eni Ghana HSE IMS • HSE Plan • Emergency Response Plan • Waste Management Plan • Oil Spill Contingency Plan • Medical Emergency Response Plan • Stakeholder Engagement Plan **To be developed and integrated in HSE IMS** • Worker's Management Plan • Influx Management Plan • Community Health Management Plan • Security Management Plan • Project Procurement Plan	**To be developed and integrated in HSE IMS** • Livelihood Restoration Plan • Cultural Heritage Management Plan • Fisheries Management Plan • Pollution Prevention and Control Plan • Biodiversity Management Plan • Local Content Development Plan • Social and Environmental Investment Plan • Traffic Management Plan • Marine Traffic Management Plan • Decommissioning Plan' • Well control plans for each well • Project Recruitment, Employment and Training Plan

11. The Eni Ghana HSE Guidelines and Protocols assigns HSE responsibilities to all personnel throughout the company, and require contractors to manage HSE in line with the guidelines and protocols and to monitor compliance by their subcontractors. The Managing Director is responsible for assuring that the HSE-IMS is developed, updated, and implemented via the provision of adequate resources. The Eni Ghana Health, Safety, Environment and Community Investments (HSE & CI) department is headquartered in Accra, where staff overseeing construction, commissioning, and operations will be located. Its manager reports to the Managing Director. HSE staff will also be located in Takoradi to facilitate HSE and social performance oversight of site activities as well as to allow direct interface and access for stakeholders in the Western Region. These staff will manage the successful implementation of the ESHMP and the continuation of the stakeholder consultation process. During commissioning and operations, HSE staff will also be located offshore. The HSE Department will need to add staff in order to carry out its responsibilities.

12. The Stakeholder Engagement Plan (SEP) annexed to the ESHIA states its objectives as follows:

- Identify all stakeholders likely to be affected by construction activities and keep aware/abreast of any changes to stakeholder base e.g. through in-migration;
- Keep stakeholders regularly informed of construction activities and schedule, and progress in implementing environmental and social management programme;
- Maintain visibility and site presence of Community Liaison staff and keep open communication lines with stakeholders and their key representatives;
- Anticipate, receive and quickly respond to grievances; and

- Identify responsible contractors, and carefully manage and oversee contractors' interactions with stakeholders.

13. Eni Ghana has appointed a Community Liaison Officer (CLO) and will appoint a Fisheries Liaison Officer (FLO), who will be responsible for the engagement functions, under the oversight of the HSE Manager. The CLO is currently responsible for receiving grievances from the affected and either resolving them or referring them to the HSE & CI Manager. However, the SEP contains a formal Grievance Mechanism that will be in place and publicized to the communities prior to any on-site activities.

14. World Bank and IFC environmental and social specialists have reviewed and commented on all safeguards documents listed above. They also conducted a site visit to the area of the project in January 2015 and met with senior management and technical staff of Eni Ghana, Vitol Ghana and Vitol Exploration and Production, deputy executive director and senior program officers of the Ghana Environmental Protection Agency ("Ghana EPA" or "EPA") and representatives of the community of Sanzule where the ORF will be located. Prior to and after the site visit, several meetings and conference calls were held with Eni Ghana and Vitol staff responsible for the environment, health and safety, human resources and corporate social responsibility.

Performance Standard 2: Labor and Working Conditions

15. **Human Resources Policies and Procedures.** For the development phase, the project expects to employ approximately 600 people for Phase 2. Accommodations will be provided for approximately 500 people offshore (including for Phase 1), and a temporary camp with capacity to host approximately 400 people will be constructed at the ORF site. For the production phase, approximately 40 people will be hosted offshore and the temporary camp at the ORF will be converted to a permanent camp for approximately 60 people. Eni Ghana will develop and implement a Local Hiring Plan in consultation with local communities to ensure transparency of the recruitment and selection process, and maximize the number of local residents benefited by job creation of the project. Eni Ghana will also develop and implement a training program for Ghanaian nationals so they can access job positions in the project and eventually assume positions initially held by employees of other nationalities.

16. World Bank and IFC staff met with Eni Ghana's Human Resources Manager and obtained and reviewed Eni Ghana and Eni S.p.A. (the parent company) documents pertinent to the objectives of PS 2. Through its corporate policy "Our People", Eni is committed to upholding the rights recognized in the "Universal Declaration of Human Rights" in the countries in which it operates; to encouraging behaviors based on mutual respect, and to condemning all forms of harassment in workplace relations. The Sustainability Guidelines include commitments to operate within the framework of the United Nations Universal Declaration on Human Rights and the Fundamental Conventions of the International Labor Organization. A labor specific grievance mechanism will be put in place to address promptly and without any retribution workplace concerns and will be available to all workers, including those of contractors. Eni Ghana will monitor and audit as necessary labor and working conditions of contractors, subcontractors and main suppliers.

17. Eni's procurement process has procedures for the approval of vendors and contractors. Depending on the significance of the contract and the level of risk associated with the supply of

the particular goods or services, Eni may require the vendors to 1) provide a self-declaration of compliance with environmental, social and labor policies, 2) answer a detailed questionnaire regarding the vendor's systems or 3) undergo a full due diligence process including reviewing of documentation and site visits to the vendor's operations. The approval of a vendor is valid for a period of three years, after which vendors are required to re-certify to continue commercial relationship with Eni. Contractual agreements include requirements to comply with labor legal requirements and Eni human resources policies. Requirements also include HSE aspects that are also evaluated at the qualification stages. These requirements are monitored by Eni during the contracting period.

18. **Occupational Health and Safety**. Consistent with corporate requirements and guidelines, a comprehensive set of plans, standards, procedures and work instructions have been adopted by Eni Ghana to cover all aspects of occupational health and safety. Management System Guidelines on health and safety are clearly spelled out by Eni at the corporate level, and their adoption by all subsidiaries is required. Contractors will be required to comply with Eni Ghana occupational health and safety policies and standards. A helicopter is planned for Medevac purposes, based at either Takoradi or Accra, to be rapidly dispatched to project sites. A support vessel will be located near the drillship during drilling activities and near the FPSO during production.

19. A project Security Management Plan will be developed for both onshore and offshore activities to safeguard project, related personnel and property and to ensure that safeguarding activities are carried out in a legitimate manner that avoids or minimizes risks to the community's safety and security (see further discussion in the section relevant to PS 4 on Community Health, Safety and Security). Offshore oil and gas facilities in Ghanaian waters have not yet experienced acts of piracy, terrorism or vandalism, but because such acts have occurred in nearby countries including Togo and Nigeria, Eni Ghana is updated on security matters from Eni HQ and will maintain a communications link with the Ghanaian Navy in case their response is needed.

Performance Standard 3: Resource Efficiency and Pollution Prevention

20. **Air Emissions, Noise and Light Emissions**. During development and production operations the project activities will emit varying amounts of airborne emissions, including carbon monoxide (CO), oxides of nitrogen (NO_x), oxides of sulfur (SO_x), volatile organic compounds (VOCs), and particulate matter. Fugitive emissions of natural gas, which mainly consists of methane (CH_4), will be generated from various equipment and components, including seals, valves, flanges, gas turbines, and storage tanks. The project has adopted a "zero flaring" design philosophy, and flares will only be used for limited periods during commissioning phase and in emergency cases during operations.

21. The project will ensure that offshore facilities and support vessels will comply with the requirements of MARPOL Annex VI and relevant WBG guidelines for thermal power plants and small combustion sources, as applicable. Air emission sources related to the ORF operation are mainly gas turbines, diesel power generation units and gas compression, all of which will be designed to comply with WBG guidelines. Baseline ambient air quality measurements showed concentrations of nitrogen dioxide, total suspended particles and VOCs within the applicable Ghana EPA national standards, with relatively high levels of sulfur dioxide and PM_{10} at the ORF site, potentially associated with fish smoking process or waste burning in Sanzule and Eikwe communities and road construction works. Air emission dispersion modeling performed by the

project, based on preliminary design information, showed that there would be no adverse impacts on ambient air quality in the nearby communities or at any appreciable distance from the FPSO.

22. The drillship, pipeline trenching activities, the FPSO, and vessel operations will generate noise into the marine environment. The low-frequency noise levels from offshore drilling and production activities are relatively weak in intensity and are expected to rapidly decay within a 1 km radius of the source. These levels are considered not to be enough to cause hearing loss, discomfort, or injury, but they can be detected and produce some behavioral responses (e.g., avoidance) in marine mammals and in fish. Sea turtles are less sensitive to changes in marine noise levels from marine activities

23. The main noise emission sources at the ORF during production operations will be the gas turbines of the power generation unit, the diesel power generators and the compressor station. Relatively high baseline noise levels for a rural environment were monitored at Sanzule and Eikwe, without significant variations between day time and night time. Average baseline noise level at Sanzule and Eikwe exceeded the WBG Guidelines for day-time and night-time noise levels in residential area, possibly due to natural sources (sea waves breaking at the beach) and community activities. Noise propagation modeling performed by the project, based on available design information, showed that the ORF will add substantially less than three dB(A) to baseline levels, thereby complying with WBG guidelines.

24. Light emissions from project facilities, vessels and FPSO may be visible at night at considerable distances, depending on weather and sea conditions. While no impacts are expected to turtle nesting or foraging area from artificial lighting from the artificial light associated with drilling and production operations offshore due to the their distance more than 40 km from the coast, seabirds may be attracted by the lights during nights, especially during poor weather, i.e. overcast nights. Although it is expected that disturbance will be localized, only affecting a small number of birds offshore, and temporary, the project will implement measures to control and reduce overall light intensity to the extent practicable, without adversely affecting maritime or operational safety.

25. **Greenhouse Gas Emissions and Resource Efficiency**. The principal sources of GHG emissions from the project will include the following: (i) main power generation systems on the drillship, FPSO and ORF; (ii) engine emissions from project installation/construction vessels and equipment, and supply/support vessels; and (iii) gas flaring and venting during commissioning, maintenance and emergency situations. The estimated total GHG emission during the development phase, including drilling, completion, installation of the subsea facilities, FPSO and ORF, will be approximately 1.2 million tons of CO_2 equivalent. The annual GHG emission during production operations is estimated at approximately 400,000 tons CO_2 equivalent per year, which would represent approximately 1.6 per cent of Ghana's projected national total. GHG emissions will be reduced as much as possible by best available techniques in:

- efficiency of power generation;
- optimisation of overall energy efficiency;
- avoidance of flaring in flaring and minimization of gas venting.

26. To the extent that Sankofa gas replaces oil fuels at VRA's generation plants, the project's net effect on national GHG emissions would be reduced and could be entirely offset, at least in its early years of production, because GHG emissions per Btu from gas are approximately 30 percent less than from fuel oils. It has been estimated that the project would reduce carbon emission by 1.6 million metric tons of CO_2 per year while the Sankofa gas displaces LCO. As required for projects with GHG emissions greater than 25,000 tons CO_2 equivalent per year, Eni Ghana will maintain a quantification program for GHG emissions.

27. Energy efficiency principles will be built into the design to minimize power requirements during production operations. Fresh water consumption will be limited during both construction and operations. Groundwater wells needed for water supply will be installed at sufficient depths to access the deep freshwater aquifer. A Water Risk Assessment study is under preparation and will quantify effects of groundwater abstraction and ensure that there will not be measurable impacts on community water resources.

28. **Wastewater Treatment and Disposal**. Wastewater streams associated with Phase 1 and Phase 2 activities will include hydrotest water, produced water, cooling water, gray water and sewage, bilge water, deck drainage, and ballast water. A Hydrotest Water Disposal Plan will be prepared that considers points of discharge, rate of discharge, chemical use and dispersion, environmental risk, and monitoring. The drillship, the pipe-laying vessel and other support vessels will adhere to MARPOL wastewater treatment regulations. At the ORF construction site, all wastewater produced will be properly treated.

29. During offshore production operations, all wastewater streams will be discharged to the sea after treatment on the FPSO, except produced water which will be reinjected into a suitable geologic formation through reinjection wells. A produced water treatment system will be installed on the FPSO to remove oil and solids from produced water and to comply with reinjection requirements and, in case of injection system unavailability, with overboard discharge regulations and WBG guidelines. In order to reduce the risk of introduction of alien species due to ballast water discharge, the project will adhere to IMO Guidelines for the Control and Management of Ship's Ballast Waste and Sediments (Ballast Water Management Convention). The wastewater effluents from the ORF operation will be mainly civil wastewater, which will be treated on-site, and storm water. Storm water collected from potentially contaminated areas will be disposed of offsite at licensed treatment plants.

30. **Waste and Hazardous Materials Management.** Eni Ghana has in place a Waste Management Plan as part of the HSE IMS, which will inform the development of a project Waste Management Plan. The plan will cover the collection, storage, treatment, transport, disposal, discharge, reporting and data management of all the waste to be generated during offshore and onshore operations, including drilling, infrastructure and facilities construction, operations and maintenance. A Hazardous Materials Management Plan will be implemented to address handling and storage of hazardous material that are used or stored aboard project vessels or facilities, ensuring compliance with Ghana laws and regulations and consistency with WBG guidelines. Only waste management companies approved by Ghanaian authorities and Ghana EPA will be used for transportation, recycling and disposal of wastes generated by the project. Adequate licensed incineration and landfill facilities have been identified in Takoradi. Eni Ghana will undertake periodic audits of third-party waste facilities and sites to verify that wastes are being managed in line with company's standards and methods, as defined in the relevant contractual agreement.

31. **Drilling Fluids and Cuttings Management**. The total volume of cuttings to be generated from each well is expected to amount to approximately 800 m^3. Approximately 400 m^3 of cuttings drilled with Water Base Muds (WBM) will be generated from the top two surface riserless intervals of each well. Discharge of WBM and associated cuttings will take place very near the sea bottom. The bottom sections of the wells will be drilled with Synthetic Based Muds (SBM), which will be recovered, reconditioned, and reused. Approximately, 400 m^3 of drill cuttings will be discharged to sea from the bottom sections of each well. Eni Ghana has specific company guidelines for the management of the cuttings, and will optimize the operational performance of solids treatment equipment on-board drillship to ensure oil on dry cuttings no more than 2 percent, which will comply with the permit EPA issued in relation to the OCTP Block Development project. This level is above the WBG guideline of 1 percent on oil content on cuttings disposed to sea. Exceptions to the WBG guideline are acceptable where a project's environmental assessment provide a full and detailed justification of the proposed alternative for ocean disposal. As part of the drill cuttings study, modeling was undertaken to quantify the transport, dispersion, and bottom deposition of discharge drill cuttings. Low toxicity and rapid dispersion of drilling discharges due to significant water depth and strong currents will cause limited or no measurable impact to the biological environment. Impacts on benthic communities of soft bottom areas will only be measurable within a few hundred meters of each drill site, and re-colonization of these areas should happen within a few years.

32. **Oil Spill Prevention and Response**. As discussed in the previous sections, the project facilities will be designed with a range of inherent measures aimed at minimizing the risk of potential oil and chemical spills. Spill prevention measures include: (i) process safety management and training of personnel; (ii) asset integrity assurance, through routine operator inspections, maintenance inspections and internal and external audits; (iii) process isolation, including emergency shut-down system as an integral part of an Integrated Combined Safety System, providing full alarm and fault status indication as well as valve isolation; (iv) state of the art blowout preventers; (v) incorporation of industry lessons; and (vi) emergency preparedness in place. Eni Ghana's Oil Spill Contingency Plan, which considers potential spill scenarios for both development drilling and production phases, is structured consistent with the International Petroleum Industry Environmental Conservation Association (IPIECA) guidance and conforms to relevant WBG guidelines. An assessment of potential oil-spill related impacts to offshore and coastal environmental resources, including turtle nesting beaches, has been conducted. Eni Ghana will finalize the OSCP before development drilling, and measures will include an environmental lead as part of the response team and clear mechanism of escalation of response effort based on coastal and biodiversity sensitivity. Eni is a participant member of Oil Spill Response Limited (OSRL), an industry-owned cooperative which exists to respond effectively to oil spills worldwide, and has therefore immediate access to OSRL's spill response technical advice, resources and expertise 365 days a year on a 24 hour basis, including West and Central Africa (WACAF) aerial surveillance and dispersant application services. Eni Ghana will also establish mutual aid agreements with other operators in Ghana.

Performance Standard 4: Community Health, Safety and Security

33. **Community Health and Safety.** The community of Sanzule, where the onshore component of the project will be located has a population of approximately 1,600. The main health and safety concerns of the local population are accidents and leakage, socio-cultural and health impacts due to in-migration of workers and people in search of job and other economic

opportunities, and conflicts with enforcement agencies and project security in the FPSO and ROW exclusion zones. The ESHIAs identified these as potential impacts, and the project will implement mitigation measures for them. Eni Ghana will develop a Community Health Management Plan. An Influx Management Plan will be developed in consultation with local communities and regional authorities to reduce and manage project induced in-migration to the area of the project and minimize associated negative impacts to local community health and safety.

34. The project will establish 500 meter radius buffer zones for safety and security reasons around offshore facilities (drilling units and FPSO) during development and production. A safety zone of 50 meters (25 meters on each side) will be established over the right of way (ROW) for the onshore pipelines. The pipeline path will be clearly indicated and certain activities such as planting trees, digging, setting fires and building any type of structure will be forbidden in the ROW. Free passage and movement of people across the ORF site will be ensured – only the individual facilities will be fenced in -- and some activities that do not pose a risk to the integrity of the pipeline or to the local population will be allowed. Specific measures and layout considerations will be included in the ORF design to ensure that, in case of accidental events, thermal radiation loads following a fire and average concentration of methane in air will be within recommended industry safety standards at the boundaries of the facility.

35. A Marine Traffic Management Plan will be developed to manage vessel movements and ensure safe passage of fishing and other boats. Routes will be established and clearly communicated to the local population with specific emphasis on fishermen. The project will also develop and implement a Traffic Management Plan to minimize the risk of road traffic accidents and mitigate other traffic related issues that may cause health problems and nuisances to the community such as noise and dust.

36. Through its corporate Code of Ethics, Eni and its affiliate Eni Ghana are committed to actively contribute to promoting the quality of life, the socio-economic development of the communities where Eni operates and to the development of their human resources and capabilities. Eni is committed to respect the cultural, economic and social rights of the local communities in which it operates and to contribute to their exercise as possible. Vitol Group has an Ethics Policy Statement that focuses on working with communities and local governments with respect, and is in the process of developing a Code of Conduct. Vitol will work with Eni Ghana to develop a code of conduct with specific provisions to manage behavior of workers including those employed by contractors and subcontractors with/in local communities.

37. **Emergency Preparedness and Response**. Eni Ghana has developed an Emergency Response Plan. The project will ensure that the plan is periodically updated and incorporates provisions to coordinate emergency response actions with relevant local authorities and will communicate and train community members on applicable aspects of the plan to ensure they are prepared in case of a project related emergency.

38. **Security.** Eni Ghana adheres to the Voluntary Principles on Security and Human Rights (Voluntary Principles) through its Management System Guideline for Security. Eni Guidelines on the Protection and Promotion of Human Rights refer, among others, to United Nations Universal Declaration of Human Rights, OECD Guidelines for Multinational Enterprises, and United

Nations Basic Principles for the Use of Force and Firearms. Eni Ghana contracts security services and has no directly-hired security personnel. The project security systems will comply with Ghana laws and regulations as well as the requirements of the Voluntary Principles. The security system will include, among other things, selection or personnel based on a careful background screening, training with regards to human rights requirements, and monitoring of performance. The project will have an unarmed dedicated patrol vessel to monitor offshore exclusion zones and will seek to establish an agreement with the Ghanaian Navy to support, if required, the project's effort to assure security. One of the functions of the Fishery Liaison Officer that Eni will appoint will be to prevent conflicts between security personnel and fishermen and to assist in resolving any conflicts that occur. Vitol will update its security policy to be aligned with the Voluntary Principles.

Performance Standard 5: Land Acquisition and Involuntary Resettlement

39. The site for the ORF covers about 237 acres (96 ha) within the local community of Sanzule, approximately 90 km west of the city of Takoradi in the Western region of Ghana. Locals undertake many agriculture and economic activities, including but are not limited to, cassava cultivation, coconut harvesting, sand and laterite extraction, gathering of firewood and construction poles, and aquaculture.

40. Regarding resettlement in the project, significant efforts have been made by all involved stakeholders to avoid or minimize the displacement of populations. The western and northern boundaries of the site have been changed to exclude two borrow areas used and not reclaimed by the GNGC pipeline corridor contractor. At the request of Sanzule village, the western limits were further altered to exclude a small cemetery, the only cultural heritage thus far discovered, and to allow for future expansion of village. In addition, Eni Ghana has narrowed the pipeline corridor from the landfall to the ORF site to avoid the relocation of 13 homes used by fishermen, identified as a vulnerable group. As a result of these changes, there will be no physical displacement associated with the development of the project. Only economic displacement of a modest number of farmers is expected. Nevertheless, Performance Standard 5 on Land Acquisition and Involuntary Resettlement is triggered in this project to ensure that resettlement activities as they relate to economic displacement are implemented with appropriate disclosure of information and participation of stakeholders, compensation for lost crops and other assets, and improvement in or at least restoration of affected livelihoods.

41. The majority of the land is Stool land owned and managed under the traditional system by members of the Sanzule community, while a small number of plots (four plots) are privately owned lands. With the participation of GNPC and the Ministry of Energy and Petroleum, Eni Ghana and the Stool/Elders negotiated a 30-year Lease-Framework Agreement for the construction and operation of the ORF. The agreement was signed on April 2, 2015, and submitted to the Lands Commission, which issued the Consent and the registration document on June 8, 2015. Eni will ensure that an adequate, fair and transparent agreement is reached with all landowners, including Stool and private owners.

42. Preliminary estimates in the ESHIA showed that about 184 farmers would be economically displaced by the project. More detailed surveys conducted as part of LRP preparation indicate that 238 farmers were operating a total of 336 farm plots or fishponds on the site as of the cut-off date. The number of farmers present as of the cut-off date for determination of eligibility for compensation is 199; 39 others moved to the area after the cut-off date and are likely ineligible.

Eni will conduct a review of the cut-off date disclosure process and if appropriate revise eligibility for compensation. Approximately half of the farmers claimed to own their farmlands based on the customary land tenure system in Ghana, while most of the others rented the land in exchange for a percentage of the harvest. It should be emphasized that half of the farmers surveyed indicated that farming is their main occupation, while the other half use the land to supplement their livelihoods, which are mainly based on fishing.

43. Eni Ghana has engaged an international resettlement expert to assist in the development and implementation of a LRP for affected people in the community of Sanzule. A review of the Land Acquisition and Livelihood Restoration process was undertaken identifying gaps and developing an action plan to ensure compliance with all PS 5 requirements. The LRP will ensure that all landowners and land and resource users affected by the project, including those impacted by the pipelines' ROW and the ORF are compensated appropriately and are provided with assistance to improve or at least restore their living conditions. The LRP will provide options to the project affected people (PAP) that will include replacement land and support for reestablishing their crops, training on agricultural practices, training on other trades, support to establish a viable and sustainable livelihood and cash compensation. Transitional support will be given to all PAP and Eni will monitor implementation of the LRP throughout the process. Once all mitigation measures have been substantially completed and displaced persons are deemed to have been provided adequate opportunity and assistance to sustainably restore their livelihoods, Eni will undertake a completion audit comparing outcomes against objectives of the plan and current living conditions against living conditions prior to the start of the project. Supplemental actions may be required after the completion audit. The development of the LRP is in process and will be completed and disclosed prior to commencement of site-clearing or site-preparation activities.

44. The participatory consultations with the proposed ORF site community leaders - representative of the chief and groups such as the elders, women, women fishmongers, fishermen, landowners and youth- indicate that there is broad community support for the project. However, since the project will involve land acquisition and restrictions on land use; local stakeholders have raised questions related to the loss of productive land; the benefits for youth from the project in terms of training, jobs, and alternative livelihoods; the impacts on the community fishermen if the offshore facilities reduce fishing opportunities, and on canoe and net owners and elderly people who depend on fishing; the impacts on the nearby refugee camp residents who are seasonally employed in the local fishing economy, boat crew members, net pullers on the beach, fish processors and fishmongers. The developer intends to share project benefits with local communities through direct and indirect jobs related to the project in the construction, maintenance, security sectors and in the provision of raw materials, supplies and services, and to create assets in the form of skills, know-how and work experience for youth and women. A collaboration with the Government's Charlotte Dolphyne Training Institute for skills training is under consideration; the institute is located in Sanzule.

45. In cases such as the Ghana SGP where land acquisition or restrictions on land use do not cause physical displacement but will have adverse impacts on incomes and/or livelihoods (economic displacement), there is a need to assess the social impacts of the project under the resettlement assistance package of the LRP. The preparation of the LRP will focus on impacts related to onshore economic displacement. The LRP will also focus on income generation

practices, including fisheries, production systems, work-related mobility patterns and practices in the impacted zone and population influx-management. It is recommended that the project be sensitive to the special needs of women and other vulnerable groups in the planning and implementation of livelihood restoration as men and women have different needs and opportunities to access to land, natural resources, employment, and markets.

46. The appropriate interventions under the LRP will be designed in close collaboration with beneficiaries, local authorities, and if appropriate with local community based organizations (CBOs) and non-government organizations (NGOs), women and youth groups. The proposed interventions will require documentation similar to Resettlement Action Plans: implementation schedule, effective organizational responsibilities, program for consultation and participation, a grievance redress mechanism, a schedule for monitoring and independent evaluation and audit, and a budget. It is best practice to also have an exit plan.

Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources

47. According to the ESHIA, the habitats that could be affected by the SGP are these:

- The Amansuri Wetland Important Bird Area (IBA);
- The beach;
- The Gulf of Guinea large marine ecosystem.

48. The ORF is located within the Amansuri Wetland IBA; however, the ORF site itself is modified habitat, largely disturbed by human activity and not important for maintenance of bird biodiversity within the IBA. The Amansuri River and its wetlands, swamp forest and mangrove are located to the north and east of the ORF site, and the ESHIA indicates that they are not likely to be affected by the construction or operation of the ORF. The Amansuri Wetlands have been proposed but not yet accepted as a Ramsar site. Eni Ghana will collaborate with relevant institutions and conservation organizations with regards to the conservation of Amansuri Wetland IBA.

49. The beach all along Ghana's Western Province is a nesting area for sea turtles. Five of the world's seven sea turtle species are found in the Gulf of Guinea. Three of them – the leatherback (vulnerable), the green (endangered), and the olive ridley (vulnerable) – have been seen regularly nesting along the beach at or near where the pipeline from the FPSO will make its landfall. The other two, the hawksbill (critically endangered) and the loggerhead (endangered) are not known to nest in the area. The Gulf is also important for fish biodiversity and fishery, because of seasonal upwelling of nutrient-rich water, and it is known to be used by 18 cetacean species – 14 dolphins and four whales. It is one of the humpback whale's customary breeding grounds. The project will develop and enforce a specific policy and procedures to ensure that impacts from construction on the beach, traffic and operations of drilling vessels, support vessels and helicopters to marine mammals and turtles are minimal. A Biodiversity Management Plan, with special attention on marine turtles, will be developed and implemented, in collaboration with recognized species specialists. Seasonal constraints, associated with peak nesting season between October and February, will be incorporated in the construction and operation management plans.

50. Soft bottom benthic communities are expected to be consistently present in the project affected area. The baseline study conducted by the project indicated that the presence of corals is limited to isolated individuals and no larger coral communities were identified. No individuals or colonies of deep water corals have been observed as a result of the surveys along the pipeline route and in the vicinity of the wells.

51. The pollution prevention and control measures in the ESHIA will protect seawater quality, to avoid adverse impacts on the marine ecosystem, including fish and fishery, sea turtles and cetaceans. Underwater noise reduction measures will minimize adverse impacts on cetaceans, which depend on sound for echolocation and communication. Unplanned events, such as fuel or oil spills at the FPSO or an oil well blowout could have serious impacts on marine life -- particularly on sea turtles and sea birds but also though somewhat less severe on fish and cetaceans. The risk of accidental oil spill impacts will be minimized and mitigated through specific prevention and response measures defined in the Oil Spill Contingency Plan, as discussed under PS 3.

52. Ecosystem services that could be adversely affected by the SGP are: land for agriculture and aquaculture, loss of forest for wood supply and non-timber products, water supply, and fishery. Mitigation for loss of loss of land for agriculture and aquaculture is addressed in the discussion of PS5 above. Water supply will be protected by pollution prevention and use of wells for the project drilled into the deep aquifer that is not tapped by the communities. The amount of forest cleared will be minimized. Fishery is not likely to be affected, because the area taken by exclusion zones around offshore installations is small compared to the area still available for fishing, and the majority of fisher-folk from the affected communities' fish closer to land.

Annex 6: Term Sheets[39]

Ghana Sankofa Gas Project

SUMMARY OF INDICATIVE TERMS AND CONDITIONS OF IDA GUARANTEE(S) USING LETTER OF CREDIT(S) [40]

IDA Guaranteed Letter of Credit ("L/C")	
L/C Applicant:	GNPC, as Buyer under the GSA
L/C Beneficiary:	ENI Ghana and Vitol Ghana (the "Private Contractors") under a single L/C[41].
L/C Bank:	A commercial bank acceptable to IDA, the L/C Applicant and the L/C Beneficiary. If necessary given the size of the L/C, the L/C Bank could act as agent of a syndicate of commercial banks that could have a participation in the L/C.
Maximum L/C Amount:	The maximum amount available for draw under the L/C (the "Stated Amount") shall not exceed US$ 500 million.
L/C Effective Date:	Gas production start date (as per GSA)[42]
L/C Validity Period	Up to term of the GSA plus some additional months to cover any post termination payment obligations.[43]
Guaranteed L/C:	Revolving standby irrevocable letter of credit issued in favor of the L/C Beneficiary by the L/C Bank at the request of the L/C Applicant to backstop payment obligations of the L/C Applicant under the Reimbursement and Credit Agreement following the occurrence of a Guaranteed Event (as defined below). Any amounts drawn by the L/C Beneficiary under the L/C that are repaid by the L/C Applicant to the L/C Bank within the L/C Reimbursement Period (as below) would be reinstated. The obligation of the L/C Applicant to repay the L/C Bank amounts drawn under the L/C would be guaranteed by IDA.

[39] Subject to change until finalization of ongoing negotiations.

[40] It is currently envisioned that only one single LC for the joint benefit of Vitol Ghana/Eni Ghana will be issued and therefore only one IDA Payment Guarantee with a total amount of US$500 million will be required. If following ongoing negotiations, it is determined that it will be more beneficial to have two separate LCs in favor of each of Vitol Ghana/Eni Ghana, two IDA guarantees will need to be provided. However in the case of several IDA Guarantees the cumulative IDA Guarantee amount will not exceed US$500 million for all IDA Guarantees combined.

[41] The mechanics for making draws are to be determined, including whether Eni Ghana (as operator) or an agent designated by ENI Ghana and Vitol Ghana will be making draws under the L/C. Parties also need to determine how non-payment will be certified/notified as a condition for accessing funds under Escrow Account and L/C.

[42] The L/C is expected to be issued (not effective) at the time of the guarantee effectiveness.

[43] Roll-over/alternative provisions may be built in the event the L/C Bank is unable to issue a L/C for the entire term required.

	Any amount paid by IDA to the L/C Bank under the IDA Guarantee would be deducted from the Maximum IDA Guaranteed Amount, and thus from the Maximum L/C Amount, and those amounts would not be reinstated.
Guaranteed Events **(Permitted Drawdown under L/C):**	Failure by the Buyer to pay the Private Contractors any sum of money that remains due from, and unpaid by, the Buyer under [Clauses 17.1 and 17.2 of the GSA and/or the Guarantee Support Agreement], provided that the L/C is not callable unless and until the Escrow Account[44] is fully drawn (and has not been replenished in whole or in part); The L/C shall be available for drawings by the Beneficiary upon filing of a claim on the basis of drawdown mechanisms and the presentation of supporting documentation to be agreed between the parties in the Guarantee Support Agreement and the L/C instrument and which should include but will not be limited to certification/evidence that: (i) the Escrow Account has been fully drawn and that (ii) the invoice remains unpaid by the due date under the GSA/Guarantee Support Agreement/ other GSA Security Package documents.
L/C Fees:	To be payable by the [L/C Applicant/L/C Beneficiary] to the L/C Bank.
<u>L/C Reimbursement & Credit Agreement (RCA)</u>	
The Borrower:	GNPC
The Lender:	L/C Bank, as lender.
L/C Reimbursement Period:	Following a draw under the L/C by the L/C Beneficiary, the Borrower would be obligated to repay the L/C Bank the amount drawn under the L/C together with accrued interest thereon within a period of twelve (12) months (the "L/C Reimbursement Period") from the date of each drawing.
Interest Rate Charged by the L/C Bank:	An appropriate 'spread' above LIBOR acceptable to the L/C Bank and the L/C Applicant and agreed by IDA. For the avoidance of doubt, IDA does not cover penalty interest, default interest or charges of similar nature.
<u>IDA Guarantee Agreement</u>	
Guarantor:	IDA

[44] This will be the Escrow Account to be maintained by GNPC as security for the payment obligations of GNPC with an amount equal to 4.5 months of payments under the GSA.

Guaranteed Beneficiary:	L/C Bank, as guaranteed lender
IDA Guarantee:	IDA will guarantee the repayment obligation of the L/C Applicant to repay the L/C Bank amounts drawn under the L/C, plus accrued interest on the amount drawn.[45] That is, if the amount remains unpaid after the expiry of the L/C Reimbursement Period, the L/C Bank would have the right to call on the IDA Guarantee for principal amount (equal to the amount drawn under the L/C) plus accrued interest due from the L/C Applicant.
Maximum Guaranteed Principal:	US$ 500 million. Any amount paid by IDA to the L/C Bank under the IDA Guarantee would be deducted from the Maximum IDA-Guaranteed Amount and those amounts would not be reinstated.
Maximum IDA-Guaranteed Amount:	The amount drawn (and not repaid) under the L/C not to exceed the Maximum Guaranteed Principal, plus accrued interest thereon in accordance with the RCA.
Maximum IDA Guarantee Period:	The L/C Validity Period plus 14 months.
Exclusions, Limitation/Suspension & Termination Events:	Standard exclusion, limitation/suspension and termination events for transactions of this nature.
Reinstatement of Guarantee in Case of Termination	In case of early termination of the Guarantee Agreement by IDA because of reasons attributable to the L/C Bank, IDA could enter into a new Guarantee Agreement with a new L/C Bank in substantially the same terms and conditions as the terminated Guaranteed Agreement and for the remaining term of the Maximum IDA Guarantee Period.
Conditions Precedent to the IDA Guarantee:	Usual and customary conditions for financing of this type including but not limited to the following: (a) firm commitment for sufficient financing to complete construction of the Project, including satisfactory contribution of equity by the Private Contractors; (b) execution, delivery and effectiveness of all Project and financing agreements, in form and substance satisfactory to IDA, including the *IDA Indemnity Agreement* and each of the *IDA Project Agreements*;

[45] Scheduled interest due and payable on any advances made pursuant to the IDA-Guaranteed Loan. For the avoidance of doubt, IDA does not cover penalty interest, default interest or charges of similar nature.

	(c) Delivery of all relevant host country environmental approvals required for the operation of the Project, and compliance with all applicable World Bank requirements relating to environmental and social safeguards under the World Bank Performance Standards and Sanctionable Practices; (d) effectiveness of all required insurance (to include IDA as an additional insured on third-party liability insurance); (e) satisfaction of all conditions precedent under the Financing Documents; (f) provision of satisfactory legal opinions; and (g) payment in full of the Up-Front Fees (if invoiced) and the first installment of the Guarantee Fee (if invoiced).
Subrogation:	If and to the extent IDA makes any payment under the IDA Guarantee, IDA will be subrogated immediately to the extent of such unreimbursed payment to the L/C Bank's rights.
Governing Law:	England.
Guarantee Support Agreement	
Guarantee Support Agreement:	The L/C Applicant would enter into a Guarantee Support Agreement with the L/C Beneficiary under which the L/C Applicant would undertake to apply for and make available an L/C that may be drawn by the L/C Beneficiary following the occurrence of certain Guaranteed Events, on the basis of drawdown and dispute resolution mechanisms and supporting documentation to be agreed between the parties and satisfactory to IDA.
Indemnity Agreement	
Parties:	IDA and the GoG
Indemnity:	Ghana will reimburse and indemnify IDA on demand, or as IDA may otherwise direct, for all payments under the IDA Guarantees and all losses, damages, costs, and expenses incurred by IDA relating to or arising from the IDA Guarantees.
Covenants:	In addition to the standard covenants for guarantees, Ghana will agree to: (i) create and head a committee to monitor the progress of the project milestones provided under the Heads of Agreement and GSA; and (ii) develop an action plan to conclude a tie-in agreement and a transportation agreement between GNPC and WAGPCO to ensure that WAGP will be operational and ready and available to receive and transport gas from Aboadze to Tema.
Remedies:	If Ghana breaches any of its obligations under the Indemnity Agreement, IDA may suspend or cancel, in whole or in part, the

	rights of Ghana to make withdrawals under any other loan or credit agreement with IDA, or any IDA loan to a third party guaranteed by Ghana, and may declare the outstanding principal and interest of any such loan or credit to be due and payable immediately. A breach by Ghana under the *Indemnity Agreement* will not, however, forgive any guarantee obligations of IDA under the IDA Guarantee.
Governing Law:	The *Indemnity Agreement* will follow the usual legal regime and include dispute settlement provisions customary for agreements between member countries and IDA.
Project Agreements	
Parties:	IDA and Vitol Ghana and Vitol B.V. (Rotterdam) IDA and Eni Ghana and Eni S.p.A.
Representations and Warranties:	Each of the Private Contractors will represent, among other standard and project-specific provisions, as of the effective date, that it (i) is in compliance with applicable environmental laws and the applicable World Bank guidelines, environmental and social safeguard policies, and other applicable requirements and (ii) neither it (including its direct and indirect shareholder and any other relevant project participants), nor any of their affiliates has engaged in any Sanctionable Practice[46] in connection with the Project.
Covenants:	Each of the Private Contractors will covenant, among other things, that it will: (i) comply with applicable laws, including environmental laws, and the applicable World Bank environmental and social guidelines and policies; (ii) provide annual audited financial statements and other reports, (iii) provide access to the Project, (iv) not engage in any Sanctionable Practice in connection with the Project, and (v) comply with World Bank requirements relating to Sanctionable Practices regarding individuals or firms included in the World Bank Group list of firms debarred from World Bank Group-financed contracts.
Guarantee Fee:	75 basis points per annum. The Guarantee Fee is assessed on any committed and outstanding IDA's financial exposure under the IDA Payment Guarantee (i.e. the Maximum L/C Amount). Payment of this fee is the obligation of the Private Contractors and must be paid in advance semi-annually. The IDA Guarantee would lapse in the event of nonpayment of any installment of the relevant Guarantee Fee.
Up-front Fees:	Standard upfront fees for guarantee transactions.

[46] "Sanctionable Practices" include corrupt, fraudulent, collusive, coercive, or obstructive practices.

Governing Law:	England.
Cooperation Agreement	
Cooperation Agreement:	GNPC would enter into a Cooperation Agreement with IDA, under which GNPC would covenant, *inter alia,* that it will: (i) comply with all its obligations under the transaction documents; obtain IDA's consent prior to agreeing to any change to any transaction document which would materially affect IDA; (ii) provide certain notices to IDA; (iii) cooperate with IDA and furnish all such information related to such matters as IDA shall reasonably request; (iv) promptly inform IDA of any condition which interferes with, or threatens to interfere with, such matters; and (v) comply with certain account management obligations. GNPC will also covenant to take all required actions under its control to meet the project milestones by the milestones completion dates as provided under the Heads of Agreement and GSA.

SUMMARY OF INDICATIVE TERMS AND CONDITIONS OF IBRD LOAN GUARANTEES FOR THE BENEFIT OF LENDERS TO VITOL GHANA/ENI GHANA

IBRD-Guaranteed Loan Agreements	
Borrower:	[Vitol Ghana/Eni Ghana]
Guaranteed Lender:	[TBD]
Loan Principal Amount:	US$ [TBD[47]] million.
Term:	[15] years
Repayment of Loan:	[Annual/semi-annual/quarterly].
Loan Interest Rate:	LIBOR + [TBD]% p.a.
Currency:	[US dollars].
Use of Proceeds:	Proceeds to be used only for design, engineering, procurement, construction, and financing costs of the Project. Proceeds may not be used for developer fees, taxes, duties, luxury items, goods or services from territories that are not a member of the World Bank, etc.
Drawdown:	When applicable, pro rata with the other loans of the Project.
IBRD Guarantee Agreement	
Parties:	IBRD and the Guaranteed Lender.
Guarantor:	IBRD
Beneficiary:	Guaranteed Lender.
Guarantee:	IBRD will guarantee to the Guaranteed Lender, up to the Maximum Guaranteed Amount, payment of principal and interest thereon (in accordance with the original payment schedule applicable to the IBRD-Guaranteed Loan Agreement) the Guaranteed Lender would have otherwise received from the Borrower, but for the occurrence of a Guaranteed Event (see below).
Guaranteed Events:	Any failure by GNPC to pay to Eni Ghana/Vitol Ghana[48]: (a) any sum of money due and unpaid under Clauses 17.1 and 17.2 of the GSA

[47] The amount of each IBRD-Loan Guarantee for the benefit of each lender to Vitol Ghana and Eni Ghana is to be determined.. The maximum cumulative amount of all such IBRD Loan Guarantees (currently expected to be three) is not to exceed US$200 million.

[48] This assumes there will be one single invoice under the GSA.

	provided that the IBRD Guarantee is not callable unless and until the Escrow Account has been depleted, the IDA-Guaranteed L/C has been fully drawn and GNPC/GOG has failed to comply with its obligations under the Multi-Party Deed and Sovereign Guarantee; and/or (b) any termination amount payable following the occurrence of a pre-identified termination event(s) under the GSA.
Provisional Payments:	If required by Guaranteed Lender and subject to standard terms and conditions for these payments.
Maximum Guaranteed Amount:	The Maximum Guaranteed Principal plus Maximum Guaranteed Interest as below.
Maximum Guaranteed Principal:	The aggregate of the principal amount of the IBRD-Guaranteed Loan committed (or, at the end of the availability period of each IBRD-Guaranteed Loan ("Availability Period"), disbursed, not to exceed USD [TBD[49]] million.
Maximum Guaranteed Interest:	Scheduled interest due and payable on the disbursed and outstanding principal amount pursuant to the IBRD-Guaranteed Loan. For the avoidance of doubt, IBRD does not cover penalty interest, default interest or charges of similar nature.
Exclusions, Limitation/Suspension & Termination Events:	Standard exclusion, limitation/suspension and termination events for transactions of this nature.
Non-Accelerability of Guarantee:	The IBRD Guarantee is non-accelerable even if the underlying payment obligations under the IBRD-Guaranteed Loan are accelerated as a result of a Guaranteed Event. In such instances, the IBRD Guarantee will cover payment of principal up to the Maximum Guaranteed Principal and scheduled interest thereon payable in accordance with the original payment schedule applicable to the IBRD-Guaranteed Loan.
Conditions Precedent to the IBRD Guarantee:	Usual and customary conditions for financing of this type including but not limited to the following: (a) firm commitment for sufficient financing to complete construction of the Project, including satisfactory contribution of equity by the Private Contractors; (b) execution, delivery and effectiveness of all Project and financing agreements, in form and substance satisfactory to IBRD, including the IBRD *Indemnity Agreement* and the IBRD *Project Agreement*;

[49] The maximum cumulative guaranteed principal amount for the benefit of Vitol Ghana and Eni Ghana is not to exceed US$200 million.

	(c) Delivery of all relevant host country environmental approvals required for the operation of the Project, and compliance with all applicable World Bank requirements relating to environmental and social safeguards under the World Bank Performance Standards and Sanctionable Practices[50]; (d) effectiveness of all required insurance (to include IBRD as an additional insured on third-party liability insurance); (e) satisfaction of all conditions precedent under the Financing Documents; (f) provision of satisfactory legal opinions; and (g) payment in full of the Up-Front Fees (if invoiced) and the first installment of the Guarantee Fee.
Subrogation:	If and to the extent IBRD makes any payment under the IBRD Guarantee, IBRD will be subrogated immediately to the extent of such unreimbursed payment to the lenders' rights, provided IBRD will not exercise such rights to the extent IBRD is reimbursed for such payment by Ghana under the Indemnity Agreement.
Claims and disputes:	Claims by the IBRD Guaranteed Lender must be made within [90] days of nonpayment with IBRD paying within [60] days thereafter. If there is a dispute between GNPC/GoG and the Borrower as to GNPC/GoG's obligation to pay or the amount of its liability, the IBRD Guarantee would be callable only in respect of amounts that GNPC/GoG is obligated to pay, and fails to pay, in accordance with the dispute resolution procedures contained in GSA or Sovereign Guarantee. For the avoidance of doubt, IBRD will pay only GNPC/GoG's liability that has been determined, whether through expert determination, settlement agreement between the parties, arbitral award, or accordance with procedures, so long as such determination is final and binding (i.e., an arbitral award is not necessarily required).
Upfront Fees:	Standard upfront fees for IBRD guarantees.
Guarantee Fee (recurrent)[51]:	80[52] bps per annum, payable semi-annually in advance by the Guaranteed Lender, on the disbursed and outstanding amount of the IBRD-Guaranteed Loan (and scheduled interest thereon), which is callable under the IBRD Guarantee. The *Guarantee* would lapse in the event of nonpayment of any installment of the relevant Guarantee Fee.
Standby Fee:	25 bps per annum, charged on the undisbursed amount of the Maximum Guaranteed Principal. Payment of the Stand-by Fees are the obligation of the Guaranteed Lender and must be paid in advance on regular payment dates.

[50] "Sanctionable Practices" include corrupt, fraudulent, collusive, coercive, or obstructive practices.

[51] TBC.

[52] For IBRD guarantees, the guarantee fee includes an annual maturity premium of 0.00 percent for maturities up to 12 years, 0.10 percent for maturities greater than 12 and up to 15 years, and 0.20 percent for maturities greater than 15 and up to 18 years (FY15 pricing)

Indemnity Agreement	
Parties:	IBRD and the GoG.
Indemnity:	Ghana will reimburse and indemnify IBRD on demand, or as IBRD may otherwise direct, for all payments under the IBRD Guarantees and all losses, damages, costs, and expenses incurred by IBRD relating to or arising from the IBRD Guarantees.
Covenants:	In addition to the standard covenants for guarantees, Ghana will agree to: (i) create and head a committee to monitor the progress of the project milestones provided under the Heads of Agreement and GSA; and (ii) develop an action plan to conclude a tie-in agreement and a transportation agreement between GNPC and WAGPCo to ensure that WAGP will be operational and ready and available to receive and transport gas from Aboadze to Tema.
Remedies:	If Ghana breaches any of its obligations under the Indemnity Agreement, IBRD may suspend or cancel, in whole or in part, the rights of Ghana to make withdrawals under any other loan or credit agreement with IBRD, or any IBRD loan to a third party guaranteed by Ghana, and may declare the outstanding principal and interest of any such loan or credit to be due and payable immediately. A breach by Ghana under the *Indemnity Agreement* will not, however, forgive any guarantee obligations of the World Bank under the IBRD Guarantee.
Governing Law:	The *Indemnity Agreement* will follow the usual legal regime and include dispute settlement provisions customary for agreements between member countries and IBRD.
Project Agreement	
Parties:	IBRD & the Borrower
Representations and Warranties:	The Borrower will represent, among other standard and project-specific provisions, as of the effective date, that (i) it is in compliance with applicable environmental laws and the applicable World Bank guidelines, environmental and social safeguard policies, and other applicable requirements and (ii) neither it (including its direct and indirect shareholder and any other relevant project participants), nor any of their affiliates has engaged in any Sanctionable Practices in connection with the Project.

Covenants:	The Borrower will covenant, among other things[53], that it will (i) comply with applicable laws, including environmental laws, and the applicable World Bank environmental and social guidelines and policies; (ii) provide annual audited financial statements and other reports, (iii) provide access to the Project, (iv) not engage in any Sanctionable Practices in connection with the Project, and (v) comply with World Bank requirements relating to Sanctionable Practices regarding individuals or firms included in the World Bank Group list of firms debarred from World Bank Group-financed contracts.
Governing Law:	England.
Cooperation Agreement	
Cooperation Agreement:	GNPC would enter into a Cooperation Agreement with IBRD, under which GNPC would covenant, *inter alia,* that it will: (i) comply with all its obligations under the transaction documents; obtain IBRD's consent prior to agreeing to any change to any transaction document which would materially affect IBRD; (ii) provide certain notices to IBRD; (iii) cooperate with IBRD and furnish all such information related to such matters as IBRD shall reasonably request; (iv) promptly inform IBRD of any condition which interferes with, or threatens to interfere with, such matters; and (v) comply with certain account management obligations. GNPC will also covenant: (a) to take all required actions under its control to meet the project milestones by the milestones completion dates as provided under the Heads and Agreement and GSA, (b) that in the event there is a call under any of the IBRD guarantees, GNPC shall give priority access to IBRD to any foreign exchange revenues arising from the operating activities of GNPC (or any of its affiliates) and not currently part of the Project security structure; and (c) prior to agreeing to any indebtedness that could result in GNPC's cumulative principal amount of debt under any Pari Passu Financing Arrangement (as defined under the Trust and Escrow Deed) to exceed 500 million United States Dollars, GNPC shall require the prior written consent of IBRD.

[53] TBC based on review of project and financing documents.

Annex 7: Ghana Energy Sector Background

Ghana: Sankofa Gas Project

A. Gas and Power Demand and Supply Analysis

Gas Supply Outlook

1. The gas supply from Ghana's domestic gas resources will come from three field developments: Jubilee, TEN, and Sankofa. The Jubilee field, discovered in 2007, has total recoverable reserves of roughly 600 million barrels of oil and 500 billion cubic feet (Bcf) of associated gas. Since start-up in December 2010, production from Jubilee has fallen short of the 120,000 barrel per day design capacity, initially due to problems with well completions and production facilities, and more recently as a result of constraints on reinjection and flaring of associated gas. Jubilee oil production began in 2010 while Jubilee gas production started in 2014, when the pipeline and processing plant needed to commercialize associated gas entered into service. In between these dates, most of the associated gas production was reinjected, although some flaring took place when reinjection capacity was restricted. With the Jubilee gas infrastructure now operational, delivery capacity from Jubilee to the Aboadze power park near Takoradi is 100 MMcfd or more. Jubilee production is expected to remain at current levels until at least 2020.

2. The TEN project—a consolidated development of the Tweneboa, Enyenra, and Ntomme discoveries—is under development by the same consortium as Jubilee and is expected to begin production in 2016, provided that no delays result from Ghana's ongoing maritime border dispute with Cote d'Ivoire before the International Tribunal of the Law of the Sea. TEN is planned as a 76,000 barrel per day development with ultimate recovery of roughly 240 million barrels. Gas production from TEN is expected to be about 50 MMcfd beginning in 2018[54] and will remain at this level for five to six years. Tullow Oil is the operator of both Jubilee and TEN.

3. The third confirmed development is the Sankofa gas field in the OCTP block. Sankofa is expected to produce 180 MMcfd of non-associated gas beginning in 2018 and to remain at this plateau production rate for 13-14 years.

4. Gas deliveries through WAGP to Ghana currently average 60 MMcfd, but are erratic. Prospects for attaining the planned contractual deliveries of 120 MMcfd to VRA remain highly uncertain due to gas shortages and infrastructure constraints in Nigeria. For this supply/demand analysis, WAGP gas delivery is estimated at 30 MMcfd.

[54] Production of TEN assumes resolution of the ongoing legal proceedings described in Footnote 9 above.

Table 1: Gas Supply (MMcfd)

	2014	2015	2016	2017	2018	2019	2020
Jubilee	--	83	104	104	104	103	98
TEN	--	--	--	--	50	50	50
Sankofa	--	--	--	--	158	171	171
Sub-Total Domestic	--	83	104	104	254	323	318
WAGP Imports	30	30	30	30	30	30	30
Total Supply	30	113	134	134	284	353	348

World Bank Energy Team Projections

Gas and Power Demand Outlook

5. Gas demand in Ghana will come exclusively from the power generation sector for the foreseeable future. GRIDCo's forecast of electricity demand begins at 14,700 GWh in 2014 and grows at an average 5.8 percent per year to 29,500 GWh by 2023. Demand figures from VRA are very similar to the GRIDCo forecast. According to VRA's planning figures, hydro supply from Akosombo/Kpong and Bui is estimated at 6,023 GWh with no long-term upside. Thus, thermal energy will play an increasing role in meeting Ghana's growing electricity demand (Table 2).

Table 2: Energy Demand and Call on Thermal Energy (GWh)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total Energy Demand	14,721	17,717	19,696	21,041	22,304	23,574	24,953	26,425	27,893	29,482
Less Hydro Output	5,182	5,182	6,023	6,023	6,023	6,023	6,023	6,023	6,023	6,023
Call on Thermal Energy	9,539	12,535	13,673	15,018	16,281	17,551	18,930	20,402	21,870	23,459

World Bank Energy Team Projections

6. Ghana's currently installed and available thermal capacity is 1,015 MW, made up of 500 MW[55] at Takoradi/Aboadze and 515 MW at Tema. With the exception of the 180 MW gas-only Sunon Asogli IPP at Tema, all existing plants are dual-fuel gas turbines (OCGT and CCGT).

7. About 2,500 MW of new gas-fired generation capacity is planned to come online between now and 2020. In Takoradi, where the Sankofa gas will come onshore, gas-fired capacity is projected to increase from 500 MW to nearly 2,000 MW over this period. The GoG is currently negotiating a number of IPPs in Takoradi with a cumulative installed generation capacity of up to 1,800 MW (see Table 3). An additional 1,000 MW of thermal generation is expected to be added at Tema through a combination of IPPs and expansion of existing VRA plants. If all the committed and planned capacity additions take place, dependable capacity will meet demand,

[55] The Aboadze figure excludes the 130 MW130MW T3 plant recently withdrawn from service.

including a small reserve margin, by 2019. Ghana will be able to export any electricity surpluses to neighboring countries through the interconnected grid.

Table 3: Planned New Gas-fired Power Generation Projects in Takoradi

Plant/Developer	MW	Assumed Start
Amandi	240	2017/18
Jacobsen	360	2018/19
EDF/VRA	200	2017/18
Ghana1000	375	2018/19
Globeleq	375	2020/21
Karpower 2	225	2016
APR Emergency power rental	250	2015/16

Source: World Bank

Table 4: Gas-fired Generation Capacity (MW, year-end)

	2014	2015	2016	2017	2018	2019	2020	Increase 2014-2020
Takoradi	500	725	850	1,030	1,285	1650	1,975	1,475
Tema	515	615	875	1,285	1,435	1,545	1,545	1,030
Total	1,015	1,340	1,725	2,315	2,720	3,195	3,520	2,505

World Bank Energy Team Projections

8. Gas demand is estimated by applying assumptions about availability, load factor, and heat rate to the above capacity figures and constraining gas consumption to correspond to the lower of energy availability or demand. Comparing the resulting gas demand estimates (Table 5) to the gas supply estimates from above shows a persistent gas deficit through 2020, with a maximum deficit of 165 MMcfd in 2017, the year before TEN and Sankofa start production. Beyond 2020 as production from Jubilee and TEN begin to decline, the gas deficit increases again necessitating development of LNG or other gas supply in the long term.

Table 5: Gas Demand (MMcfd)

	2014	2015	2016	2017	2018	2019	2020
Takoradi	33	77	104	143	167	208	230
Tema	73	80	114	157	174	156	143
Total	106	157	218	299	342	364	373

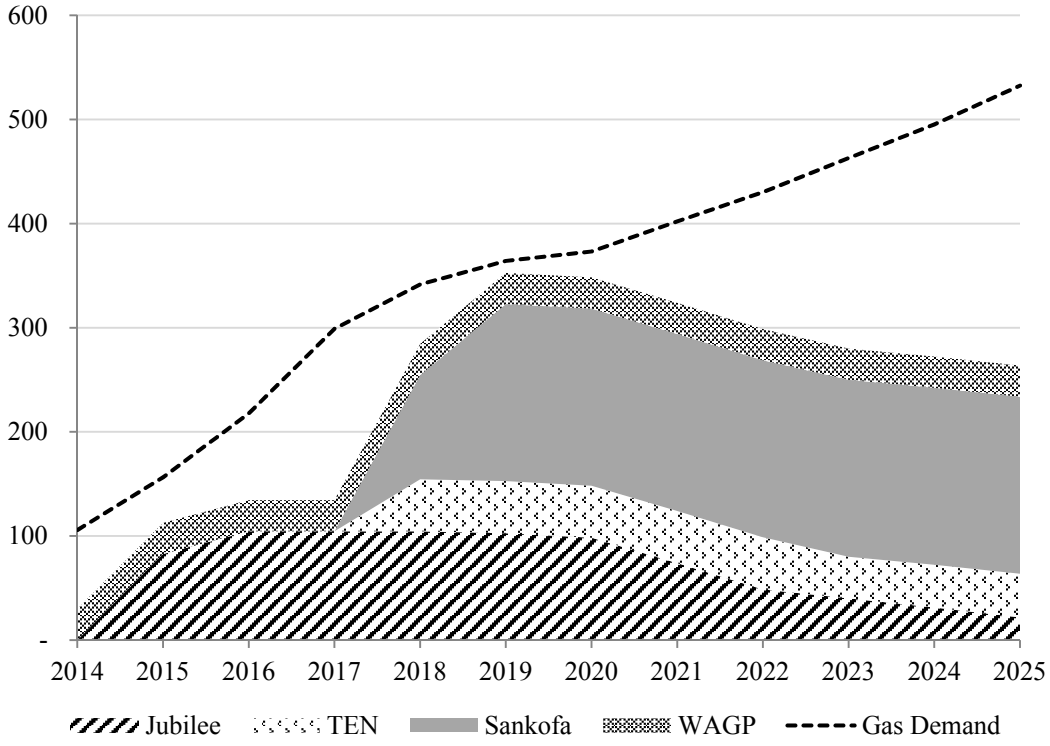
World Bank Energy Team Projections

Table 6: Gas Surplus/Deficit (MMcfd)

	2014	2015	2016	2017	2018	2019	2020
Takoradi	-33	6	1	-38	87	115	88
Tema	-43	-50	-84	-127	-144	-126	-113
Total	-76	-44	-83	-165	-57	-12	-25

World Bank Energy Team Projections

Chart 1: Gas Supply vs. Demand[56] (MMcfd)



World Bank Energy Team Projections

9. Demand for gas will be higher than gas supply at a national level. However, a gas surplus is expected in Takoradi during the period 2018-2020. Gas from Jubilee, TEN, and Sankofa gas fields will deliver gas to Takoradi where the rapid expansion of domestic gas supply during 2018-2020 is likely to outpace gas demand from IPPs. For Sankofa gas and the other domestic gas projects to be fully absorbed, gas will have to be transported from Takoradi (in Western Ghana) to the existing cluster of power plants in Tema (in Eastern Ghana) where a severe gas deficit is projected to persist. This could be done through "back-flow" on WAGP. Preliminary technical analysis by WAPCo, Eni, and GNGC suggest that a simple pipeline connection at Aboadze between the GNGC pipeline and WAGP would allow up to 140 MMcfd of Western Region gas supply to back-flow eastwards from Aboadze to Tema. Any gas delivered to Tema would find a ready market, given the dual-fuel thermal generation plants in Tema that are currently using LCO, but that could be using gas. Establishing gas back-flow capability on WAGP would provide a buffer against any slippage in the IPP roll-out schedule in Takoradi. Beyond its role in de-bottlenecking Takoradi supply, integration of the GNGC and WAGP

[56] Excludes the Karpower barges.

pipelines would provide long-term benefits in terms of operational flexibility to accommodate supply and demand variations at all delivery points. Without a pipeline to transport gas eastwards to Tema, the maximum gas surplus at Takoradi is estimated to occur in 2019 when supply would exceed local demand by 115 MMcfd, equivalent to roughly 700 MW of generation capacity. Discussions on the commercial framework of gas backflow have started between the stakeholders and agreement is expected in the near future.

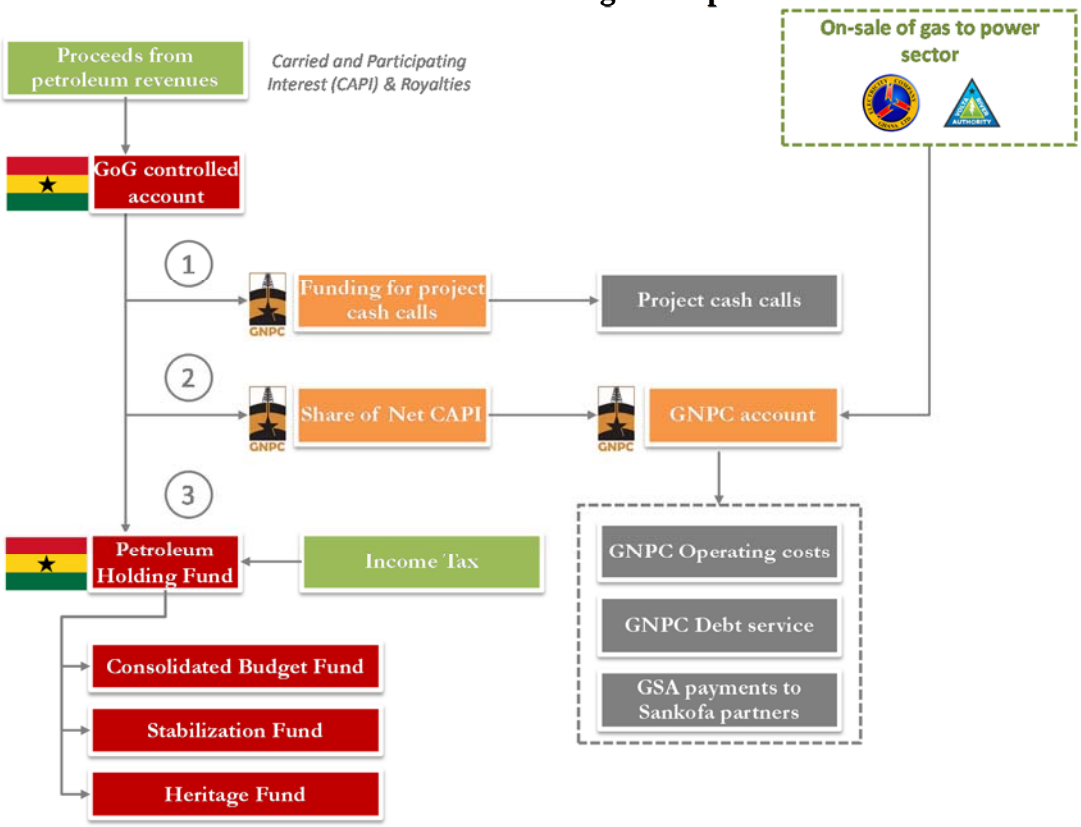
B. Petroleum Sector Regulatory Framework

10. Institutional responsibility for managing the oil and gas sector in Ghana is divided into three mandates. The Ministry of Petroleum has policy-making and oversight responsibility for the sector, through a team of representatives from the Ministry of Petroleum, GNPC and the Petroleum Commission on behalf of the Minister. The Petroleum Commission is the upstream regulator with responsibility for, *inter alia*, qualifying licensees, approving appraisal plans, and implementing local content regulations. GNPC is the national oil company with responsibility for commercializing oil and gas. GNPC negotiates petroleum agreements with International Oil Companies (IOCs) and holds the participating and carried interests under each petroleum agreement. Because of GNPC's extensive experience, it acted in the past as de facto regulator until the establishment of the Petroleum Commission. The GNGC was established in 2012 with a mandate to implement the Jubilee gas infrastructure and to act as gas aggregator/marketer. However, the GoG has recently announced that GNGC will be acquired by GNPC and appointed GNPC as Gas Sector Aggregator.

11. The 2011 PRMA defines the methods for collection and allocation of petroleum revenues. Under the PRMA, all royalties, taxes, and participating interests are deposited into a consolidated account. From the consolidated Petroleum Holding Fund account, GNPC receives a priority distribution equal to its equity finance costs plus a portion of the remaining revenue from CAPI.[57] The remaining oil revenue is distributed between the current-year budget (limited to 70 percent of revenue), the Ghana Stabilization Fund, and the Ghana Heritage Fund. The PRMA establishes governance, oversight, and disclosure requirements and defines the eligible categories of investment for petroleum revenues. It prohibits using oil revenues in the Petroleum Holding Fund as collateral for debts and guarantees. The GoG has experienced a number of start-up challenges in implementing the PRMA and plans to amend the Act to address the problematic areas.

[57] The current level of CAPI contributions to GNPC is set by the GoG at 30 percent of the net cash flow from the CAPI after deducting the equity financing cost of GNPC.

Chart 2: Ghana's Oil Revenue Management per the 2011 PRMA



Source: World Bank Team

C. GNPC Financial Analysis

12. The following analysis is based on GNPC audited financial statements from 2011 to 2013 and from the unaudited 2014 financial statements. Given the significant depreciation of the Ghanaian Cedi against the U.S. Dollar over the past seven years (15 percent average annual depreciation) and the fact that GNPC's revenues are denominated in U.S. Dollars as they are derived from oil liftings, the financial analysis has been done in both local currency and U.S. Dollars.

Operating Performance

Tables 7 and 8: GNPC Income Statement in Ghanaian Cedi and U.S. Dollars

Income Statement *In millions of GHS*	2011	2012	2013	2014
Gross sales	**686**	**1,006**	**1,476**	**2,134**
Royalties paid to Government of Ghana	(190)	(280)	(411)	(590)
Government net CAPI share	(175)	(297)	(559)	(970)
Revenues	**321**	**429**	**507**	**573**
Equity funding (level 1 revenues)	*205*	*231*	*157*	*158*
GNPC net CAPI share (level 2 revenues)	*117*	*198*	*349*	*411*
Share of gas sales	-	-	-	*4*
Share of project production costs	(54)	(123)	(160)	(116)
Net Revenues	**267**	**306**	**347**	**457**
Non-trading income	23	57	87	48
Income from refined products trading	(39)	(11)	(9)	-
Admin and General Expenses	(40)	(37)	(47)	(67)
Petroleum project expenditure	-	(20)	(27)	(49)
Finance charges	-	-	(4)	-
Total costs (excl. non trading income)	**(79)**	**(69)**	**(87)**	**(116)**
Net Earnings	**211**	**294**	**347**	**388**
Equity funding	(151)	(110)	0	(41)
Project funding	(90)	(139)	(277)	(314)
Net Earnings after statutory transfers	**(30)**	**44**	**70**	**33**

Income Statement *In millions of USD*	2011	2012	2013	2014
Gross sales	**419**	**528**	**622**	**667**
Royalties paid to Government of Ghana	(116)	(147)	(173)	(185)
Government net CAPI share	(107)	(156)	(235)	(303)
Revenues	**197**	**225**	**213**	**179**
Equity funding (level 1 revenues)	*125*	*121*	*66*	*49*
GNPC net CAPI share (level 2 revenues)	*71*	*104*	*147*	*129*
Share of gas sales	-	-	-	*1*
Share of project production costs	(33)	(65)	(67)	(36)
Net Revenues	**163**	**160**	**146**	**143**
Non-trading income	14	30	37	15
Income from refined products trading	(24)	(6)	(4)	-
Admin and General Expenses	(24)	(19)	(20)	(21)
Petroleum project expenditure	-	(11)	(11)	(15)
Finance charges	-	-	(2)	-
Total costs (excl. non trading income)	**(48)**	**(36)**	**(37)**	**(36)**
Net Earnings	**129**	**154**	**146**	**121**
Equity funding	(92)	(58)	0	(13)
Project funding	(55)	(73)	(117)	(98)
Net Earnings after statutory transfers	**(18)**	**23**	**30**	**10**

World Bank Energy Team Analysis on basis of GNPC data

13. **Revenues.** Under the PRMA framework, oil and gas revenues as well as royalties are collected by GNPC and deposited in a consolidated account. Royalties are paid into the Petroleum Holding Fund and GNPC receives a payment from this consolidated account matching the cash contributions it has to make in the projects in which it holds a stake (Jubilee, TEN, and Sankofa). These are the "level 1" revenues. The amount remaining after these payments is called the net CAPI (net Carried and Participating Interest). Per the law, GNPC is entitled to receive 30 percent of the net CAPI ("level 2" revenues), the remaining 70 percent being paid into the Petroleum Holding Fund managed by the GoG. As level 1 revenues match cash contributions GNPC has to make, revenues actually available to GNPC to pay for its operating expenditures and its own development come exclusively from level 2 revenues. However, timing differences between the moment when GNPC receives level 1 revenues and when it actually has to pay for its project related share of capital and production costs explain why level 1 revenues do not always match perfectly the cash contributions GNPC has to make.

14. **Revenue Calculation.** GNPC revenues can be analyzed through two different approaches: (i) a top down approach starting from the oil and gas receipts as well as royalties collected by GNPC and deducting subsequently the royalties and the government share of net CAPI; or (ii) a bottom up approach by simply adding the level 1 and level 2 revenues that GNPC receives as foreseen in the PRMA. The two methodologies produce the same cash result but to different accounting treatments.

Tables 9 and 10: Net CAPI Calculation in Ghanaian Cedi and U.S. Dollars

In millions of GHS	2011	2012	2013	2014
Gross sales	**686**	**1,006**	**1,476**	**2,134**
Royalties paid to Government of Ghana	(190)	(280)	(411)	(590)
Equity funding (level 1 revenues)	(205)	(231)	(157)	(158)
Net CAPI	**292**	**495**	**908**	**1,385**
Government share	175	297	559	970
GNPC share (level 2 revenues)	117	198	349	411

In millions of USD	2011	2012	2013	2014
Gross sales	**419**	**528**	**622**	**667**
Royalties paid to Government of Ghana	(116)	(147)	(173)	(185)
Equity funding (level 1 revenues)	(125)	(121)	(66)	(49)
Net CAPI	**178**	**260**	**382**	**433**
Government share	107	156	235	303
GNPC share (level 2 revenues)	71	104	147	129

World Bank Energy Team Analysis on basis of GNPC data

15. **Accounting Standards.** So far, GNPC has prepared its financial statements in accordance with the Ghana National Accounting Standards, but it intends to follow the International Financial Reporting Standards (IFRS) in the near future. In the current situation this choice would result in a large decrease in the sales recorded by GNPC and a large reduction in the size of its balance sheet. The reason for this is that GNPC does not have control over its revenue streams: the full receipts from oil and gas revenues as well as royalties are paid into an account controlled by the GoG and not GNPC, this technical difference has significant accounting implications. The GoG pays out to GNPC its share of development and production costs (level 1 revenues) and its 30 percent share of net CAPI (level 2 revenues); the rest of the funds are allocated to the GoG's budget and other funds set up by the GoG (this allocation is regulated by the PRMA). Since GNPC does not have control of the account into which the proceeds from oil and gas revenues as well as royalties are paid, it cannot book these revenues under the IFRS framework; it is only allowed to book the level 2 revenues (the level 1 revenues only offsetting cash call from petroleum projects in which GNPC has an interest). The implication for GNPC's balance sheet is that since it does not have control over the cash generated by its interests in the petroleum projects, it cannot book these assets in its balance sheet, causing its balance sheet to significantly shrink. Until this issue is resolved between GNPC and the Ministry of Finance, the implementation of the IFRS framework has been delayed and the accounts presented below follow the Ghanaian accounting standards.

Tables 11 and 12: GNPC Revenues in Ghanaian Cedi and U.S. Dollars

Income Statement *In millions of GHS*	2011	2012	2013	2014
Gross sales	**686**	**1,006**	**1,476**	**2,134**
Royalties	(190)	(280)	(411)	(590)
Government net CAPI share	(175)	(297)	(559)	(970)
Revenues	**321**	**429**	**507**	**573**
Equity funding (level 1 revenues)	*205*	*231*	*157*	*158*
GNPC net CAPI share (level 2 revenues)	*117*	*198*	*349*	*411*
Share of gas sales	-	-	-	*4*
Share of project production costs	(54)	(123)	(160)	(116)
Net Revenues	**267**	**306**	**347**	**457**

Income Statement *In millions of USD*	2011	2012	2013	2014
Gross sales	**419**	**528**	**622**	**667**
Royalties	(116)	(147)	(173)	(185)
Government net CAPI share	(107)	(156)	(235)	(303)
Revenues	**197**	**225**	**213**	**179**
Equity funding (level 1 revenues)	*125*	*121*	*66*	*49*
GNPC net CAPI share (level 2 revenues)	*71*	*104*	*147*	*129*
Share of gas sales	-	-	-	*1*
Share of project production costs	(33)	(65)	(67)	(36)
Net Revenues	**163**	**160**	**146**	**143**

World Bank Energy Team Analysis on basis of GNPC data

16. **Revenue Growth.** The large increase in gross sales in local currency over the past four years has been driven by two major factors: (i) the ramp-up of the production of the Jubilee field; and (ii) the large depreciation of the Ghanaian Cedi (GHS) against the U.S. Dollar (US$). The Jubilee field started its operations in late 2010 and has reached a level of production in excess of 100,000 barrels per day, resulting in larger revenues from oil liftings. Since the end of 2011, the GHS has lost more than half of its value against the US$, but since GNPC's sales are labelled in US$, a decrease in the value of the GHS results in higher sales once converted from US$ to GHS, even though the oil price was stable from 2011 to 2013. When converted in US$, GNPC revenues and

net revenues are more stable over time and the net CAPI doubles from 2011 to 2013.[58] The reduction in the net CAPI percentage allocated to GNPC in 2014 explains most of the slowdown in revenue growth in 2014.

17. **Foreign Exchange Gains.** GNPC also records non-trading income below its net revenues, which refers mainly to foreign exchange gains resulting from GNPC's cash holdings in US$ that appreciate as the Ghanaian Cedi depreciates.

Tables 13 and 14: GNPC Costs in Ghanaian Cedi and U.S. Dollars

In millions of GHS	2011	2012	2013	2014
Net Revenues	**267**	**306**	**347**	**457**
Non-trading income	23	57	87	48
Income from refined products trading	(39)	(11)	(9)	-
Admin and General Expenses	(40)	(37)	(47)	(67)
Petroleum project expenditure	-	(20)	(27)	(49)
Finance charges	-	-	(4)	-
Total costs (excl. non trading income)	**(79)**	**(69)**	**(87)**	**(116)**
Net Earnings	**211**	**294**	**347**	**388**

In millions of USD	2011	2012	2013	2014
Net Revenues	**163**	**160**	**146**	**143**
Non-trading income	14	30	37	15
Income from refined products trading	(24)	(6)	(4)	-
Admin and General Expenses	(24)	(19)	(20)	(21)
Petroleum project expenditure	-	(11)	(11)	(15)
Finance charges	-	-	(2)	-
Total costs (excl. non trading income)	**(48)**	**(36)**	**(37)**	**(36)**
Net Earnings	**129**	**154**	**146**	**121**

World Bank Energy Team Analysis on basis of GNPC data

18. **Operating Costs.** Recurring operating costs are stable over time at around US$35 million and include mainly administrative and general expenses (staff costs and other general expenses) and expenditures related to existing or new oil fields.

19. **Net Earnings.** Despite a large increase in net earnings in GHS, net earnings expressed in US$ are stable over time and show little volatility. Timing difference between the time level 1 revenues are received to match cash contribution and actual cash contributions explain why net earnings have not increased despite a large increase in level 2 revenues (in 2012 GNPC received GHS231 million as level 1 revenues but only used GHS123 million).

Tables 15 and 16: GNPC Net Earnings after Statutory Transfers in Ghanaian Cedi

In millions of GHS	2011	2012	2013	2014
Net Earnings	**211**	**294**	**347**	**388**
Equity funding	(151)	(110)	0	(41)
Project funding	(90)	(139)	(277)	(314)
Net Earnings after statutory transfers	**(30)**	**44**	**70**	**33**

In millions of USD	2011	2012	2013	2014
Net Earnings	**129**	**154**	**146**	**121**
Equity funding	(92)	(58)	0	(13)
Project funding	(55)	(73)	(117)	(98)
Net Earnings after statutory transfers	**(18)**	**23**	**30**	**10**

World Bank Energy Team Analysis on basis of GNPC data

20. **Statutory Transfers.** GNPC's income statement reports the amounts that have been earmarked for existing projects and for petroleum projects that have been approved by Parliament. These charges are therefore non-cash and represent commitments from GNPC to pay in the future for their share of the costs of current projects and those under development. Equity funding refers to GNPC's share of production costs that have not been used in the year while project funding refers to GNPC's share of development costs.

[58] During this period GNPC was entitled to receive 40 percent of the net CAPI, but this percentage was reduced down to 30 percent in 2014.

Cash Flow Generation

Tables 17 and 18: GNPC Cash Flow Statements in Ghanaian Cedi and U.S. Dollars

Cash Flow Statement *In millions of GHS*	2011	2012	2013	2014
Net Earnings after statutory transfers	(30)	44	70	33
Decrease (increase) in working capital	579	(5)	(161)	(211)
Increase (decrease) in short term facility	(611)	(53)	(101)	-
Other adjustments	15	5	(27)	2
Cash flow from operating activities	**(46)**	**(8)**	**(218)**	**(177)**
Equity funding	151	110	(0)	41
Project funding	90	139	277	314
Change in medium term loan	(97)	(53)	38	287
Change in training & technology grant	29	(9)	(0)	72
Cash flow from financing activities	**173**	**187**	**314**	**715**
Additions to petroleum projects	(102)	(41)	(24)	(294)
Exchange gain reserve	-	-	-	285
Other investments	(2)	(5)	(4)	(10)
Cash flow from investing activities	**(104)**	**(46)**	**(28)**	**(19)**
Change in Cash	**23**	**132**	**68**	**519**

Cash Flow Statement *In millions of USD*	2011	2012	2013	2014
Net Earnings after statutory transfers	(18)	23	30	10
Decrease (increase) in working capital	354	(3)	(68)	(66)
Increase (decrease) in short term facility	(373)	(28)	(42)	-
Other adjustments	9	2	(11)	0
Cash flow from operating activities	**(28)**	**(4)**	**(92)**	**(55)**
Equity funding	92	58	(0)	13
Project funding	55	73	117	98
Change in medium term loan	(59)	(28)	16	90
Change in training & technology grant	18	(5)	(0)	23
Cash flow from financing activities	**106**	**98**	**132**	**224**
Additions to petroleum projects	(62)	(22)	(10)	(92)
Exchange gain reserve	-	-	-	89
Other investments	(1)	(3)	(2)	(3)
Cash flow from investing activities	**(64)**	**(24)**	**(12)**	**(6)**
Change in Cash	**14**	**69**	**29**	**162**

World Bank Energy Team Analysis on basis of GNPC data

21. **Cash Flow from Operating Activities.** Over the past four years and despite a high price of oil (until mid-2014), GNPC has not been able to generate positive cash flows from its operating activities. The net CAPI share GNPC was entitled to receive (40 percent until 2013, 30 percent since 2014) was therefore not sufficient to cover its operating costs.

22. **Cash Flow from Financing and Investing Activities.** As part of the level 1 revenues, GNPC receives cash to pay for its share of development costs in TEN and Jubilee as well as for its share of production costs. The equity funding category refers to the funds that were received to pay for GNPC's share of production costs in Jubilee but which were not used, while the project funding category refers to GNPC's share of development costs. GNPC has received medium-term loans from the sponsors of Jubilee and TEN which have carried, or are still carrying GNPC's interest during the development phases of the fields (the negative changes in 2011 and 2012 were related to the repayment of the interest in Jubilee while the positive changes in 2013 and 2014 were related to the carry of GNPC's interest in TEN). GNPC will repay the existing medium-term loan with the proceeds from oil liftings from the TEN field (40 percent of GNPC's oil liftings will be dedicated to the repayment of the loan to the TEN partners). Due to the large depreciation of the GHS against the US$ in 2014, GNPC has recorded in the section "Exchange gain reserve" the extraordinary foreign exchange gains it made in 2014 by not converting its US$ income immediately in GHS when it received the proceeds from its share of the oil liftings.

23. **Cash Flow Generation Analysis.** GNPC has been able to generate positive cash flows and to accumulate cash over the years not from its operating activities but rather from its funding activities. The cash that is currently in GNPC's balance sheet is therefore not cash which GNPC can use at its discretion but rather cash that has already been earmarked to pay for its share of projects' capital and production costs and for other projects that have been approved by Parliament. The current level of net CAPI is therefore not sufficient to allow GNPC to finance its ongoing operations and development.

Tables 19 and 20: GNPC Balance Sheet in Ghanaian Cedi and U.S. Dollars

Balance Sheet				
In millions of GH₵	2011	2012	2013	2014
Petroleum Projects	262	303	327	621
Amount due from Government of Ghana	103	103	103	103
Other non-current assets	12	16	18	25
Total non-current assets	**376**	**422**	**447**	**748**
Debtors	173	200	391	617
Cash & Short term investments	48	180	248	767
Other current assets	59	43	16	22
Total currents assets	**279**	**423**	**655**	**1,406**
Total Assets	**655**	**844**	**1,102**	**2,155**
Contributed capital	7	7	7	7
Capital and Income account surplus	113	157	214	246
Petroleum Equity & Project Funds	241	491	767	1,123
Exchange Gain Reserve	-	-	-	285
Other	69	60	60	132
Total Equity	**430**	**715**	**1,048**	**1,793**
Medium term loans	53	-	38	325
Total non-current liabilities	**53**	**-**	**38**	**325**
Short term facility	153	101	-	-
Other	19	29	17	36
Total current liabilities	**172**	**129**	**17**	**36**
Total Liabilities	**655**	**844**	**1,102**	**2,155**

Balance Sheet				
In millions of USD	2011	2012	2013	2014
Petroleum Projects	160	159	138	194
Amount due from Government of Ghana	63	54	43	32
Other non-current assets	7	8	7	8
Total non-current assets	**230**	**221**	**188**	**234**
Debtors	106	105	165	193
Cash & Short term investments	29	94	104	240
Other current assets	36	23	7	7
Total currents assets	**171**	**222**	**276**	**440**
Total Assets	**400**	**443**	**464**	**674**
Contributed capital	4	4	3	2
Capital and Income account surplus	69	83	90	77
Petroleum Equity & Project Funds	147	257	323	351
Exchange Gain Reserve	-	-	-	89
Other	42	31	25	41
Total Equity	**263**	**375**	**441**	**561**
Medium term loans	33	-	16	102
Total non-current liabilities	**33**	**-**	**16**	**102**
Short term facility	94	53	-	-
Other	11	15	7	11
Total current liabilities	**105**	**68**	**7**	**11**
Total Liabilities	**400**	**443**	**464**	**674**

World Bank Energy Team Analysis on basis of GNPC data

24. **Non-current Assets.** GNPC's non-current assets are mainly composed of its interests in the TEN and Jubilee projects, respectively US$102 million and US$73 million in 2014.

25. **Current Assets.** As a result of a large positive net cash flow in 2014 (US$162 million), GNPC held US$240 million at the end of 2014. However, as noted previously, most of this cash has already been earmarked for capital expenditures. The US$193 million amount for "debtors" can be broken down between the Tema oil refinery (US$52 million), the Ministry of Finance (US$50 million), the share of crude proceeds not yet paid to GNPC (US$36 million), and others (US$55 million).

26. **Equity.** GNPC equity includes retained earnings (capital and income account surplus), statutory transfers that have been deducted in the income statement (Petroleum Equity and Project Fund) and which represent the amounts earmarked for projects already approved (US$351 million at the end of 2014), and the Exchange Gain Reserve that has been created in 2014 to reflect the large foreign exchange gains that were recorded that year as a result of the large deprecation of the GHS against the US. Dollar.

27. **Medium-term Loans.** The 2014 US$102 million medium-term loan refers to the carry of GNPC's interest in TEN by the private partners of the project. This loan will be repaid with 40 percent of the oil proceeds received by GNPC.

28. **Financial Health.** GNPC has a healthy balance sheet with US$240 million in cash and limited debt (its US$102 million TEN interest carried by the Private Sponsors). However, the fact that GNPC had commitments of US$351 million at the end of 2014 shows that GNPC will not be free to invest its cash in a discretionary manner as the value of its future commitments actually outweighs its cash position. Since GNPC already received the cash to pay for these future commitments, these commitments will have to be financed through GNPC's share of net CAPI, which currently stands at 30 percent. The US$102 million medium-term loan in addition

to the US$351 million future commitments amount to a total of US$453 million that GNPC will have to pay (or repay in the case of the loan provided by the sponsors of the TEN field) in the next few years. Its current US$240 million cash will not be sufficient and additional financing will likely be required.

Forecasts

Table 21: GNPC Five-year Forecast

Income Statement					**Forecast**				
In millions of USD	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Gross sales	**419**	**528**	**622**	**667**	**447**	**566**	**740**	**938**	**1,012**
Royalties paid to Government of Ghana	(116)	(147)	(173)	(185)	(106)	(133)	(170)	(233)	(265)
Government net CAPI share	(107)	(156)	(235)	(303)	(172)	(154)	(236)	(333)	(403)
Revenues	**197**	**225**	**213**	**179**	**169**	**279**	**335**	**371**	**344**
Equity funding (level 1 revenues)	*125*	*121*	*66*	*49*	*96*	*212*	*234*	*228*	*171*
GNPC net CAPI share (level 2 revenues)	*71*	*104*	*147*	*129*	*74*	*66*	*101*	*143*	*173*
Share of gas sales	*-*	*-*	*-*	*1*	*-*	*-*	*-*	*-*	*-*
Share of project production costs	(33)	(65)	(67)	(36)	(54)	(97)	(112)	(132)	(124)
Net Revenues	**163**	**160**	**146**	**143**	**115**	**182**	**223**	**239**	**220**
Non-trading income	14	30	37	15	-	-	-	-	-
Income from refined products trading	(24)	(6)	(4)	-	-	-	-	-	-
Admin and General Expenses	(24)	(19)	(20)	(21)	(53)	(56)	(59)	(62)	(65)
Petroleum project expenditure	-	(11)	(11)	(15)	(60)	(73)	(57)	(31)	(30)
Finance charges	-	-	(2)	-	-	-	-	-	-
Total costs (excl. non trading income)	**(48)**	**(36)**	**(37)**	**(36)**	**(113)**	**(129)**	**(116)**	**(92)**	**(95)**
Net Earnings	**129**	**154**	**146**	**121**	**2**	**52**	**107**	**147**	**125**
Equity funding	(92)	(58)	0	(13)	-	-	-	-	-
Project funding	(55)	(73)	(117)	(98)	(41)	(115)	(122)	(96)	(48)
Net Earnings after statutory transfers	**(18)**	**23**	**30**	**10**	**(39)**	**(63)**	**(15)**	**51**	**78**

World Bank Energy Team Analysis on basis of GNPC data

29. **Assumptions.** The five-year projection of GNPC's financial performance is based on information received from GNPC and on the World Bank's own calculations.

30. **Net Revenues.** The limited drop in net revenues expected in 2015 may be misleading as part of the level 1 revenues are actually used to fund GNPC's share of development costs, which can only be seen lower in the income statement in project funding. The key metric is GNPC's share of net CAPI as it is the revenues from which GNPC has to finance its ongoing operations and its development. It is expected to be significantly reduced in the next two years as a result of lower oil prices, and it is not expected to return to its 2014 level before 2018 when both the oil and gas production from the Sankofa field will have started.

31. **Costs.** Administrative and general expenses are expected to increase in 2015 as GNPC scales up its operations with three fields being either in development or in production. Petroleum project expenditures are also expected to increase sharply as GNPC is expected to undertake larger investments in new projects (South Deepwater Tano, Voltaian Basin Project, North and South Tano, Hess Block, and Ultra Deep Keta).

32. **Analysis.** The low price environment and the development of GNPC's operations are going to put GNPC's financial ratios under pressure for the next three years. This situation will be aggravated by the fact that GNPC will have to fund the 4.5-month escrow account (estimated at

US$200 million) prior to the start of Sankofa gas production per the security package agreed with the Private Sponsors of the project. GNPC also would require US$300 million of additional investment in the Sankofa project to lower the gas price to US$8.15/MMBtu. GNPC will require additional funding in the form of a loan with a maturity long enough to allow GNPC to finance its development for the next five years.

D. Electricity Sector

33. Access to electricity in Ghana, at about 75 percent, is well above other countries in sub-Saharan Africa. Electricity consumption per capita is 344 kilowatt hours (kWh) in 2011. Ghana's power sector is unbundled in separate generation, transmission, and distribution utilities. It was one of the first countries in sub-Saharan Africa to attract private investment through independent power producers (IPPs). Ghana's high-voltage power grid is interconnected with neighboring countries (Cote d'Ivoire, Togo and, shortly, Burkina Faso). Already a net electricity exporter, Ghana is well positioned to further develop its role as electricity exporter and energy 'bank' in the sub-region. While fuel shortages and macroeconomic shocks have adversely impacted the sector in the past few years, the Ghanaian power sector remains one of the most advanced in Africa.

34. Hydropower remains the main source of energy in Ghana, but is increasingly being complemented by thermal generation. Ghana has an installed power generation capacity of about 2,400 MW, made up of 1,400MW of hydropower plants, 1,015MW of gas/oil fired thermal facilities, and 2.5 MW of grid-connected solar. Approximately 800 MW of additional thermal generation capacity is currently under construction by public utilities and independent power producers. Total power generation was 13 TWh in 2014. Electricity demand at peak is currently about 2,000 MW. Electricity demand is projected to grow by an average 5.8 percent per year in the coming decade.

35. The increasing dependency on liquid fuels to run thermal power plants over the past several years has increased the cost of power generation and has required considerable government subsidies. Thermal generation has been mostly run on LCO in the past decade, complemented by gas from WAGP, and more recently domestic gas. Developing natural gas resources is critical to reduce generation costs in Ghana. Developing gas resources will also help to reduce costs and decrease the dependency of Ghana's Sahelian neighbors on liquid fuel transported by road inland from the coast.

36. Ghana's power sector has an unbundled structure composed of separate generation, transmission, and distribution utilities. The Volta River Authority (VRA) manages hydropower assets as well as part of the thermal generation capacity. IPPs account for 15 percent of installed capacity. The transmission system is owned and operated by GRIDCo. The distribution of electricity is carried out by ECG, with about 2.6 million customers that accounts for about 90 percent of retail power sales, and the Northern Electricity Corporation (NEDCo), a subsidiary of VRA, which handles the remaining 10 percent. All utilities are autonomous state-owned enterprises. The Ministry of Power is responsible for formulating, implementing, monitoring and evaluating energy sector policies, while the Energy Commission (EC) and the PURC regulate the industry.

37. The financial health of the power sector has deteriorated in recent years. Electricity tariffs are below cost recovery level, especially for VRA where they are 35 percent below cost recovery. Despite recent tariff increases in real terms, tariffs have not kept up with currency depreciation

and the high cost of liquid fuel. The PURC has not consistently implemented mandated quarterly tariff adjustments, in part because of nation-wide load shedding. The increased dependency on liquid fuels is caused by a combination of low water levels in the main hydropower reservoir, unreliable gas supplies from Nigeria through WAGP, and delays in the development of domestic gas fields.

38. The GoG is taking a number of parallel actions in order to start a virtuous cycle of increasing revenues and reducing costs. The large 2013 tariff increase already has had a positive effect on the financial equilibrium of the sector. Short-term measures and medium-term reforms in the distribution sub-sector will help to improve revenue collection, operational efficiency, and attract private financing. A new cash management system will bring greater predictability to the flow of funds in the power sector. As Ghana has developed most of its hydropower resources, its main avenue for reduction of generation costs is the development of domestic gas.

39. The GoG has begun to reduce the stock of payment arrears to ECG for its electricity consumption. Under the MCC Compact II program, the GoG has committed to settle its arrears by end-2017 and maintain public sector receivables to less than two months of sales. In addition, the IMF's Extended Credit Facility will reinforce fiscal discipline by applying a ceiling to the contracting and guaranteeing of new non-concessional external debt by the government and public enterprises, including GNPC, GNGC, VRA, GRIDCo, and ECG. The budget support received through the IMF's Extended Credit Facility, and the IDA DPOs will assist the GoG to partially pay off its arrears for electricity consumption. The payment of government arrears to ECG will enable ECG in turn to significantly reduce its debts to suppliers, VRA, and independent power producers.

40. ECG is rolling out a number of improvements in its commercial management, and the GoG has started a process to seek a private operator for ECG under a long-term concession. In addition, ECG is rolling out a new company-wide commercial management system to be completed by September 2015. This will be complemented by the installation of a large number of prepayment meters to replace old, faulty meters and the introduction of advanced metering infrastructure to remotely record consumption of large customers. These short-term measures are being implemented under the IDA-supported GEDAP project.

41. In early 2015, the GoG announced its intention to introduce private sector participation in ECG through a long-term concession contract with a competitively-selected private operator. The introduction of private sector participation is a condition of the MCC Compact II, which the Parliament of Ghana approved in 2014. MCC has committed to provide US$340 million in complementary grant funds to ECG for investments to support the private sector participation process. The tendering, selection, and finalization of the concession contract is expected to take two to three years. A request for proposals from interested parties is being drafted, with the intent of issuing it before the end of 2015.

42. The GoG is finalizing a revenue management scheme that will bring greater predictability to the flow of funds in the power sector by obliging ECG to distribute predetermined shares of its monthly revenue to other sector entities. The new scheme will remove ECG's discretionary authority to distribute sector revenues that it collects on behalf of other entities on a non-transparent and variable basis. It is an important measure to restoring payment discipline and predictable cash flows within the sector. ECG's Board is also expected to streamline the top

management structure of the company to give greater focus to commercial aspects of the business.

43. Three commercial gas field developments – Jubilee, TEN, and Sankofa - will help reduce power generation cost by an estimated US$200 million per year and extend electricity services going forward. Increased gas supply will enable the GoG to attract private sector financing into the power sector through the financial closure of thermal IPPs that have been delayed by uncertainty of fuel supply. In 2012, the Ghana Ministry of Energy estimated over US$4 billion needed to be invested in the next ten years to meet rising power demand. The GoG will be able to directly finance only a portion of this. However, several developers have shown an interest in investing in the sector. In the past few years, lack of fuel has been a binding constraint for IPP developers, which will only move forward with financial close once they have secured domestic gas to reduce the fuel supply risk. In order to move swiftly on the financing and construction of these additional power plants, the GoG will have to improve the IPP development process which is cumbersome and time consuming. If all the committed and planned capacity additions take place, dependable capacity will meet demand (including a small reserve margin) by 2019.

ECG Financial Performance

44. ECG's operational and financial performance is critical for the sustainability of the entire energy sector value chain. ECG is a large, centralized organization, with serious weaknesses in its management, corporate governance, and institutional culture that call for a change.

45. ECG is to be the offtaker for virtually all IPPs currently under development. This arrangement is risky for both ECG and IPPs given the current weakness in the financial equilibrium of ECG. ECG purchases part of its bulk power supply from VRA at a regulated bulk generation price. In the past the impact of delayed adjustments in regulated tariffs was moderate for ECG as the loss of revenue resulting from the non-adjustment of retail tariffs was largely offset by the absence of increase in bulk power purchase price. However, as the proportion of ECG energy purchases from IPPs increases, ECG finds itself in a situation in which its energy costs are largely based on commercial contracts (power purchase agreements denominated in US$ and indexed on fuel costs), while its revenues remain regulated by PURC in local currency.

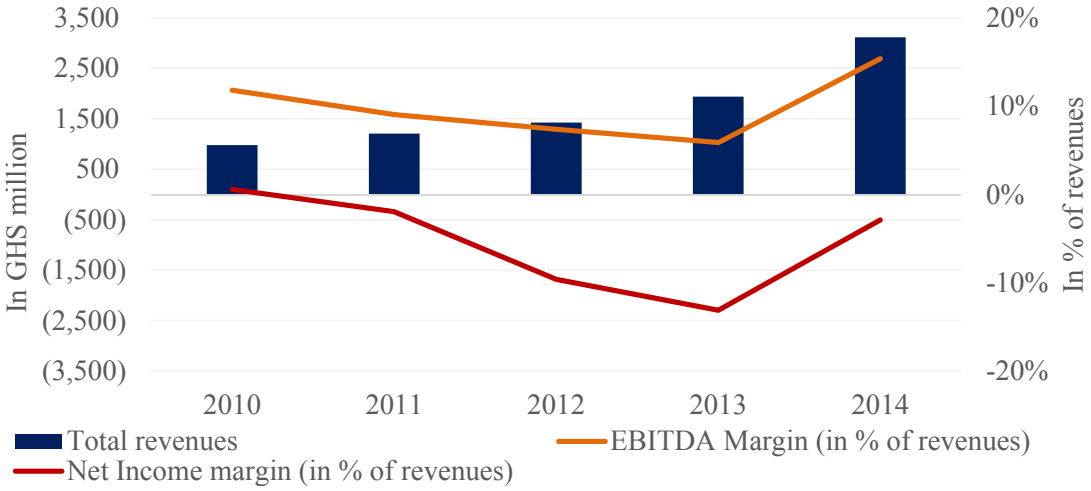
46. The following financial analysis of ECG is based on the audited financial statements from 2010 to 2013 and the unaudited statements for 2014.

Financial Performance

47. **ECG's Financial Performance FY2010-2014.** Since 2010, when large tariff increases resulted in a profit, ECG faced a declining trend in profitability, which started to be reversed in 2014. Despite increasing revenues, ECG losses reached 13 percent of revenues in 2013 and were reduced to 3 percent in 2014 because of a large tariff increase in late 2013. The increasing ECG losses between 2011 and 2013 were caused by increasing power purchase costs and foreign exchange charges[59] outpacing the increase in revenue. A large tariff increase in October 2013 helped to reverse this trend, but overall, ECG's losses deepened in 2013 and it was only able to maintain its financial position through a large increase in its payables to VRA and IPPs.

[59] Related to increase in value of ECG liabilities denominated in foreign currencies.

Chart 3: ECG Revenues, Operating and Net Margins



48. **Revenues.** From 2010 to 2014, revenues more than tripled to GHS2.8 billion (US$690 million); this increase can be broken down between a 45 percent increase in volumes billed and a 112 percent tariff increase. However, over the same period the cumulative inflation was close to 55 percent and the GHS lost over 50 percent of its value against the US$. Increasing receivables from public sector consumers have caused a chain reaction impacting ECG's financial performance, which in turn had a negative influence on the sustainability of the entire energy sector value chain. As public finances were squeezed, receivables from public sector consumers to ECG increased to GHS820 million (US$256 million) at the end of 2014.

49. **Power Purchases.** ECG's operating costs are dominated by the cost of purchased power, mainly from VRA. Over the 2010-2014 period, volumes billed increased from 4.6 TWh to 6.6 TWh, a 45 percent increase, while volumes purchased increased from 6.2 TWh to 9.2 TWh (48 percent). This indicates that that technical and commercial losses increased slightly over the period (from 27 to 28 percent). Technical and commercial losses, coupled with the large depreciation of the GHS against the US$ caused power purchase costs to increase from GHS591 million in 2010 to GHS1,826 million in 2014.

50. **Transmission, O&M Costs, and Overheads.** Transmission and operation and maintenance costs are relatively minor compared to power purchase costs. Transmission cost increased by 176 percent between 2010 and 2014 while O&M costs increased by 214 percent. Staff costs increased at a similar pace to other operating costs, rising by 227 percent over the period. Staff costs are stable at 8-10 percent of ECG's total revenues.

Table 22: ECG Income Statement (2010-2014)

In GHS million otherwise stated	2010	2011	2012	2013	2014
Total revenues	**975**	**1,207**	**1,422**	**1,939**	**3,114**
Change YoY			*+17.9%*	*+36.3%*	*+60.6%*
Power purchases	(591)	(693)	(817)	(1,189)	(1,826)
Transmission Costs	(119)	(171)	(198)	(218)	(329)
Distribution, operation and maintenance	(67)	(100)	(126)	(184)	(210)
Transport costs	(11)	(16)	(21)	(31)	(32)
Overhead costs (mostly staff costs)	(73)	(118)	(156)	(203)	(239)
EBITDA	**115**	**109**	**105**	**114**	**478**
EBITDA Margin (in % of revenues)	***11.8%***	***9.1%***	***7.4%***	***5.9%***	***15.4%***
Depreciation & Amortization	(76)	(150)	(199)	(237)	(285)
EBIT	**39**	**(40)**	**(94)**	**(123)**	**193**
Operating Margin	***4.0%***	***-3.4%***	***-6.6%***	***-6.4%***	***6.2%***
Net interests	1	(2)	3	(12)	(66)
Foreign exchange difference	11	(15)	(17)	(78)	(215)
Tax credit/(expense)	(46)	34	(28)	(40)	(2)
Net Income	**6**	**(24)**	**(136)**	**(254)**	**(90)**
Net Income margin (in % of revenues)	*0.6%*	*-2.0%*	*-9.6%*	*-13.1%*	*-2.9%*

51. **Payables and Receivables.** Despite posting large operating losses since 2011, ECG has been able to generate positive cash flows from its operations through the increase in payables. A significant portion of ECG's investments are funded by short-term commercial debt and suppliers' credits, repayment of which is given priority, to the detriment of ECG's power suppliers (VRA, IPPs, and GRIDCo). ECG's short-term liabilities to power producers increased to GHS3.4 billion (US$1.1 billion) at the end of 2014. As ECG failed to pay VRA for power deliveries, large cross-arrears among energy sector companies have been built up. From 2010 to 2014, payables to power suppliers increased from GHS265 million (164 days of power purchases) in 2010 to GHS1,835 million (367 days of power purchases) in 2014. This large increase in payables enabled ECG to offset decreasing profit margins and the deterioration in revenue collection. At the same time, the level of sales receivables has increased from GHS328 million (130 days of revenues) in 2010 to GHS1,401 million (180 days of revenues) in 2014. This indicates a deterioration in collection rates.

52. **Financial Health.** To bridge the gap between capital expenditures and cash flow from operations, ECG borrowed GHS560 million from 2010 to 2014. This large increase in current liabilities has caused ECG's current ratio (Current Liabilities/Current Assets) to decrease from 1.16 times in 2010 to 0.71 times in 2014. This situation is not sustainable as ECG will have to settle its arrears at some point. This will only be possible once the arrears in electricity bill payments by public sector agencies are settled by the Ministry of Finance and some short-term debt is refinanced on better terms.

Table 23: ECG Cash Flow Statement (2010 - 2014)

In GHS million otherwise stated	2010	2011	2012	2013	2014
Cash Flow from Operations before Working Capital	122	109	148	87	134
Change in Working Capital	(38)	152	70	521	218
Cash Flow from Operations	**84**	**261**	**217**	**608**	**352**
Cash Flow from Investing Activities	**(218)**	**(434)**	**(341)**	**(639)**	**(251)**
Change in debt	130	88	73	45	28
Net interests	-	-	-	-	-
Other	19	92	26	59	-
Cash Flow from Financing Activities	**150**	**179**	**100**	**104**	**28**
Net Cash Flow	**17**	**7**	**(24)**	**72**	**129**

Table 24: ECG Balance Sheet (2010 - 2014)

In GHS million otherwise stated	2010	2011	2012	2013	2014
Cash & ST investments	96	102	79	151	313
Sales receivables	328	387	529	927	1,401
Other receivables	246	125	58	137	562
Other current assets	70	75	87	86	118
Total current assets	**740**	**689**	**752**	**1,301**	**2,395**
Total non-current assets	**1,811**	**3,591**	**4,294**	**5,205**	**6,542**
Total assets	**2,551**	**4,280**	**5,046**	**6,506**	**8,937**
Overdraft	-	12	-	-	-
Short term debt	32	-	68	123	198
Power supply creditors	265	322	493	1,281	1,835
Other creditors	326	345	336	546	1,187
Other short term liabilities	14	20	49	69	177
Total current liabilities	**637**	**699**	**946**	**2,019**	**3,397**
Long term debt	278	175	218	244	257
Defered credit	233	242	324	337	-
Defered tax	7	77	15	37	-
Total non-current liabilities	**518**	**494**	**557**	**618**	**257**
Total equity	**1,165**	**2,263**	**2,657**	**2,788**	**3,738**
Total Liabilities	**2,321**	**3,457**	**4,160**	**5,426**	**7,392**

Table 25: ECG Key Indicators (2010 - 2014)

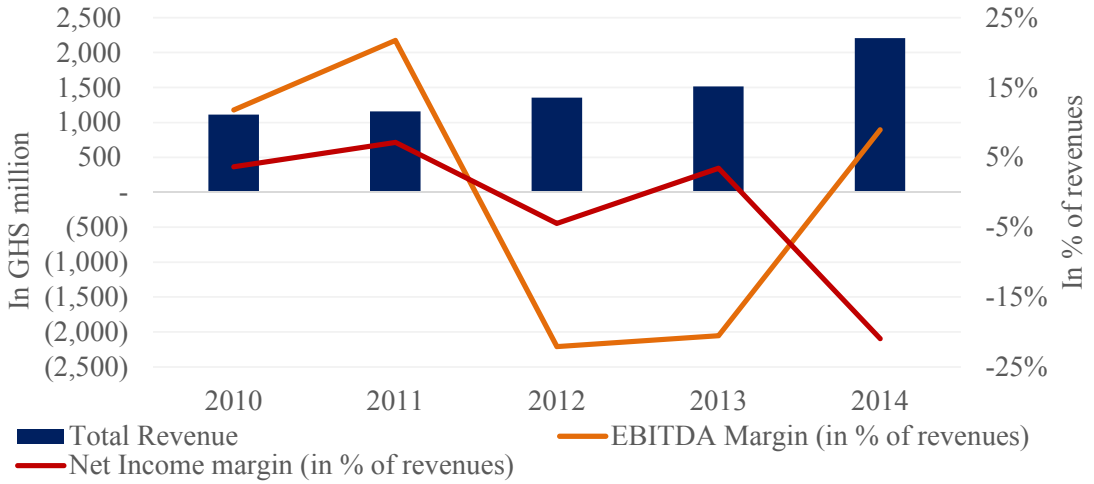
	2010	2011	2012	2013	2014
Average tariff in USD	14.1₵/kWh	14.4₵/kWh	14.4₵/kWh	13.7₵/kWh	15.4₵/kWh
Change	*+45%*	*+2%*	*-0%*	*-5%*	*+12%*
Current ratio	1.16x	0.99x	0.79x	0.64x	0.71x
Change	-0.57x	-0.18x	-0.19x	-0.15x	0.06x
Sales receivables in days of sales of electricity	130 days	123 days	143 days	186 days	180 days
Change	*+11 days*	*-6 days*	*+20 days*	*+43 days*	*-6 days*
Power supply creditors in days of power purchases	164 days	170 days	221 days	393 days	367 days
Change	*-15 days*	*+6 days*	*+51 days*	*+173 days*	*-27 days*

VRA Financial Performance

53. The financial analysis of VRA has been prepared using VRA audited financial statements from 2010 to 2013 and the unaudited 2014 financial statements.

54. **VRA Financial Performance FY2010-2014.** VRA has suffered from volatile generation costs (due to hydrological variations impacting hydropower production and liquid fuel price volatility) as well as payment arrears from its purchasers, especially ECG. VRA is heavily dependent upon sales to the domestic market, with only limited sales denominated in US$ (to the mining sector and exports). For the past three years, the GoG has subsidized VRA's liquid fuel purchases (GHS361 million in 2012, GHS664 million in 2013, and GHS298 million in 2014) to partly compensate it for the lack of cost-recovery tariffs. In addition to these subsidies, the GoG recapitalized VRA in 2010 for GHS232 million. However, the GoG subsidies were insufficient to offset the delays in payments from ECG. As a result, VRA had to borrow substantially to finance its ongoing operations and pay for its fuel purchases. Excluding the foreign exchange fluctuation on foreign debt in 2014, VRA posted net incomes close to equilibrium for the past five years (the loss in 2014 being the result of adverse foreign exchange effects on its US$ denominated debt), taking into account the subsidies it received from the GoG.

Chart 3: VRA Revenues, Operating and Net Margins



55. **Revenues.** Since the price at which VRA is able to sell its electricity to the mining sector is more than twice that of the price paid by ECG, the profitability of VRA is closely linked to its sales to the mining sector. The total volume of electricity sold by VRA from 2010 to 2014 increased by 10 percent to reach 11.2 TWh. This increase was mainly due to increased demand from the mining sector. Over the same period, VRA's revenues increased by 98 percent in GHS. Tariffs increased on average by 80 percent, but since inflation was 71 percent over the same period, tariffs have only increased slightly in real terms.

56. **Operating Expenses.** VRA's operating expenses are dependent on hydrological factors: when water levels are low, VRA has to buy more LCO to run thermal generation. The decrease in the global oil price in the second half of 2014 has significantly reduced thermal generation expenses, but due to severe cash flow constraints, VRA is unable to pay its suppliers for its gas purchases.

57. **Operating Margin.** Low hydrology, low tariff increases, and a sharp rise in power purchases have put VRA's operating margin under pressure such that in 2012 and 2013 it was significantly negative at -22 percent and -20 percent, respectively. Only when revenues from the mining sector increased in 2014 was VRA able to have a positive operating margin.

58. **Financial Expenses.** VRA has historically been lowly indebted, but in 2014 VRA took both short- and long-term debt to offset the lack of payments received from ECG. VRA borrowed the bulk of its debt in US$ and since the GHS has depreciated by more than 30 percent in 2014, this resulted in the value of the US$ denominated debt increasing sharply when converted to GHS. This increase was reflected in VRA's income statement as a GHS 451 million charge in 2014. High cost short-term borrowings are thus aggravating the sector's financial disequilibrium.

Table 26: VRA Income Statement (2010 - 2014)

In GHS million otherwise stated	2010	2011	2012	2013	2014
Total Revenue	**1,114**	**1,159**	**1,357**	**1,516**	**2,207**
Change YoY	-	*+4.0%*	*+17.1%*	*+11.8%*	*+45.5%*
Hydro expenses	(10)	(15)	(19)	(24)	(31)
Thermal expenses	(752)	(618)	(796)	(979)	(973)
Electricity purchases	-	-	(634)	(608)	(569)
Admin expenses	(166)	(202)	(208)	(217)	(436)
Other	(55)	(72)	-	-	-
EBITDA	**131**	**252**	**(300)**	**(311)**	**198**
EBITDA margin	*11.8%*	*21.7%*	*-22.1%*	*-20.5%*	*9.0%*
Depreciation	(78)	(112)	(75)	(105)	(158)
EBIT	**53**	**140**	**(375)**	**(416)**	**40**
Net Interests	(30)	(35)	(49)	(75)	(320)
FX gains/losses	17	(22)	2	(121)	(481)
Corporate tax	(0)	(0)	-	-	-
Net Income before Government Subsidy	**41**	**83**	**(421)**	**(612)**	**(761)**
Government subsidy	-	-	361	664	298
Net Income	**41**	**83**	**(61)**	**52**	**(462)**
Net margin	*3.6%*	*7.1%*	*-4.5%*	*3.4%*	*-20.9%*

Cash Flow Generation and Financial Health

59. **Cash Flow.** VRA's cash flow suffers from late payment by ECG for the power it supplies. At the end of 2014 receivables reached GHS2.8 billion (US$0.9 billion), or 465 days of revenues. The increased receivables has resulted in a negative cash flow from operations since 2011, including the GoG's subsidies. Capital expenditures increased in 2014 as VRA started investing in new generation capacity, but it is not yet commissioned and thus not producing any revenue.

Table 27: VRA Cash Flow Statement (2010 - 2014)

In GHS million otherwise stated	2010	2011	2012	2013	2014
Cash Flow from Operations before Working Capital	146	228	(298)	(433)	(283)
Change in Working Capital	(238)	3	(458)	(362)	(1,157)
(Increase)/Decrease in Stocks	*(61)*	*(84)*	*105*	*(109)*	*(343)*
(Increase)/Decrease in Receivables	*(72)*	*(73)*	*(636)*	*(552)*	*(964)*
Increase/(Decrease) in Payables	*(105)*	*160*	*74*	*300*	*149*
Cash Flow from Operations	**(91)**	**231**	**(755)**	**(795)**	**(1,440)**
Government's subsidy	**232**	**-**	**361**	**664**	**298**
Cash Flow from Investing Activities	**(76)**	**(109)**	**(126)**	**(276)**	**(876)**
Change in debt	(56)	(9)	564	481	2,486
Interesst	(37)	(38)	(50)	(79)	(326)
Cash Flow from Financing Activities	**(93)**	**(46)**	**513**	**402**	**2,159**
Net Cash Flow	**(28)**	**75**	**(7)**	**(5)**	**142**

60. **Liabilities.** VRA's debt was GHS3.9 billion (US$1.1 billion) at the end of 2014. Of this, half is short term debt. Most Ghanaian banks have reached their credit exposure limit to VRA. In addition to this debt, VRA also had payables for GHS716 million at the end of 2014. These short-term liabilities in addition to VRA's GHS108 million in bank overdrafts amount to GHS2.8 billion (US$0.9 billion) in total short-term liabilities that will have to be paid/refinanced in 2015. The payment of receivables owed to VRA would allow VRA to clean its balance sheet of its short-term liabilities. The Ministry of Finance is working on options for refinancing the sector's short-term debt, once the reconciliation of inter-utility dues has been completed and a figure for total net sector indebtedness agreed.

Table 28: VRA Balance Sheet (2010 - 2014)

In GHS million otherwise stated	2010	2011	2012	2013	2014
Cash & Short term investments	129	186	187	175	410
Stocks (fuel & spare parts)	155	239	134	244	587
Receivables	593	661	1,293	1,847	2,811
Total current assets	**877**	**1,087**	**1,615**	**2,266**	**3,807**
Fixed assets	2,253	2,957	2,778	3,342	5,406
Long term investment	234	279	286	291	315
Long term receivables	6	10	15	13	13
Total non-current assets	**2,493**	**3,246**	**3,079**	**3,646**	**5,733**
Total assets	**3,370**	**4,333**	**4,694**	**5,912**	**9,541**
Overdrafts	50	22	38	19	108
Short term debt	125	77	416	764	2,002
Short term payables	198	333	351	614	716
Total current liabilities	**373**	**432**	**805**	**1,398**	**2,825**
Long term debt	220	260	484	616	1,865
Other payables	1	25	82	118	165
Total non-current liabilities	**221**	**285**	**566**	**734**	**2,030**
Total equity	**2,776**	**3,617**	**3,323**	**3,780**	**4,686**
Total liabilities	**3,370**	**4,333**	**4,694**	**5,912**	**9,541**

Table 29: VRA Key Indicators (2010 - 2014)

	2010	2011	2012	2013	2014
Current ratio	2.35x	2.52x	2.01x	1.62x	1.35x
Change	2.35x	0.16x	-0.51x	-0.39x	-0.27x
Sales receivables in days of revenues	194 days	208 days	348 days	445 days	465 days
Change	*+194 days*	*+14 days*	*+140 days*	*+97 days*	*+20 days*

Annex 8: Implementation Support Plan

Ghana: Sankofa Gas Project

Government Oversight of the Project

1. The strategy for implementation support has been developed on the basis of the nature of the project. The proposed strategy ensures that the World Bank's resources and staff are sufficient to supervise the project and support its implementation.

2. As part of the Heads of Agreement for the combined Oil and Gas Project, the parties have established a dedicated gas and power infrastructure committee comprising representatives from Eni Ghana, Vitol, GNPC and GNGC, Ministry of Petroleum and VRA. It is proposed that ECG will join this committee as an observer. The World Bank will be invited to join this committee as an observer from time to time, as issues related to the overall project implementation arise. This committee is chaired by a representative of the Ministry of Petroleum and meets on a monthly basis. It provides management oversight of the overall project and ensures that multiple interfaces and interconnections in respect of the implementation of the gas infrastructure that are needed for the proposed project are implemented in a timely manner.

Implementation Support Plan

3. Implementation support will first focus on ensuring timely completion of contractual milestones agreed between the GoG, GNPC, and the Sponsors under the Heads of Agreement and Gas Sales Agreement. While the procurement process is almost complete, the World Bank will focus on monitoring the construction process and contract management.

4. In addition, the Bank team will follow up on ensuring that by the SGP completion, the required infrastructure to absorb the gas generated by the project will be developed by the GoG and that the GoG reform program to increase revenues in the sector is delivering improved revenue collection by ECG. The broader sector implementation support will be provided in close coordination with other Bank support to the energy sector in Ghana, such as the supervision and implementation support for GEDAP, and ongoing technical assistance and policy dialogue. GoG's capacity to manage the environmental and social risks of oil and gas development has been and is being strengthened by a component of the Oil and Gas Capacity Building Project that has delivered equipment and services to EPA to enhance the agency's monitoring, surveillance, and oil spill response capacity. The Norwegian Government has been supporting training and organizational capacity-building at EPA.

5. To ensure the timely completion of the milestones, a number of actions will be agreed with the GoG (see "Non-Standard Conditions" in the datasheet). Appropriate covenants will be included under the Indemnity Agreement between the GoG and the Bank and the Cooperation Agreement between GNPC and the Bank to such effect.

6. To ensure the timely completion of the milestones, the following actions have been agreed with the GoG:

(i) Create a committee jointly chaired by Ministry of Finance and the Ministry of Energy and Petroleum, including GNPC/GNGC, VRA, ECG, and project participants (ENI and Vitol) to monitor milestone completion. The Bank, as needed, will be invited to the committee as an observer from time to time.

(ii) As necessary, the committee will provide progress reports to the Bank and other relevant parties on Project milestones as per the milestone completion dates provided under the Heads of Agreement and Gas Sales Agreement. The committee shall meet and report to the relevant parties on a quarterly basis.

(iii) GNPC to prepare and provide to the Bank for discussion a plan of action to conclude a tie-in agreement and a transportation agreement between GNPC and WAPCo to ensure that WAGP will be available to receive and transport gas from Aboadze to Tema. The GoG will keep the Bank informed on the progress of any actions under the plan and discuss and agree with the Bank any remedial measures to be taken in the event of delay or failure to implement the plan.

7. GNPC shall take all actions under its responsibility to ensure the timely completion of the Project milestones, per its contractual undertakings. In particular, GNPC shall ensure that:

(iv) Transportation and tie in agreements are entered into by the relevant parties thereto to ship contracted OCTP gas sales volumes to the power plants that have contracted to take Sankofa gas;

(v) Gas sales agreements are entered into with new or existing power plants for the firm purchase of all contracted gas sales volumes;

(vi) The required pipelines to transport the contracted gas sales volumes and power plants with the necessary power generation capacity are in place to absorb the contracted gas sales volumes;

(vii) Natural gas nominations processes, procedures and systems are in place to enable operation of the gas infrastructure supplying gas from multiple suppliers to multiple offtakers, including for OCTP gas volumes.

Key Areas of Supervision

8. An implementation support strategy has been designed to suitably match the requirements and complex issues to be addressed under the project. The focus will be on anticipating and managing risks that could impact the project as noted in this PAD. During the early phase of the project implementation, more frequent supervision is envisaged in order to ensure that implementation of the project is being undertaken on a timely basis. The period between Bank Board approval and financial close will require intensive Bank involvement in the finalization of legal documentation. At least two implementation support missions will be undertaken in fiscal year 2016. Missions will include safeguards, sector expertise, and guarantee related expertise. Implementation support will be coordinated and possibly jointly conducted with other potential project participants such as IFC and MIGA. Maximum utilization will be made of field-based staff.

9. In the event that IFC is a financing party to the project and MIGA provides PRI to Vitol, the Bank will conduct joint technical implementation missions. The Bank will also coordinate supervision with IFC/MIGA as feasible and practical to ensure an efficient WBG approach to project supervision.

10. The Bank team will be composed of a mix of skills and experience for successful project implementation. The table below outlines the expected staff weeks and travel required to ensure the actions and schedule are appropriately resourced.

Time	Focus	Skills Needed	Resource Estimate (Staff Weeks)
First 24 months	Compliance with agreed Milestones. Review construction progress of infrastructure; Implementation of environmental and social safeguard studies;	Guarantees, Task Management, Technical, Safeguards	40 SWs per annum
24 months onwards	Overall project progress and implementation support; Social and environmental safeguard implementation support; M&E implementation support	Senior Energy Specialist, Guarantee Specialist Social Safeguard Specialist and Environmental Specialist M&E Specialist	20 SWs per annum

11. The staff skill mix and focus in terms of implementation support is summarized in the table below.

Skills Mix Required

Skills Needed	Number of Trips	Comments
Senior Energy Specialist (co-TTL)	2 per annum	Field based
Senior Guarantee Specialist (co-TTL)	2 per annum	HQ based
Senior Oil & Gas Specialist	2 per annum	HQ based
Social Safeguard Specialist	1 per annum	HQ based
Environmental Specialist	1 per annum	HQ based
Financial Analyst	1 per annum	HQ based
Infrastructure Finance Specialist (STC)	-	Field based

12. Based on the above Implementation Support plan, the Bank's estimated implementation supports budget from FY16 to FY18 is estimated below:

Fiscal Year	FY16	FY17	FY18
Amount of Resources Required (US$)	400,000	400,000	300,000

Annex 9: Map

Ghana – Sankofa Gas Project