

## Updated Project Information Document (PID)

Report No: 30723

<b>Project Name</b>	AFRICA - 3A-West African Gas Pipeline (IDA S/UP)		
<b>Region</b>	Africa Regional Office		
<b>Sector</b>	Power (80%); Oil and gas (20%)		
<b>Theme</b>	Regional integration (P)		
<b>Project</b>	P082502		
<b>Borrower(s)</b>	GHANA (GUARANTOR)		
<b>Implementing Agency(ies)</b>	WEST AFRICAN GAS PIPELINE COMPANY LTD (WAPCO)(PRIVATE) West African Gas Pipeline Company Limited Address: PO Box OS 458, Osu, Accra, Ghana Contact Person: Dennis J. Fahy, Managing Director Tel: +233 21 780501 Fax: +233 21 780503 Email: djfa@chevrontexaco.com		
	Ministry of Energy Address: PO Box T40, Accra, Ghana Contact Person: P. Kwesi Nduom, Minister Tel: +233 21 667090 Fax: +233 21 668262 Email: nduom@africaonline.com.gh		
<b>Environment Category</b>	A (Full Assessment)		
<b>Date PID Prepared</b>	November 21, 2004		
<b>Auth Appr/Negs Date</b>	September 16, 2004		
<b>Bank Approval Date</b>	November 23, 2004		

### 1. Country and Sector Background

The proposed West African Gas Pipeline (**WAGP**) project - which is designed to substitute abundant and cheap natural gas from Nigeria for expensive alternate fuels used by the power, industrial, mining, and commercial sectors of Ghana, Togo, and Benin – supports the World Bank West Africa Regional Integration Assistance Strategy (the **RIAS**). The RIAS translates the Bank's greater focus on regional integration in Africa, and involves 15 countries, Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, and Togo. home to 240 million people, half of whom live in poverty, with annual per capita income of US\$ 300. The objective of the RIAS is to help the West Africa countries to create an open, unified economic space through the integration of markets for goods as well as financial and other services. Well-defined and phased integration efforts focus on key sectors – where countries would benefit significantly from cross-border and regional trade – notably air, road, and sea transport, energy, and telecommunications.

The WAGP project complements the West Africa Power Market Development Project (**WAPP**), which supports increased electricity trade in West Africa. The proposed WAGP project is part of the action plan of the New Partnership for Africa's Development (**NEPAD**) and is actively supported by the Economic Community of West African States (**ECOWAS**).

**Ghana.** With a population of about 20 million and a Gross National Income per capita of US\$280 (2002), Ghana has made considerable progress on laying the foundations for sustainable growth and poverty reduction. This has resulted in sustained per capita output growth, averaging 1.6 percent per annum, and increased private sector activity and investment. Social indicators also improved over the period. In parallel with the economic reforms, the country completed the political transition, moving to a firmly democratic form of Government. However, overall outcomes have fallen short of expectations, as progress in social and economic development have been periodically interrupted by episodes of weak macroeconomic management mostly associated with the electoral cycle. The growth outlook for the 2004-06 period is encouraging, with signs of robust economic activity that should allow the GPRS target of 5 percent real GDP growth to be achieved, leading to a per capita real GDP growth of about 3.0 percent.

**Ghana's Electric Power Sector.** For the past 10 years, Ghana has been struggling to meet an increasing demand for reliable and affordable electricity. From 1988 to 2002, Ghana's electricity consumption increased at an average rate of over 8% p.a., which has put enormous pressure on the country's state-owned electric utilities. (These figures exclude electricity demand from Volta Aluminum Company (Valco)'s aluminum smelter which remained approximately constant over that period. If electricity demand from Valco is included, the average growth over the 1988-2002 period is about 4% p.a.) Recently, uncertainties have arisen from the closure of the Valco smelter, which was buying a third of Ghana's electricity production. This has caused a need to revisit electricity demand assumptions, which was done in the context of assessing the economic and financial viability of the proposed Project. Until recently, the sole sources of power supply in Ghana were from the hydroelectric plants of Akosombo (900 MW) and Kpong (100 MW) owned by Volta River Authority (VRA) – a 100 percent state-owned integrated power utility – and imports from Côte d'Ivoire. In the early 1990s, it became apparent that future growth in demand would have to be met from non-hydro sources because of the limited remaining hydro potential and the need to lower supply risks through diversification of supply sources. The 330 MW Takoradi (T1) power project, located at Aboadze in western Ghana, was then conceived and prepared. The need for a diversification strategy was demonstrated when power shortages severely disrupted economic performance because of poor hydrological conditions in 1997 and 1998. To avert a power supply crisis, the Government contracted out the second unit at Takoradi (T2) and two other private diesel power plants on an emergency basis. In addition, VRA had to operate its own inefficient 30 MW diesel power plant, as well as import power from Côte d'Ivoire. In parallel, far-reaching reforms in the electricity sector are underway, including the introduction of private management of distribution and thermal generation facilities. In addition, a large investment program, to be financed by the private sector and by the Government and donor development partners, is contemplated over the next five years to upgrade infrastructure, install additional generation capacity, and expand rural access to energy services. The reforms seek to set the stage for these investments with interventions to enhance efficiency in all aspects of the sector and provide a better deal for electricity consumers.

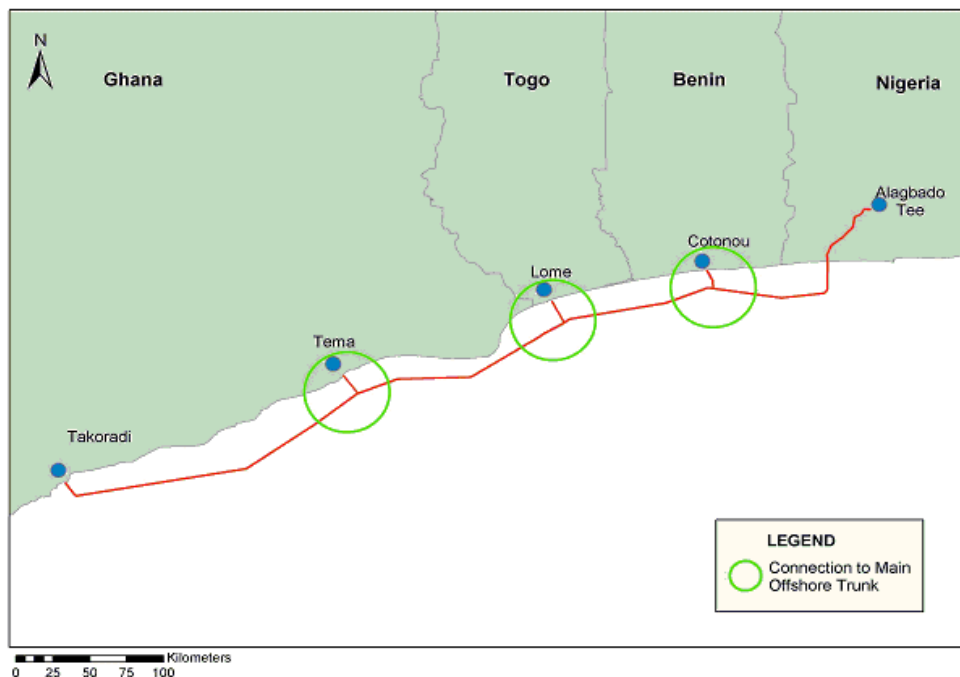
## 2. Objectives

The **developmental objectives** of the proposed Project are to: (a) improve the competitiveness of the energy sectors in Ghana, Benin, and Togo by: (i) promoting the use of cheaper and environmentally cleaner gas from Nigeria in lieu of solid and liquid fuels for power generation and other industrial, commercial, and domestic uses; and (ii) promoting reforms including a modern, institutional legal and regulatory framework that facilitates private sector participation in the energy sector; and (b) foster regional economic and political integration that would support economic growth. If the Project does not go ahead, it is likely that Ghana, Togo, Benin, Nigeria, and the Gulf of Guinea region in general would be deprived of substantial economic and social benefits that are to be expected from a long-term, reliable access to clean energy supply.

### 3. Rationale for Bank's Involvement

World Bank Group participation (IDA and MIGA) will provide financial risk mitigation to allow the proposed Project to proceed, support the implementation of regional and national frameworks and actions required to kick start the development of gas markets in Ghana, Benin, and Togo, and more broadly will provide comfort to all the stakeholders regarding Project preparation and implementation standards. The work being undertaken by the Global Gas Flaring Reduction Public-Private Partnership (**GGFR**) to facilitate the development of gas markets in Benin, Togo, and Ghana is an important adjunct to the Project.

### 4. Description



The proposed West African Gas Pipeline Project includes: (a) a new pipeline system (678 km long) that will transport natural gas from Nigeria to Ghana, Togo, and Benin; (b) spurs to provide gas to power generating units in Ghana, Benin, and Togo; (c) conversion of existing power generating units to gas; and (d) as needed additional compression investments (see map).

To meet the expected market potential of about 450 MMscf/day, the new pipeline will be 20 inches in diameter. The main trunk of the offshore pipeline will be placed on the seabed in 26 to 70 meters water depths at an approximate distance of 15 to 20 kilometers from the shore. At three locations, connections will be made in from the main offshore trunk into 8 inches or more lateral spurs, which will transport gas to delivery points at or near Cotonou (Benin), Lomé (Togo), and Tema (Ghana). The final terminal of the proposed pipeline system is at the Takoradi Power Stations (Ghana) with an option to extend the pipeline to other West African states, if feasible in the future.

The Project includes a number of contracts for the design, engineering, construction, ownership, operation and maintenance, oversight, and political risk mitigation of the new pipeline and (a) contracts for the purchases of natural gas from the Producers, for the transportation of natural gas by the Transporters, for the sales of foundation amounts of natural gas to VRA and Communauté Electrique du Bénin (**CEB**); and

(b) environmental assessments and resettlement action plans.

Under the Project, N-Gas will contract for the purchases of natural gas at interface points on the ELPS from the upstream Producers. WAPCo will deliver that gas from the interface point with the ELPS pipeline located in western Nigeria and transport it on to Benin, Togo, and Ghana. The new pipeline project does not include the operation of the ELPS nor the extraction of hydrocarbons from the ground.

In parallel with the Project, GGFR is funding a project to identify barriers to development of the natural gas markets in Benin, Togo, and Ghana and recommend strategies for implementation, including the possible use of carbon credits.

## 5. Financing

### Source (Total ( US\$m))

BORROWER (\$465.00)

MIGA GUARANTEE (\$75.00)

IDA GUARANTEE (\$50.00)

**Total Project Cost: \$590.00**

## 6. Implementation

The WAGP is a cooperative effort of the four **States** (Benin, Ghana, Nigeria, and Togo), the Producers, the Sponsors, the Transporters, the Foundation Customers, and the providers of political risk guarantees.

The implementing agencies for the four States are as follows:

Republic of Benin:	Ministère des Mines, de l'Énergie et de l'Hydraulique Cotonou, Benin
Republic of Ghana:	Ministry of Energy Accra, Ghana
Federal Republic of Nigeria:	Ministry of Petroleum Resources Abuja, Nigeria
Togolese Republic:	Ministère de l'Équipement, des Mines, de l'Énergie et des Postes et Télécommunications Lomé, Togo

The four States have established by treaty the WAGP Authority to, *inter alia*: (a) monitor compliance by WAPCo of its obligations under the IPA; (b) approve pipeline design and construction plans; (c) negotiate and agree with WAPCo the licenses and access code; (d) negotiate and agree with a third party operator of the pipeline system; (e) negotiate and agree on any expansion plans; (f) act on behalf of the four States' respective tax authorities; (g) negotiate and agree with WAPCo to changes in tariff methodology; and use its best efforts to ensure that each State complies with the IPA and applicable enabling legislation. The WAGP Authority does not set tariffs, as these are regulated by contract.

Commercially, two new entities and one existing entity will implement the WAGP:

- **N-Gas Limited (N-Gas)**, a new entity to be owned (directly or indirectly by affiliates) by Nigerian National Petroleum Corporation (**NNPC**), Chevron Nigeria Limited (**CNL**), and Shell Petroleum Development Company of Nigeria (**SPDC**) will contract for the purchase (by N-Gas from NNPC/CNL and NNPC/SPDC/Elf/Agip), transportation (by NGC and WAPCo), and sales (to VRA and CEB) of natural gas;
- **Nigerian Gas Company (NGC)**, a wholly owned subsidiary of NNPC, under contract from N-Gas,

will transport natural gas from its sources in Nigeria to a terminal near Lagos over the existing Escravos-Lagos Pipeline System (ELPS); and

- **West African Gas Pipeline Company Limited (WAPCo)**, a newly formed entity owned (directly or indirectly by affiliates) by CNL, NNPC, SPDC, VRA (as shareholder for the Government of Ghana), SoBeGaz, and SoToGaz (SoBeGaz and SoToGaz are currently not shareholders of WAPCo. However, each of them separately have the option to buy a 2% share in WAPCo at FID) – referred to as the **Sponsors** of the Project – will build, own, operate, and transport (under contract with N-Gas) natural gas through the new pipeline system from the terminal near Lagos to Takoradi in Ghana, with spurs to Cotonou, Lomé, and Tema.

The contractual underpinnings of the Project are based on the following simplified value chain: (a) the **Producers** (*i.e.*, NNPC, CNL, SPDC, Elf Petroleum Nigeria Limited, and Nigerian Agip Oil Company Limited) will sell natural gas to N-Gas under long-term Gas Purchase Agreements; (b) N-Gas will engage the **Transporters** (*i.e.*, NGC and WAPCo) to move the gas under long-term Gas Transportation Agreements; and (c) N-Gas will sell the gas to the **Foundation Customers** (*i.e.*, VRA and CEB) under long-term Gas Sales Agreements.

## 7. Sustainability

The sustainability of the proposed Project will be underpinned through a combination of the following factors: (i) economic and financial benefits to the four states and to the executing agencies; (ii) private sector operation backed by financial incentives to the Sponsors; (iii) regional cooperation, facilitated by ECOWAS, for development of the broader West Africa region; and (iv) support from NEPAD as the project is part of NEPAD's short-term action plan.

## 8. Lessons learned from past operations in the country/sector

The Project team is drawing lessons from the experience in developing power transmission facilities in the countries of the region (Nigeria, Senegal/Mauritania/Mali) and building of petroleum and gas pipeline facilities (Chad/Cameroon, Mozambique, Bolivia, Argentina, BTC).

## 9. Environment Aspects (including any public consultation)

**Issues** : The Sponsors have prepared a regional Environmental Assessment (EA) and individual country EAs and Environmental Management Plans (EMPs) for Benin, Ghana, Nigeria, and Togo. The conclusion of the assessments was that no potentially high severity impacts would remain after the planned mitigation measures in the EMPs are applied in accordance with current commitments and plans. All of the residual impacts become either moderate or low severity.

**Secondary and Cumulative Impacts.** Environmental and socioeconomic secondary impacts could occur “upstream” or “downstream” of the Project. For the initial gas supply to WAGP, wells and infrastructure are already in place, so there will be no significant drilling or gathering system installation upstream, in the Niger Delta, for the first five to ten years of operation. To address potential impacts of future increases in gas production that may occur, a covenant in the Access Code will require any supplier shipping gas through WAGP to be in compliance with applicable national environmental regulations. Downstream of the Project, the most immediate sources of potential impacts are modification of the electric generating facilities of the Foundation Customers. Covenants in the legal documents condition delivery of gas by WAPCo to the VRA facilities in Ghana on certification that the necessary environmental audits and EAs have been completed and implemented. In Benin and Togo, CEB has been delivered to the Bank a written commitment to prepare and EAs, RAPS, and audits satisfactory to the Bank for facilities in Cotonou, Maria Gleta, and Lomé.

Beyond the issues of upstream and downstream development, few indirect or secondary impacts were found to be significant, either in the country EAs or the regional EA, the latter having been designed to examine impacts from a broader perspective. The regional EA did not reveal any significant cumulative impacts – that is, impacts of WAGP construction or operation in conjunction with other planned infrastructure projects or development activities. Adverse impacts can of course result from development that may be induced by the increased supply of electricity and gas if it is not planned and managed in accordance with national environmental regulations.

Land Acquisition and Involuntary Resettlement. Land acquisition is summarized below:

Country	Area (ha)	Households Affected
<b>Benin</b>	39	337
<b>Ghana</b>	13	42
<b>Nigeria</b>	144	2,485
<b>Togo</b>	10	29
<b>Total</b>	206	2,893

For permanent loss of assets and displacement, adequate compensation measures have been identified within a RAP for each country. Each RAP has been supported by a Participatory Social and Impact Assessment (**PSIA**) as well as wide public consultation.

EMPs. Management of environmental and social impacts will be by means of an EMP included in the EA for each country but published as a free-standing document as well. The regional EA contains a consolidated EMP. The EMPs include monitoring to check whether the WAPCo operational controls and mitigation measures conform to planned arrangements, including regulatory requirements, whether they are being properly implemented, and whether they are effective. Third party monitors from within the Sponsors' organizations will assist in oversight of EMP implementation, and WAPCo will contract with environmental firms to conduct independent audits at intervals. WAPCo will develop final arrangements for monitoring and auditing in consultation with the Bank and national regulatory agencies. The audit reports will be made available to regulatory agencies and the Bank, MIGA, and Zurich/OPIC. Virtually all elements of the EMPs will be implemented by WAPCo, which is committed to provide the essential personnel and specialized skills. Budgets have been calculated for EMP implementation during construction and operation. Government agencies will be welcome to participate in various monitoring and auditing processes.

Consultation and Disclosure. The extensive stakeholder consultations were conducted by WAPCo during preparation of the EAs and RAPs. The first consultations actually preceded EA preparation, having begun at the conceptual stage of front end engineering design as early as 2000. Consultations on the EAs were initiated by WAPCo in September 2002 and have continued up to the public hearings held by the environmental agencies of Benin, Ghana, Nigeria, and Togo in March and April 2004 as part of the national review and clearance procedures. Drafts of the EAs were publicly disclosed at a total of 41 locations across the four countries prior to the hearings. The country EAs and RAPs and the Regional EA were subsequently reviewed by the World Bank, revised by WAPCo's consultants, and cleared in final draft form for disclosure in accordance with Bank policies. The documents were posted on the WAGP website and re-disclosed at the same 41 locations, plus the Public Information Centers in the Bank's country offices and the InfoShop in Washington. Disclosure was completed on July 7, 2004. Final versions of the EAs incorporating changes requested by the national governments and additional changes requested by the Bank were prepared and delivered to the Bank during October, along with free-standing EMPs. They will replace the previously-disclosed versions at the same locations. No additional work was

required on the RAPs, hence re-disclosure is not necessary.

MIGA has also carried out its review of the Project in collaboration with Bank environmental and social specialists assigned to work on the WAGP Project. Site visits by MIGA environmental and social specialists were carried out as part of MIGA's environmental and social due diligence during Project underwriting to verify that the Project will comply with MIGA's Safeguard Policies and environmental guidelines. The WAGP Project is in conformity with MIGA Safeguard Policies and associated procedures for public involvement and disclosure.

**10. List of factual technical documents:**

**11. Contact Point:**

**Task Team Leader**

Michel E. Layec

**The World Bank**

**1818 H Street, NW**

**Washington D.C. 20433**

**Telephone:** (202) 473-3231

**Fax:** (202) 473-5123

**12. For information on other project related documents contact:**

The InfoShop

The World Bank

1818 H Street, NW

Washington, D.C. 20433

Telephone: (202) 458-5454

Fax: (202) 522-1500

Web: [http:// www.worldbank.org/infoshop](http://www.worldbank.org/infoshop)

**Note: This is information on an evolving project. Certain components may not be necessarily included in the final project.**