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Volume III – Lessons Learned

LP Gas Sector Improvement Studies

Cameroon, Ghana, Nigeria

March 31, 2007



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First printing March 2007

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Abbreviations and Acronyms

ESMAP	Energy Sector Management Assistance Programme
GLPGA	Ghana LP Gas Association
GSB	Ghana Standards Board
LPG	Liquefied Petroleum Gas
MCC	Millennium Challenge Corporation
MoEN	Ministry of Energy
NPA	National Petroleum Authority
SCDP	Société Camerounaise des Dépôts Pétroliers, the principal bulk storage company in Cameroon
TOR	Tema Oil Refinery
WLPGA	World Liquefied Petroleum Gas Association
yr	year

Units of Measure

Kg	Kilogram
MT	Metric Ton
PSI	Pounds per Square Inch

Currency Equivalents

Cedi, ¢	Monetary Unit of Ghana; In January 2007, US\$1.00 was the equivalent of 9,400¢
FCFA	Franc de la Communauté Financière Africaine, the Monetary Unit of Cameroon. In December 2006, US\$1.00 was the equivalent of 501.75 FCFA.

Executive Summary

1. This report is a sequel to the Nigerian LP Gas Sector Improvement Study of 2004, which was produced by the World Bank Oil and Gas Policy Division with funding under the Energy Sector Management Assistance Programme (ESMAP). The objective of the Nigerian study was to investigate and identify reasons for the failure of the LPG market in Nigeria to live up to its potential, to develop a strategy for reviving Nigeria's domestic LPG market, and to expand LPG access to all, including to the poor, in Nigeria.

2. In light of the successful outcome of the Nigerian LPG Sector Improvement Study, it has been suggested that lessons learned should be tentatively applied to other countries likely to benefit from similar investigative and analytical work. The main objective in the present study is to identify two or more countries, investigate the situation there, and if and where impediments similar to those in Nigeria are found, to prepare a business proposal for mitigating pertinent problems that currently inhibit the sound development of LPG markets in those countries.

3. The two countries selected for this study are Cameroon and Ghana. A detailed description and analysis of Cameroon has been incorporated as Volume I, "Cameroon LP Gas Sector Study" in this report. A similar analysis for Ghana, VOL II, "Ghana LP Gas Sector Study" is also part of this report.

4. This report, VOL III, pulls together the LPG work that was done in Nigeria, Cameroon, and Ghana, to determine whether the LPG markets in developing countries share certain characteristics and, if so, whether the lessons learned in Nigeria can be applied, in part or in whole, in Cameroon and Ghana as well.

5. Following a brief introductory Chapter 1, the second Chapter in VOL III is a comparison of the LPG markets in Nigeria, Cameroon, and Ghana. In all three countries the LPG industry is characterized by a mix of public and private sector participants. The type of participation and the institutional oversight vary from country to country, but certain weaknesses of LPG markets in cash-poor environments such as they are found in developing countries are repeated again and again. Chief among those weaknesses are incomplete industrial infrastructures, poor legal underpinnings and regulatory oversight, inadequate and sometimes unreliable LPG supply, inadequate distribution and transportation facilities, non-working LPG cylinder policies, neglect of safety issues and others, including lack of access to LPG by the poor.

6. This is shown in some detail in a tabular matrix that lists and compares certain LPG market elements side by side for the three countries here under discussion. The elements that were used include the LPG industry structure, the legal and regulatory structure, the LP Gas supply sector, the LPG distribution infrastructure, and the transportation sector. Also included are LPG cylinders issues, the use of LPG for household cooking and lighting, household appliances, safety, automotive use, investment funding, and access by the poor. A final comparison addresses country-specific issues. A few remarks highlighting similarities and differences in the three subject countries conclude Chapter 2. For more detailed country-specific data on the Cameroon and Ghana LPG markets, the reader is referred to Volumes I and II of this

report.

7. Chapter 3 deals with critical issues, strategies and action plans for the Cameroonian LPG market. The coverage and format of this Chapter, and of the Ghana Chapter that follows, build heavily on the Nigerian ESMAP Study.

8. Chapter 3 opens with a brief discussion of the current status of the Cameroonian LPG market, which has exhibited substantial growth over the last two decades, but at a cost. The tripling of LPG consumption was regionally uneven, leaving out the rural areas which continue to be deprived of LPG accessibility. In addition, the market is generally in a dilapidated condition and in need of rehabilitation and expansion. A lack of attention to safety issues is, perhaps, the weakest link in the market.

9. There is one event that, more than any other, will shape the Cameroonian LPG availability. That is the Equatorial Guinean gas export project, scheduled for completion in 2010, which will inject some 300,000 metric tons of LPG per year into the domestic market. This presents both an opportunity and a challenge. The opportunity is represented by the nearly eight-fold increase in LPG supply, relative to current (2006) demand. The challenge is to expand and improve the market with massive capital investments, so it can absorb the newly available LPG, or most of it, with any remaining volumes slated for export. It would be easy to simply export all of the new LPG, as that requires no infrastructure build-up, but the effect would be the Dutch disease impact which would have all the resources leaving the country with no visible domestic benefits.

10. Just about any sub-sector of the Cameroonian LPG market needs to be improved. To begin with, an improved policy framework that promotes the expansion of the LPG infrastructure and prescribes pragmatic strategies to stimulate private sector investment is absolutely necessary, as is a review and adjustment of the industry structure and the strengthening through a substantial escalation in funding of the country's regulatory LPG regime, with special attention to the household sector. To boost household LPG consumption, the entire LPG supply chain, from storage facilities and transportation to the distribution network needs to be rehabilitated, upgraded, and expanded. That includes a complete revamping of the LPG cylinder management system. An aging household survey needs to be updated, along the Nigerian ESMAP lines. Household appliances, safety perceptions, the potential for automotive use, and other issues need to be explored through such a survey. Last, but not least, the need for and amount of investment funding to facilitate LPG access by the poor need to be determined and ways to find the required funds need to be explored, through wholly private capital injections, through private partnership projects, through donor actions or, more likely, through a combination of all three.

11. Tables 3-1 and 3-2 spell out a proposed action plan for consideration by participants in a round-table discussion and for the development of a roadmap for LPG market enhancements in Cameroon.

12. Chapter 4 deals with critical issues, strategies and action plans for the Ghanaian LPG market. It, too, opens with a brief discussion of the current status of the LPG market. Many of the shortcomings found in Cameroon are replicated in Ghana, including regional accessibility problems and a generally dilapidated market in need of rehabilitation and expansion. Unlike in Cameroon, the Ghanaian consumer seems to more readily accept LPG as a relatively safe fuel.

13. There is no windfall event in Ghana, like the Equatorial Guinean gas export project in Cameroon that will provide a substantial boost to LPG supplies in the foreseeable future. That leaves the traditional market rehabilitation and expansion challenge, and the need to revise policies and, even more so, much needed regulations, especially safety regulations. Also needed is an effective industry-wide LPG Association, currently absent, to coordinate the efforts of the various retailers and distributors and to provide a channel of communication with all stakeholders, particularly with the National Petroleum Authority (NPA), which is charged with the implementation of pricing and regulatory issues. The operational weakness of both, the NPA and the Ghana Standards Board (GSB), are at the bottom of the regulatory disarray that the LPG market finds itself in, and both need funding and personnel training.

14. All in all, the Ghanaian LPG supply has been erratic, in part because of operational inefficiencies at the Tema Oil Refinery (TOR) and because of inadequate storage within and outside the refinery. Transportation is limited to road service, which is handicapped by the deteriorated road conditions in much of the country. One notable impediment is the fact that there is no cylinder management system. The end-user is the owner of LPG cylinders which, in addition to a financial burden, is a major contributor to safety problems. These problems are accentuated by a lack of nationally accepted operational and safety standards in the LPG industry. Significant investments will be required in the LPG supply-distribution infrastructure to facilitate end-user access to the product, and barriers limiting access to LPG by the poor will need to be overcome, including financial barriers.

15. While Cameroon has the Equatorial Guinean windfall event, Ghana has its own unique advantage. The country is highly regarded for its political and commercial integrity. It is ranked as the fifth top performer among African Nations (along with Egypt and Senegal) on the 2006 Corruption Perceptions Index, and it has been declared eligible for program assistance by the Millennium Challenge Corporation (MCC), based on that organization's sixteen-variable integrity rating system.

16. The MCC has signed a \$547 million compact with Ghana to fund a poverty-reduction project. This will be achieved through a private-sector led agribusiness development plan that targets the very population that the ESMAP LPG project is focusing on, the poverty-stricken mostly rural population. MCC interventions aim to increase farmer incomes and export earnings by increasing the production and productivity of high-value cash and food staple crops in some of Ghana's poorest regions and to enhance Ghana's agricultural products in regional and international markets. The two largest items in the assistance budget are agriculture development (\$241 million) and transport development (\$143 million). The first of these will stimulate demand for LPG by providing purchasing power to rural regions and the second item will improve the supply infrastructure by enhancing Ghana's LPG delivery system.

17. Tables 4-1 and 4-2 spell out a proposed action plan for consideration by participants in a round-table discussion and for the development of a roadmap for LPG market enhancements in Ghana.

1

Introduction

Study Background

1.1 In 2001, the World Bank Oil and Gas Division and the World LP Gas Association (WLPGA) undertook a Regional LP Gas Study that revealed a very low per-capita usage of LP Gas in Nigeria compared with neighboring countries in West Africa. Preliminary investigations of the Nigerian LP Gas sector indicated an inadequate supply to the domestic market, lack of access to the existing infrastructure, and shortcomings in the institutional and regulatory framework. It asserted the need for a follow-on study that would take an in-depth look at the structural reasons for this market failure and that would propose realistic ways and means to bring Nigeria's LP Gas consumption in line with its resource-based capabilities, and closer to the Region's average.

1.2 The proposed follow-on study was initiated by the World Bank in 2002, under the auspices of its Energy Sector Management Assistance Program. A fact-finding mission to Nigeria developed a study work plan in January of 2003. By December of that year, a preliminary report was submitted to a stakeholders workshop in Abuja, where an in-depth discussion led to the adoption of the report by all interested parties, including the Government of Nigeria. The final report, titled "Nigerian LP Gas Sector Improvement Study", was published in March of 2004. The report was among the most detailed analyses to date of a country's LPG market. As part of its analysis of critical LPG issues in Nigeria, the report included the findings of a household survey, and it contained a set of strategies and related action plans, as well as a roadmap to bring the sector back to sustainable development. The Government of Nigeria fully endorsed the plan and set up a steering committee to pilot, promote, and monitor its implementation. Today, the Government is at an advanced stage of privatizing its LPG market.

1.3 In light of the successful outcome of the Nigerian LPG Sector Improvement Study, it has been suggested that lessons learned should be tentatively applied to other countries likely to benefit from similar investigative and analytical work. Four countries have been selected as potential candidates for such studies. Two of these countries were dropped early on. In Papua New Guinea, the selected in-country consultant opted for other energy consulting opportunities and informed the World Bank too late to search for and appoint another consultant in the country, and in Ecuador the in-country consultant dropped out for unexpected medical reasons. That left two countries, Cameroon and Ghana, as viable LPG study candidates. The studies printed as Volume I and Volume II in this publication reflect the work of the respective country consultants, Mr. Joël Nkoto-Angoula in Cameroon and Mr. Ishmaël Edjekumhene in Ghana.

Both countries clearly have failing LPG markets, generally for the same or similar reasons as those encountered in Nigeria. This report analyzes what the LPG market failures in Cameroon and Ghana have in common and where and how they coincide with those in Nigeria. By extension, it also demonstrates where similar LPG problems are likely to arise in other developing countries and points to ways in which they can be identified and resolved.

Study Objective

1.4 The objectives of this study are to:

- Analyze the LPG markets in Cameroon and Ghana, in light of insights gained from the Nigerian experience,
- Investigate and identify reasons for the LP Gas market failures in Cameroon and Ghana,
- Develop a strategy for developing and expanding LP Gas markets in the two subject countries, and
- Expand LP Gas access to all, including to the poor.

1.5 The target is to achieve per capita LP Gas consumption equivalent to or greater than the average for comparable West African countries. According to data in the World Bank/WLPGA Study for West Africa this is approximately 3.7 kg per capita per year, compared to 1.9 in Cameroon and 2.1 in Ghana.

2

LPG Market Comparison

Introduction

- 2.1 In all three countries, Nigeria, Cameroon, and Ghana, the LPG industry is characterized by a mix of public and private sector participants. The type of participation and the institutional oversight vary from country to country, but certain weaknesses of LPG markets in cash-poor environments such as they are found in developing countries are repeated again and again. Chief among those weaknesses are incomplete industrial infrastructures, poor legal underpinnings and regulatory oversight, inadequate and sometimes unreliable LPG supply, inadequate distribution and transportation facilities, non-working LPG cylinder policies, neglect of safety issues and others, including lack of access to LPG by the poor.
- 2.2 The fuel of default in a poverty-stricken cash-starved non-market subsistence environment is wood. In all three countries here under consideration, this is the dominant cooking fuel. In Ghana, for example, wood represents 56% of the country's source of cooking fuel, not counting charcoal, which represents another 32%. In Cameroon, wood represents 61% of the country's total energy usage, followed by oil products at 21%. The advantage of wood is that it is "free". In a non-market society, and looked at narrowly, the cost of wood reflects the opportunity cost of the person gathering it, and that may well be zero if that person lives in a state of actual or de facto unemployment and has idle time to devote to fuel gathering. In a larger sense, of course, the use of wood has serious consequences that transcend the individual using it, such as desertification, health problems and others that impose real current and future costs on society at large and on the Government that will naturally attempt to alleviate these problems.
- 2.3 The many disadvantages of using wood for cooking are well documented. They include time lost in the daily search for fuel, health hazards, deforestation and desertification in the northern part of all three subject countries where wood is systematically being cut down as a matter of survival. Used as cooking fuel, wood is only 42% as efficient as LPG, and it emits two-and-a-half times the amount of greenhouse gas, the principal contributor to global warming. Illnesses caused by the inhalation of wood fires include acute lower respiratory infection, chronic obstructive pulmonary disease, lung cancer, pulmonary tuberculosis, asthma and cataract. Indoor air pollution caused mainly by smoke generated by incomplete

combustion of wood fuels in poorly ventilated kitchens is estimated to kill annually over 1.6 million people, predominantly women and children, throughout the world.

2.4 Thus it is not surprising that efforts are underway worldwide to substitute a cleaner-burning fuel for wood. LPG has all the attributes to qualify as the substitute fuel of choice. To quote the World LP Gas Association:

- LP gas is portable. It can be transported, stored, and used virtually anywhere in the world. It does not require a fixed network and will not deteriorate over time.
- It is clean. LP Gas is very clean burning and has lower greenhouse gas emissions than any other fossil fuel when measured on a total fuel cycle. Originating mainly from natural gas production, it is also non-toxic and will not contaminate soil or aquifers in the event of a leak.
- It is accessible. LP Gas can be accessible to everyone everywhere today without major infrastructure investment. Nothing needs to be invented and there are enough reserves to last many decades.
- It is efficient. LP Gas is cost-effective, since a high proportion of its energy content is converted into heat. LP Gas can be up to five times more efficient than traditional fuels, resulting in less energy wastage and better use of our planet's resources.
- It is convenient. LP Gas is a multi-purpose fuel. There are more than a thousand applications, from cooking, heating, air conditioning and transportation, to cigarette lighters and even the Olympic torch.

2.5 Removing market barriers and subsidization are the two principal instruments in the economist's tool box that are employed in promoting the use of goods or services. The removal of barriers can range from opening markets to competition through targeted legislation that includes the privatization of most market activities, introducing and enforcing tough but uniform regulations covering market concentration, health, safety, and environmental aspects, encouraging investments in infrastructure developments, developing and applying anti-corruption measures, and others. The instruments that are targeted to remove market barriers will be discussed in some detail later in this study. They are conceptually easier to understand than subsidies and, given the host country's political will and ethical sincerity, they are easier to apply.

2.6 It is in the realm of subsidies that conceptual problems arise. Simply allocating money to a section of society to assist their members in buying otherwise unaffordable fuel without concomitant efforts to raise their opportunity costs will lead to expensive and unsustainable developmental efforts. Unemployed people who have their cooking fuel or other products provided wholly or partially free of charge quickly become dependent on the subsidy. Unless broken by securing employment that will allow them to enter or re-enter the market as full participants, selling their services and buying commercial goods, this dependency will become a financial liability to the subsidizing agency that is ultimately funded by taxpayers. If shared by a substantial number of subsidy recipients, this policy will eventually create a political liability. Expectations, habituation, and

organized political resistance will make it nearly impossible to stop the subsidy, as Nigeria has found out in its energy markets. Forced unto the people, the weaning of their dependency may well lead to unrest, perhaps violence.

- 2.7 Securing employment for the unemployed or underemployed is an act of raising their opportunity cost. Fully employed people do not have the time to traverse ever larger distances to gather wood for cooking, and they have the cash it takes to acquire an alternative fuel in the market. Among those alternative fuels LPG stands out as one of the best options. In addition to the attributes listed above, LPG is gigajoule for gigajoule among the most efficient fuels. Unlike natural gas, it does not require a complex distribution system and thus has very little overhead for the consumer to absorb in the retail market.
- 2.8 It is an axiom of economics that a given commodity, if subsidized in preference to a competing commodity, will generate market aberrations. In Nigeria, kerosene was being subsidized while LPG was imported with substantial import duties, causing LPG to be displaced in the market and newly constructed LPG storage facilities to deteriorate without ever being put to use. Worse, a significant LPG surplus in Nigeria was exported if produced in the vicinity of convenient export facilities, and flared if not. More will be said later on with regard to subsidy policies. Suffice it here to point out that these policies breed inefficiencies and market distortions and are capable of presenting grave and nearly unsolvable political risks.

Comparing LPG Markets in Nigeria, Cameroon, and Ghana

- 2.9 LPG markets in developing countries have many characteristics and weaknesses in common. Some of these characteristics and weaknesses are listed in Table 2-1, for Nigeria, Cameroon, and Ghana. The Nigeria data come from the ESMAP LP Gas Sector Improvement Study, while the data for Cameroon and Ghana have been brought in from Volumes I and II in this report. Comparing the market environment in Cameroon and Ghana to that of Nigeria and reviewing the recommended Nigerian market corrections will lead, it is hoped, to similarly effective policy recommendations for Cameroon and Ghana.
- 2.10 As a general rule, market deficiencies in developing countries, including Nigeria, Cameroon, and Ghana, occur in just about every sector, as Table 2.1 reveals in summary fashion. The bulleted text following Table 2.1 provides supporting details from the three source reports.

Table 2.1: LPG Market Comparison Nigeria, Cameroon, Ghana

Sector	Nigeria	Cameroon	Ghana

LPG Industry Structure	LP Gas market is highly fragmented. Need for a single representative “LP Gas Association”. Refineries are owned by Government. Distributors and retailers are private. Imports permitted since 1999 deregulation. Private gas processing plants are coming on line.	Mix of public and private sector participants. Sole refinery 100% state-owned is exclusive LPG importer. LPG prices controlled (“stabilized”). Diverse distribution and marketing companies, 27 in all. Ghana has no National LP Gas Association.
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Legal and Regulatory Structure	<p>The legal framework for the sector is very weak and needs serious upgrading and consolidation. Principal regulator is Dept. of Petroleum Resources. It emphasizes licensing of facilities and statistics, neglects regulatory oversight in operations.</p>	<p>T h e N a t i o n a l P e t r o l e u m A u t h o r i t y A c t p r o v i d e s t r i b u t i o n s e c t o r i s i n c r e a s</p>
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LP Gas Supply	LPG prices prohibitively high due to high import duty, VAT, shipping, and demurrage costs. Removal of import duty and debottlenecking import facilities would immediately reduce costs and enable marketers to reduce prices to consumers by nearly half.	L Refinery inefficiencies have led to unreliable supplies. P Ghana relies heavily on imports and this is expected to continue until conditions at the refinery improve. Storage facilities need to be developed in strategic locations in the country.	i m p o r t s n o w r e p r e s e n

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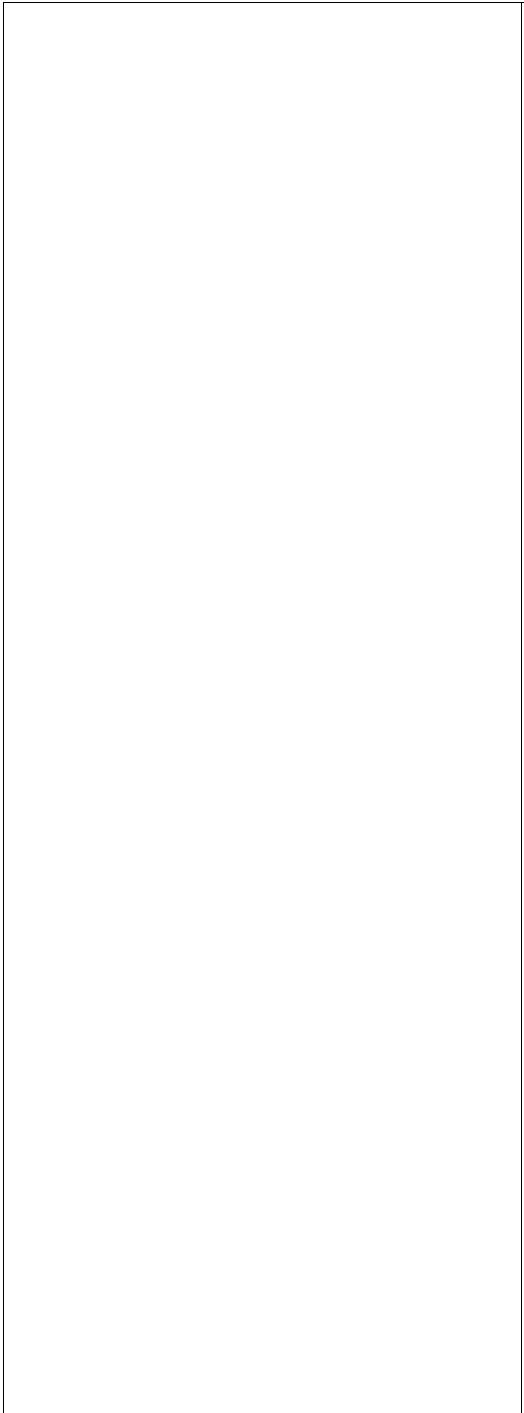
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LPG Distribution Infrastructure	<p>There is an extensive distribution infrastructure capable of supplying a much enlarged market. Debottlenecking import facilities at the port of Lagos is a first priority. Government-owned butanization depots are being privatized as a result of the ESMAP Report.</p>	<p>D i s t r i b u t i o n o f L P G i n C a m e r o o n i s</p>	<p>The refinery, which is the sole bulk supplier of LPG in the country, has a storage capacity for a only week's consumption. There are no downstream LPG depots in any of ten regions. There is therefore an inadequate strategic reserve for the supply of LPG in Ghana.</p>

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Transportation	<p>There is an established pattern of LP Gas transport by ship from coastal refineries to receiving facilities in Apapa (Lagos). Inland transportation of LP Gas is by road and is likely to remain so in the immediate future. Road transport is at present the only practical on-land method, given the limitations of the rail system.</p>	<p>T h e d e p o r t a n a t i o n o f L P G i s p e r f</p> <p>Currently, road transport is the only mode for LPG distribution in all parts of the country. There are no LPG depots in Ghana apart from the limited primary storage at the refinery, which means that all retailers have to drive to Accra for supplies. There exists a huge potential for private participation in the construction of primary LPG depots.</p>

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Sector	Nigeria	Cameroon	Ghana
Cylinders	Most of the cylinders in circulation are in poor condition from lack of proper maintenance and renewal. The country has the capacity to manufacture and refurbish steel cylinders. The ownership of cylinders, the right to refill them, and responsibility for their maintenance should be codified and enforced	Gas cylinders are owned by marketers. Consumers pay a deposit, which varies because there is a lack of bottles in the country. For example, in Yaoundé, the deposit for a 12.5 kg bottle may vary from 10,000 to 25,000 FCFA (\$20-\$50) and in the hinterland, it ranges from 15,000 to 30,000 FCFA.	Most cylinders in circulation are in poor condition due to the absence of a cylinder management system. The current cylinder ownership arrangement allows end-users to own their cylinders. Two cylinder manufacturing companies have the capacity to manufacture a limited range of cylinder sizes.
Household Cooking and Lighting	A household survey revealed a significant suppressed demand for LPG. Many households are forced to use kerosene when the preferred fuel is LPG. Additional uses of LPG would help the viability of the industry and reduce the hardship of electricity outages.	LPG in Cameroon is mostly consumed in households, at 93% of the gas sold. At less than 1% of total energy use, LPG remains a marginal commercial energy source. Its availability is limited in some Northern Provinces, where the per-capita gas consumption averages 0.3 kg/yr.	Although the household sector is the largest consumer of LPG in Ghana, only 9% of the total population uses the fuel for cooking. LPG is rarely used for lighting and refrigeration. Kerosene, followed by electricity, are the main sources of lighting in Ghana.
Household Survey	Attitudes toward LP Gas are generally favorable. Some rural dwellers did not know the product. Of the households surveyed, 20 percent used LPG as the fuel most used in cooking. Many LP Gas consumers are discouraged by the perceived high cost	A survey initiated by the a third-party organization showed that 30.1% of the non-poor households consume 93.7% of the total residential LPG supply, and 3.7% of the poor households consume 6.3%.	No household survey was initiated for this study and no previous third-party surveys could be found.
Household Appliances	Burners and rings are often imported and later incorporated into cooking stoves, water boilers, and the like. The assembly work tends to be done in craft shops. There is no industrial-scale gas cooker manufacturer operating in Nigeria but a limited range of imported cookers may be found in stores in the large cities.	LPG is mostly used for cooking. A variety of devices are used, ranging from simple gas plates to stoves with ovens. The use of LPG for lighting or refrigeration remains weak. Gas plate prices range from 10,000 to 30,000 FCFA (\$20-\$60). Gas stove prices vary from 100,000 to 500,000 FCFA (\$200-\$1,000)	There are primarily two types of LPG end-use appliances in Ghana: locally fabricated stoves which run as low as \$22 for single burner stoves, and imported western type stoves at \$200-\$300. Commercial gas ovens are in wide use among bread bakers and producers of confectionary in the cities and major town centers.
Safety Image	The authorities tend to focus on technical and safety aspects of plant operation and cylinder manufacture. The household survey disclosed a disturbing level of safety problems in households, including deteriorated cylinders, random refilling practices and lack of policing the final sellers.	Serious safety problems exist in all phases of LPG operations. A field inspection revealed numerous safety violations at depots. Leaks and theft are not uncommon at rail loading stations. Tank truck violations range from speeding to poor equipment maintenance. There were 20,955 accidents in households in 2004, that killed 279 people and injured 4,270.	There are genuine safety concerns in the supply/distribution chain and the handling of LPG by end-users. However, safety is not a major inhibiting factor in the use of LPG in the country. Rather, the lack of appropriate legislation and regulation continues to be a bane to private-sector investment in the LPG sub-sector.

Sector	Nigeria	Cameroon	Ghana
Automotive Use	Not addressed in ESMAP Study	The use of LPG as an automotive fuel is not expected to occur any time soon, because of safety problems and because of the poor condition of the 300,000-vehicle fleet in circulation	The use of LPG in automobiles in Ghana is generally believed to be on the ascendancy. However there are no official statistics regarding the number of vehicles running on LPG as most have been retrofitted illegally.
Investment Funding	Sector recovery will call for significant investment in physical assets and in institutional development and training. External investment will be required if sector recovery and access to the poor are to be achieved without inordinate delay. Certain initiatives, such as LP Gas production, will meet commercial investment criteria but certain others, such as cylinder renewal, may not.	By 2010, when the Equatorial Guinean export project is completed, the country will have at its disposal some 300,000 MT of LPG per year, part of which will be used for domestic consumption. This will require the investment of 78.5 billion FCFA (\$157 million) in all sectors of the Cameroonian LPG market, not including strengthening of regulatory authorities and activities.	The weak supply/distribution infrastructure in Ghana's LPG sector is reflected in the low LPG per-capita use of 2.8kg/yr. An estimated US\$78 million in hardware (cylinders and cook stoves) will be required to provide 1.6 million households with LPG over the next ten-year period. This does not include the cost of expanding the refinery capacity and of enhancing the distribution/storage infrastructure.
Access by the Poor	An abundant supply of LPG will help to revitalize the industry and extend availability geographically and across socioeconomic groups. Affordability, however, will require the whole gamut of targeted facilitating measures such as lowering the costs for cylinders and equipment by tax and duty exemption and ready access to soft financing.	With 40% of the Cameroonians below the 2001 poverty line of US \$1.08 per day, and only 3.7% of the poor using LPG, access by the poor is very low. Cameroon committed itself, as part of its structural adjustment program, to eliminate subsidies on domestic gas, yet stabilization and equalization taxes drive up the cost of LPG.	In Ghana, approximately 90% of all households rely on wood fuels for cooking. The rising retail price of LPG and the high initial outlay are the principal factors for the low penetration of the product among the poor. The absence of an efficient and reliable supply chain for LPG in many areas is another key barrier to the use of the fuel.
Country-Specific Issues	Nigeria is literally drowning in LPG and it has a substantial, if unused and partially dilapidated, distribution infrastructure. ESMAP's recommendations to privatize the LPG market will almost certainly be successful, if pursued with vigor and integrity.	Cameroon will turn from an LPG deficit to a surplus in 2010, when the Equatorial Guinean gas export project is completed. But the country has a weak and regionally scattered infrastructure, and it has a perceived corruption problem that it will have to overcome to attract foreign investors.	Having no oil or gas production to speak of, Ghana is totally dependent on imports for all hydrocarbon fuels. The West African Gas Pipeline, on the point of completion, cannot compete with LPG, especially not in rural areas. Ghana will need to both rehabilitate and expand its LPG infrastructure. In its favor is Ghana's vigorous pursuit of market liberation and financial support of the Millennium Challenge Corp. which is targeting the agricultural sector, for a perfect match with the LPG project.

- **The LPG Industry Structure** is generally characterized by mixed government and private ownership, the latter at times with monopolistic market dominance by one company. Exclusive import licenses have in some cases yielded to partial import concessions and to free access regimes, under pressure from foreign investors. Market fragmentation is prevalent, with flight-by-night operators working side by side with serious and safety-conscious companies that are in for the long haul, especially international oil companies. However, oil companies have been known to withdraw from markets because the precarious safety situation leaves them open to liability risks they do not care to assume. Marketers in the LPG industry often do not have LP Gas Associations to represent their interests vis-à-vis the government or the public. Such an association exists in Nigeria, but not in Ghana. It exists in Cameroon, but under government (that is National Oil Company) auspices.
- **The Legal and Regulatory Structure** is generally weak. When the legal framework is missing or inadequate, regulatory enforcement is necessarily flawed. Oftentimes, the regulator resides within a Ministry that has a hard time differentiating between policy-making, which is its job, and regulating, which in a western environment it is not. Regulatory independence is often viewed as a foreign concept. Even in those cases where a reasonable regulatory authority exists, it generally lacks the funding to secure the equipment and to provide the personnel training it needs for effective enforcement.
- **The LPG Supply Sector** is often unreliable which, in Ghana for example, has caused consumers to go back from LPG to the more reliable wood fuel (wood or charcoal). The reasons for the unreliability of LPG supplies are manifold. In Nigeria, the refineries are the principal bottlenecks in part because they are not operating at capacity because of their deteriorated condition and in part because of insufficient evacuation facilities. Offloading harbors also present problems for various technical reasons. Refinery inefficiencies are to blame in Cameroon and Ghana for LPG supply bottlenecks. Paradoxically, price stabilization and equalization policies have generally caused prices generally to be higher than they would be without them, and they have introduced rigidities in LPG markets that hamper competitive market activities.
- **The LPG Distribution Sector** is often faced with insufficient or inadequately spaced depots. In Ghana, for example, there are no primary LPG depots outside the refinery in Accra, which means that all retailers have to drive to Accra and wait in long lines to procure their products. Similar deficiencies in the transportation sector will be discussed below. Paradoxically, on the retail side the LPG distribution sector often suffers from extreme competition, if such a thing exists. It is generally neither difficult nor expensive to enter the LPG retail business, where the almost total absence of safety enforcement allows marketers to cut corners. That includes inadequate maintenance of equipment, insufficient training of personnel and careless handling of cylinders.
- **Cylinders** are owned by marketers in some LPG markets, (Nigeria and Cameroon, for example) and by users in others (Ghana). Either way, inadequate regulatory enforcement permits the circumvention of certification and periodic re-certification. In some instances, even though there are domestic cylinder manufacturing facilities as in Nigeria,

Cameroon, and Ghana, used cylinders of questionable quality are being imported and put in circulation.

- **Household Cooking** is the dominant use of LPG in all three countries here under discussion. In Nigeria, where pricing policies has been favoring kerosene, LPG comes in second after kerosene as the dominant cooking fuel. Still, to the extent that LPG is used, it is used almost exclusively for cooking. In Cameroon, LPG is an insignificant source of energy overall, at less than one percent of energy used nation-wide. However, almost all of the little that is used, 93% of it, goes for cooking. The same holds true, at slightly higher utilization percentages, for Ghana. LPG and kerosene are the two cooking fuels that can be delivered without an expensive overhead delivery system. Thus both lend themselves for use in scattered rural areas. Pricing, more than anything else, is likely to determine consumer preferences, which mandates special attention to the pricing policies of both, lest the signals be distorted and the fuels misallocated.
- **The Household Survey** that ESMAP conducted in Nigeria yielded significant insights as to LPG user and marketer preferences. For example, it led to the discovery of a significant suppressed demand and to attendant investment opportunities that probably would have gone unnoticed otherwise. Even though a casual third-party survey was conducted in Cameroon, the Nigerian experience suggests that a formal LPG survey along Nigerian lines be conducted anew in Cameroon. This holds even more true for Ghana, where no consumer survey is available to guide future policy analyses.
- **Household Appliances** are generally available in a range of sizes and qualities. They are imported or manufactured in commercial plants or, at lower prices, in local craft shops, were they are relatively “inexpensive”, if that term can be applied to an item that costs \$20 and that a buyer whose income barely exceeds a dollar a day must purchase. That is the case in Cameroon, where 40% of the population lives below the poverty line. Of course, a dollar a day only covers cash income. It does not include non-market income, which probably represents ninety or more percent of the income generated in very poor households. Still, \$20 is the equivalent of three weeks of a poor person’s cash income. Add to that the cylinder deposit and fuel, which are market items and require cash payment, and the enormity of the barrier to entry by the poor comes into perspective.
- **Safety** is, perhaps, the most disturbing aspect of LPG gas use in developing countries. Clearly, at an atmospheric boiling pressure of close to 100 PSI at 80 degrees Fahrenheit, LPG (70% propane and 30% butane, the Ghana standard) must be handled with caution. Pressure vessels and pressure regulators are standard equipment in containing and using LPG, and they must be treated with respect. For lack of care by users or because of regulatory shortcomings by the authorities, generally both, the use of LPG is not anywhere near as safe in developing countries as it is in industrialized nations. This is an area that needs urgent attention in all three countries here under discussion. 20,955 accidents and 279 people killed in Cameroon in one year is unacceptable on human grounds and a disincentive to using the fuel on commercial grounds. This kind of safety record discourages people from using LPG, thereby limiting market expansion and foreclosing foreign or domestic investments in the market.

- **Automotive Use of LPG** is not widely accepted in developing countries. There is market potential, given the growing number of cars in circulation and the low expense of using LPG as an automotive fuel, but cars are often in poor condition, and converting them to LPG is dangerous. In Ghana, for example, there are a number of retrofitted cars, but the retrofitting is generally done illegally and clandestinely, so that there are no statistical data available to assess the market potential.
- **Investment Funding** to rehabilitate or expand LPG markets is expensive. The ESMAP Study summed up the problem correctly when it said that the rehabilitation and expansion of the Nigerian LPG market will call for significant investment in physical assets and in institutional development and training. External investment will be required if sector recovery and access to the poor are to be achieved without inordinate delay. Certain initiatives, such as LP Gas production, will meet commercial investment criteria but certain others, such as cylinder renewal, may not. One credible estimate, Cameroon, suggests that tripling LPG consumption from 44,000 to 122,000 MT per year over the next 20 years requires an investment of \$157 million, with more than 86% going to storage, transportation and cylinders. This estimate includes a modest amount of promotion (3.8%), but it does not include typical consumer charges such as the cost of appliances, nor does it include the expense of setting up, equipping and training an effective regulatory authority. The problem, generally, is that it is easy to discern non-functioning deteriorated hardware and to assess what is needed and what it costs to rehabilitate it, but non-functioning regulation is much harder to cost out and fix. Ideally, an independent regulatory authority should be self-funding, with operating cash generated through license fees. Whether that is feasible in a developing country deserves discussion.
- **Access by the Poor** is the most urgent and challenging task in developing LPG markets. Significantly, the ESMAP Study recognizes the difficulties faced by poor households in acquiring LPG appliances, making deposits for cylinders and paying cash for fuel, and they recommend a series of steps to alleviate the problem, but there is no suggestion of subsidies. There is only the recognition that, “without subsidy or soft financing, the initial cost of becoming an LP Gas consumer will be a formidable barrier to access for the poor”. Such subsidies have raised prices and brought inflexibility to markets in Cameroon and Ghana and, in combination with misconceived import duty policies, they have led to severe market distortions in Nigeria.

3

Critical Issues/Strategies/Action Plans – Cameroon

Critical Issues/Constraints Summary

3.1 **Introduction:** Based on the methodology developed in the ESMAP Study and the findings of the country consultants in Volumes I and II, a tentative delineation of critical issues and strategies/action plans is offered here in two separate chapters. This Chapter deals with the Cameroonian LPG market. A discussion of the Ghanaian market follows in Chapter 4. The format for both closely follows the format set forth in the ESMAP Study. Following review and discussion with government and industry representatives of the current LPG situation and proposed strategies to stimulate LPG consumption in both countries, it is suggested that a detailed roadmap be developed and implemented to translate the policy proposal into reality.

3.2 **Objectives:** Lessons learned from the ESMAP Study and findings developed by the Cameroonian in-country consultant point to the need for massive improvements in the LPG supply and distribution infrastructure and practices if the fuel is to be made available in all parts of the country, particularly to the poor in the northern regions. In addition, there is a need for demand stimulation once LPG is made accessible. It is thus important that, as the supply and distribution infrastructure for the LPG industry is improved, steps be taken to stimulate demand for the product in all parts of the country.

3.3 **Current Status:** Even though the Cameroonian LPG market has grown substantially over the years, it has failed to fully achieve its potential. Total LPG consumption has more than tripled over the last twenty years and per-capita consumption has doubled, but much of the country's associated gas is still being flared and will continue to be flared for another 4 years, until a major associated-gas recovery project is completed. Perhaps the greatest hurdle Cameroon still has to overcome is the achievement of a deeper and more evenly divided market penetration. Practically no LPG is used where it is needed most, in the Far North Province where the per-capita consumption is 0.1 kg/yr. Efforts to stabilize the domestic price of LPG in the face of volatile international markets have been partially successful, but they have introduced a rigid pricing mechanism that keeps domestic market forces at bay, and they have raised prices. This has led to capital shortages in the industry and to shortages and obsolescence in equipment, which resulted in sluggish growth and uneven regional use patterns. In response, there have been suggestions regarding the need to compel industry to expand into areas where, under the current system, little LPG is being delivered. Mandatory market adjustments generally signal the absence of effective incentives. If imposed, they would merely compound the existing capital shortage. The one area that does require compulsory action is the enforcement of safety and other regulations. A review of the current regulatory oversight mechanism is needed, including a

determination of the composition and regulatory authority of the oversight board, its independence and non-involvement in operational activities, and its ability to develop and impose sanctions.

3.4 Policy: The government's LPG policy cannot be said to have achieved the desired result of ensuring improved access by all Cameroonians and safeguarding the integrity of the industry. Most operators in the LPG industry have not lived up to expectation with regard to adhering to standards and regulations and, most importantly, protecting lives and property. That policy should also be designed to help elevate the LPG industry to an improved level of operational performance.

3.5 Industry Structure: The three major participants in the Cameroonian LPG market are the government, quasi-public corporations, and private operators. While the government is clearly committed to move the industry away from government ownership and towards relatively unimpeded private-enterprise markets, its presence and influence in the market continue to be pervasive.

3.6 Legal and Regulatory Structure: A number of laws, decrees, and orders govern every aspect of the LPG sector. Among them, the Caisse de Stabilisation des Prix des Hydrocarbures under the Ministry of Trade is in charge of regulating financial aspects of the LPG distribution sector, where it operates the country's price stabilization and equalization programs. Meanwhile, the Ministry of Water and Energy is the lead agency for all administrative and technical activities of the petroleum products industry, including the development and implementation of legislation and oversight responsibility of all regulatory activities in the petroleum products sector. Both Agencies are discussed in more detail later in this Chapter. Underfunded and undertrained, the regulatory authority needs to be overhauled and welded into an effective enforcement agency.

3.7 Demand/Supply: Essentially all of the LPG consumed in Cameroon is used by the household sector. Under almost any scenario, LPG consumption is expected to rise substantially over the foreseeable future, which gives rise to concern how the increase in demand will be accommodated. The completion of the ongoing associated-gas project to capture natural gas currently flared at the wellhead, to strip it and ship the methane components to Equatorial Guinea for liquefaction and export, will create a new source of supply of some 300,000 MT of LPG per year for consumption in Cameroon. While this is an extraordinary opportunity, it is also a challenge since such a dramatic increase in LPG availability will require substantial investments to handle them. It will also require that the build-up of regulatory effectiveness begin now.

3.8 Distribution Infrastructure: The entire LPG supply chain, from storage facilities and transportation to the distribution network is underdeveloped and in urgent need of upgrading, rehabilitation, and new capacity development. The principal storage company in Cameroon, (Société Camerounaise des Dépôts Pétroliers, or SCDP), has not expanded its storage capacity in 20 years. As of 2004, SCDP storage capacity was 3,077 MT below legal requirements. Similar problems exist in coastal transportation, where there is a shortage of safe (double hulled) marine vessels, and in railway and road transportation where serious regulatory and safety problems place equipment and people in jeopardy.

3.9 Cylinders: The country has no cylinder management system in place. Many of the cylinders in circulation are in poor condition and are either due for maintenance or disposal. Cylinders are owned by marketers and consumers pay a deposit for their use. The amount of that

deposit varies because there is a lack of bottles in the country. For example, in Yaoundé, the deposit for a 12.5 kg bottle may vary from 10,000 to 25,000 FCFA (\$20-\$50). The problem is that cylinders are not readily available in the market, which is a major inhibitor of bottle interchangeability. An appropriate cylinder management system should be established to cope with the increasing volume of dangerous cylinders circulating in the country.

3.10 Household Cooking and Lighting Demand: In 2002, wood constituted by far the most important energy source in Cameroon, at 61% of the country's total energy consumption, with oil products running a distant second at 21%. Within the various oil products, LPG ran second to last, at 3.1%, out of seven categories of oil products, aviation fuel being last. In other words, LPG consumption was, and continues to be, a relatively insignificant source of energy in Cameroon. LPG consumption by households needs to be addressed with some urgency. This includes the removal of consumption barriers by de-bottlenecking the supply sector, but attention also needs to be paid to the LPG pricing policy.

3.11 Household Survey: A household survey conducted in 2001/2002 revealed that LPG consumption is unevenly distributed across the nation. Forty percent of the population lives below the poverty line of \$1.08 per day, and only 3.7% of the poor households use LPG. This socio-economic divergence in LPG consumption also manifests itself regionally and in terms of urban vs. rural consumption. The survey is getting dated. A new survey along ESMAP lines should be instituted and the results used in designing a promotional campaign to improve popular understanding of LPG and to stimulate household consumption of the fuel.

3.12 Household Appliances: Almost all of Cameroon's LPG is consumed in households, where it is used mostly for cooking, with limited use for lighting and refrigeration in rural zones that have no access to electricity. A variety of cooking devices is used, ranging from simple gas plates to stoves with ovens. It is suggested that the household survey suggested above include a review of prices of, and taxes on, appliances.

3.13 Safety Image: In Cameroon, LPG has the reputation of being an unsafe fuel, and for good reason. In 2004, no less than 20,955 households have experienced gas-related accidents resulting in the deaths of 279 people and injuring 4,270. This unacceptably high accident rate is almost exclusively attributable to careless handling of the gas in all sub-sectors of the LPG market, including storage, transportation, distribution, and above all consumption. The situation requires more vigorous enforcement of existing safety regulations and better training of professionals in the LPG sector, and a serious safety campaign among all stakeholders, especially the consuming public.

3.14 Automotive Use: Even though, as of 2004, Cameroon had an estimated automotive fleet of 300,000 vehicles, LPG has not yet been put to use as an automotive fuel. The use of this source of energy as an automotive fuel is not expected to occur any time soon because of the safety problems associated with LPG and because of the poor condition of the vehicles in circulation. However, the suggested household survey should include one or two questions probing the perception of vehicle owners with regard to LPG as an automotive fuel.

3.15 Investment and Funding: Serious under-investment characterizes the Cameroonian LPG industry. There are shortages in storage capacities of major depots, an undersized and in part deteriorated truck fleet, a severe shortage of retail outlets and of LPG cylinders, to name a few. These shortages will become worse as consumption rises, unless the government finds a

mechanism to attract investors into the market. This is an urgent issue, as some 300,000 MT of LPG will come to market in 2010, when the Equatorial Guinean gas export project is completed.

3.16 Access by the Poor: With 40% of the Cameroonian population below the 2001 poverty line of US \$1.08 per day, and only 3.7% of the poor using LPG, access by the poor is very low. The average LPG access rate in 2004 was 19.5% for the country at large; it was 38.1% in urban zones and 3.1% in rural areas. The far northern provinces have the lowest accessibility rate, with only one retail outlet per 151,300 inhabitants. The LPG pricing structure needs to be re-examined for its efficiency in allocating the fuel to those areas where it is needed most, assisted by a determined government policy to eliminate, or at a minimum reduce, the current deforestation in the northern part of Cameroon. It also means the development of a targeted growth policy that will stimulate the absorptive capacity of the LPG-starved provinces in the north, once the new LPG availability from the Equatorial Guinean gas export program is completed.

Strategies/Action Plans

Table 3.1: Objectives/Targets - Cameroon

Objectives	Target
1. Develop a strategy for stimulating and expanding the LPG industry in Cameroon. 2. Expand LP Gas access by the poor	• LPG per capita consumption of 4.0 kg per year by 2025

Table 3-2: Critical Issues, Strategies, and Action Plans - Cameroon

	Critical Issues	Strategy	Action Plan
1	<p><i>Objectives:</i> The study has two main objectives: revival of the domestic LP Gas market and expanded access of LP Gas to the poor. The best prospect for extending LP Gas access to the poor is from a well-founded, dynamic industry. No realistic prospect of achieving the second objective is possible until the first has been implemented.</p>	<p>Concentrate initially on the revival of the domestic gas market while planning for its expansion to the poor.</p>	<p>Commence implementation of the recovery program in accordance with the final agreed roadmap.</p> <p>Determine priorities and timescale for implementation of the roadmap.</p>
2	<p><i>Government Policy / LPG Strategy:</i> At this time, Cameroon depends on LPG from its domestic refinery, with imports closing the growing gap between limited refinery supplies and rising LPG demand. Completion of a natural gas export project to Equatorial Guinea is expected to inject substantial quantities of LPG into the Cameroonian gas market by 2010. Making this new gas available to the population rather than exporting it will require substantial investments in the LPG infrastructure, improvements in its operational efficiency and adherence to safety standards.</p>	<p>Secure formal government endorsement of the study's roadmap. Generally, the government should pursue an enabling function to facilitate implementation in the LPG industry.</p> <p>Establish a dialog with the International Monetary Fund, which has advocated decontrol of prices for some time, and with the Millennium Challenge Corporation to determine whether any or all of the proposed actions advance or impede their work, which places heavy emphasis on open and transparent market behavior.</p>	<p>Complete and present the report incorporating the strategic roadmap and follow up as necessary to secure acceptance by relevant government agencies.</p> <p>Secure endorsement of the lead minister for the target set in terms of per capita usage and for market expansion aimed at improved access by the poor.</p> <p>Secure clarification of the role of LP Gas in energy planning within a coherent fiscal and legal framework.</p> <p>Identify the resources required to implement the sector rehabilitation/expansion strategies.</p> <p>Identify available skills, quantify the skills/resource deficit, and propose measures to match resources to requirements, especially in the regulatory sector.</p> <p>Prepare a short- and medium-term institutional development plan for the LP Gas industry.</p> <p>Allow the LP Gas industry to represent itself and to participate in energy and gas strategy planning.</p> <p>Brief the relevant committees of the National Assembly with a view to securing their support and appropriate government action.</p>

	Critical Issues	Strategy	Action Plan
3	<p>LP Gas Industry Structure/Market Controls:</p> <p>There are three major participants in the Cameroonian LPG market: the government, quasi-public corporations and private operators. The principal LPG supplier, the Limb�� Refinery, is 66% state-owned and the bulk depot company (SCDP) is 51% state-owned. Marketing activities are in the hands of private-sector companies. Various ministries are responsible for the regulation of different LPG activities.</p> <p>A Cameroon Gas Association has recently been created (Oct 2006), under the auspices of the state-owned oil company CNH. It lacks the broad membership and the experience it needs to make its voice heard.</p> <p>The market is inflexible even though nominally free of price controls, due to the use of stabilization and equalization taxes. In terms of operating efficiency and safety, the market is basically out of control.</p>	Develop an effective LP Gas industry Association representative of all sectors, including consumer groups—not just marketers—with a brief to support the LPG expansion program.	<p>Assist the Cameroon Gas Association in the development of a coherent LPG market, where the members will support the establishment of efficient and safe operations, under the tutelage of a reinforced regulatory regime.</p> <p>Enroll the Cameroon Gas Association in the World LP Gas Association and use the services available to WLPGA members.</p> <p>Empower and resource the Gas Association to deal with industry problems.</p>
4	<p>Legal and Regulatory Structure: A number of laws, decrees and orders deal with the LGP market, especially Decree Nbr. 022/MINEE which spells out the licensing requirements for all downstream petroleum activities including refining, imports, exports, storage, qualities and quantities, and distribution. The Ministry of Water and Energy is in charge of all administrative and technical activities of the petroleum products industry. The Ministry of Trade issues operating licenses, sets prices for petroleum products, and oversees the Price Stabilization Board. Other Ministries deal with fiscal policies and customs, petroleum transport issues, and environmental issues.</p> <p>Willingness and enforcement capacity, not legal or regulatory coverage, are the principal impediments to efficient market operations.</p>	Having secured formal government endorsement of the study roadmap, seek to strengthen and rationalize legislation and regulatory functions in order to facilitate sector recovery and future development.	<p>Prepare a submission to the Minister of the lead agency setting out the LP Gas industry vision of its role, highlight any regulatory and structural impediments, and make recommendations, where appropriate, for legislative action to facilitate policy objectives and to reflect current conditions and technology.</p> <p>Secure clear definition of the functions of government, regulatory authorities and industry, supportive of LPG policy objectives.</p> <p>Develop a constructive dialogue with the relevant agencies and authorities for collaboration in efforts to bring the benefits of LP Gas to the largest possible number of consumers.</p> <p>Press for the establishment of an LP Gas Department in the Ministry of Water and Energy or the establishment of a separate regulatory agency with strict enforcement of regulations to discourage market/price manipulation, promote safety, and encourage good industry practice.</p> <p>Press for clear definition of regulatory functions and for elimination of overlap, for example, in pressure vessel testing and certification.</p>

	Critical Issues	Strategy	Action Plan
5	<p><i>LP Gas Supply/Refineries/Storage/Distribution:</i></p> <p>The LP Gas industry effectively depends upon the Limb�� Refinery and imports for supply and, at times, supply has been insufficient, overpriced and unreliable. Inadequate facilities and low priority have consistently impeded evacuation when LP Gas was available at the refineries.</p> <p>The inland transportation infrastructure for LP Gas is underdeveloped.</p> <p>The LPG primary depot at the refinery is undersized and has inadequate evacuation facilities. Apart from the refinery which has all of its depots at the refinery proper, there is only one company that has primary depots in the country. That company, SCDP, which is 51% government-owned, has not added to capacity in 20 years and currently is in violation of minimum storage capacity laws. Holding all of the ex-refinery depot capacity in the country places SCDP in a monopoly position.</p> <p>Coastal shipping and road and rail transport incur high costs and suffer low operational efficiency. Many road tankers are dilapidated.</p>	When the Equatorial Guinean gas export project is completed in 2010, there will be more than adequate LPG supplies available to Cameroonian consumers, provided that the storage, transport, and distribution sectors gear up in time to absorb the influx. This will require the establishment of an investor-friendly, transparent and profitable market environment.	<p>Press the government to release its interest in the SCDP to new investors, hopefully to oil companies that have set the example generally in adhering to international safety and operating standards, but at a minimum to new owner/operators: (a) with the financial and technical capacity for their rehabilitation and expansion; (b) committed to their operation on an open access/transparent price basis.</p> <p>Encourage suppliers and supply chain operators to improve shipping and inland transport performance and standards.</p> <p>Promote the expansion of alternative transportation modes, for example rail and pipeline, for safer and more economical inland supply of LP Gas.</p> <p>Raise technical standards and provide funding or self-funding (through license fees) for regulatory authorities so they can acquire the equipment and skills they need for effective regulation.</p> <p>Strictly enforce compliance with regulatory requirements, remove sub-standard equipment where practicable (trucks for example), and enforce rehabilitation where not (depots, loading facilities etc.).</p>
6	<i>LP Gas Cylinders:</i> Many cylinders are in poor condition from age and lack of proper maintenance. Leaking cylinder valves are common. Unauthorized cylinder filling has helped to undermine the discipline of periodic inspection and maintenance. There is no clear accountability or traceability in the event of an accident or of under-filling.	Issues surrounding the identity, rights, and obligations of cylinder owners and users to be resolved, codified, and enforced.	<p>Prepare and cost out a program to rehabilitate and renew LP Gas cylinders.</p> <p>Ensure that national standards and regulations do not preclude the use of new technologies, such as composite cylinders.</p> <p>Encourage the LP Gas industry to work with the appropriate regulatory authority for the progressive and permanent removal of dangerous cylinders from the market, avoiding disruption, panic, and hardship for consumers.</p> <p>Investigate whether the sole cylinder manufacturer in Cameroon, SCTM, who controls 62% of the cylinder inventory, is engaged in monopolistic practices and, if so, seek and recommend ways to make that section of the market more competitive.</p>

	Critical Issues	Strategy	Action Plan
7	<p>Household Cooking Demand and LP Gas Appliances: Almost all of the LPG (93%) sold in Cameroon is used in households, and almost all of that for cooking. However, wood and charcoal are still the predominant energy sources, at better than 60% of the total energy consumed in the country. There is a variety of LPG appliances in the market, both manufactured and produced in local work shops at costs ranging from \$20 for gas plates to \$1000 for western ovens. Even the \$20 gas plate is a barrier to entrance for the poor.</p>	Suitable, affordable appliances to be made available to prospective LP Gas consumers throughout Cameroon.	<p>Have LP Gas marketers work with manufacturers, local work shops, and vendors to secure suitable, affordable appliances.</p> <p>Investigate adaptability of a cooking device that uses cylinder foot rings as cooking pot supports. This Easi-Cooker proved practical and popular in Nigeria.</p> <p>Investigate introduction of easy-financing mechanism to help the poor to overcome the financial entry barrier of costly appliances and cylinders.</p>
8	<p>Safety/Image: Whether Cameroon is particularly unsafe in its handling of LPG or whether other countries lack relevant data, 20,955 accidents in one year (2004), with 279 people killed and 4,270 injured, does not enhance consumer confidence in LPG. Safety is perhaps the worst LPG problem in Cameroon. It exists in every subsector, from storage to transportation, distribution, and consumption.</p>	Improve LP Gas safety throughout the distribution system and at the point of use.	<p>Make sure that LPG storage depots are closely monitored for adherence to safety standards and regulations.</p> <p>In marine transportation, discontinue delivery of imported LPG, except in double hulled vessels, and rehabilitate separate oil harbour.</p> <p>In on-land transportation, enforce certification and periodic re-certification of rail tanks and tank trucks and remove from service if beyond rehabilitation.</p> <p>Improve the quality of cylinders and valves by enforcing re-certification, eliminating sub-standard units and banning unsafe practices such as unauthorized and illicit filling.</p> <p>Adopt and enforce good LP Gas industry standards and practices, such as <i>The Guidelines for Safety and Good Practice</i> published by the World LP Gas Association.</p> <p>Promote safety standards and practices through: (a) seminars for industry players; (b) securing formal commitment of industry players; and (c) a properly designed and funded consumer safety awareness campaign.</p>

	Critical Issues	Strategy	Action Plan
9	<i>Access by the Poor:</i> The initial cost of becoming an LP Gas consumer is a real barrier for the poor, not least because of their inability to secure consumer credit. Uncertainty regarding availability and pricing, together with safety concerns, are also deterrents.	LP Gas access to the poor to be formally adopted as an objective of the LP Gas industry and its association.	Have the LP Gas Association monitor and report on relevant programs in other countries to take account of experience gained by LPG industries and NGOs elsewhere. Update the household survey findings and use the data in planning and evaluating pilot projects in poor communities. Have the LP Gas Association report periodically to members and the media on safety (and regulatory) progress.
10	<i>Investment/Funding/Implementation:</i> The sector recovery program calls for significant new investment and sustained effort for its implementation. Dependence on funds generated internally would imply a delayed timescale for recovery, and hence, for progress toward the second objective. The impending completion of the Equatorial Guinea gas export project in 2010 (just around the corner in terms of downstream hydrocarbon planning) imposes a sense of urgency on the funding issue, necessitating significant and almost immediate injections of private-sector capital.	Attract external local or foreign investment and skills essential for the implementation of the sector recovery program.	Identify and seek support from organizations with institutional development skills and capacity relevant to the needs of the LP Gas industry. Organize seminars and presentations for financial institutions and prospective investors. Use publications such as the WLPGA's <i>Special Report on Funding Sources</i> to extend the range of possible investors and facilitators. Introduce new resources and structures to enable action plans to be implemented. The LP Gas industry needs to take this responsibility.

The Way Forward

3.17 Implementation of the final, agreed roadmap depends critically on commitment from key stakeholders—government and industry. Commitment to LP Gas sector recovery and extended access, together with clarification of the respective roles of government and industry, are essential outcomes. They must also be set in an agreed, realistic timeframe.

3.18 The thrust of this study is that the LP Gas industry/private sector should initiate and carry through the various action plans while the government/public sector acts as the enabler. In order to achieve this the LP Gas industry will need to put in place the resources and structures necessary to implement many of the action plans essential for achievement of the study objectives.

4

Critical Issues/Strategies/Action Plans-Ghana

Critical Issues/Constraints Summary

4.1 **Introduction:** Based on the methodology developed in the ESMAP Study and the findings of the country consultants in Volumes I and II, a tentative delineation of critical issues and strategies/action plans is offered here in two separate chapters. Chapter 3 dealt with the Cameroonian LPG market. This Chapter addresses critical issues in the Ghanaian market. The format for both Chapters closely follows the format set forth in the ESMAP Study. Following review and discussion with government and industry representatives of the current LPG situation and proposed strategies to stimulate LPG consumption in both countries, it is suggested that a detailed roadmap be developed and implemented to translate the policy proposal into reality.

4.2 **Objectives:** Lessons learned from the ESMAP Study and findings developed by the Ghanaian in-country consultant point to the need for massive improvement in the supply and distribution infrastructure/practices of LPG if the product is to be made available in all parts of the country, particularly to the poor. In addition, there is a need for demand stimulation once LPG is made accessible. It is thus important that, as the supply and distribution infrastructure for the LPG industry is improved, steps be taken to stimulate demand for the product in all parts of the country.

4.3 **Current Status:** The LPG industry has made some strides since the launch of the LPG promotional campaign by the government in the early 1990s. LPG has gained a high level of market acceptance among most urban dwellers with marginal usage in the rural and peri-urban areas. The uncertain supply of LPG in the Ghanaian market coupled with price hikes has compelled some current LPG users to switch back to traditional cooking fuels such as charcoal and firewood, and it has served as a deterrent to other potential users. The perennial shortage of the product is partly due to bottlenecks in the delivery infrastructure for LPG at the Tema Oil Refinery and to operational inefficiencies at the refinery. An improved supply environment is essential to retain existing users and to encourage prospective LPG users to make the necessary initial cash outlay. It is also important that private investors be attracted to the distribution chain.

4.4 **Policy:** The government's LPG policy cannot be said to have achieved the desired result of ensuring improved access by all Ghanaians and safeguarding the integrity of the industry. Most operators in the LPG industry have not lived up to expectation with regard to adhering to standards and regulations and, most importantly, protecting lives and property. An improved LPG policy framework that promotes the expansion of the LPG infrastructure (availability/accessibility) and prescribes pragmatic strategies to stimulate private sector

investment is necessary. That policy should also be designed to help elevate the LPG industry to an improved level of performance.

4.5 Industry Structure: An effective industry-wide LPG Association, currently absent, is necessary to coordinate the efforts of the various retailers and distributors and to provide a channel of communication with all stakeholders, particularly with the NPA, on pricing and regulatory issues. A dialogue should begin as soon as practicable between the key industry players particularly the existing LPG Retailers Association, the liquid petroleum gas marketing companies and the oil marketing companies involved in the LPG industry.

4.6 Regulation: The National Petroleum Authority and the Ghana Standards Board are not only perceived to be ineffective but they also lack the capacity to effectively regulate the various participants in the LPG industry. Over the years, regulation of the sector has been limited to screening of applications for licenses. Monitoring LPG facilities to ensure conformity to and compliance with safety standards and regulations has been minimal due to the limited logistical and human resource capacity of the regulators. End-user safety standards and regulations are lacking and the GSB, which is expected to ensure adherence to end-user safety and regulations, either lacks the capacity (it seems) or the will-power to undertake this task effectively. The capacity of the regulators will thus have to be strengthened to enable them to establish and enforce relevant laws and regulations for the smooth operation of the LPG industry.

4.7 Supply: The LPG supply in Ghana has been erratic due to unreliable deliveries from the Tema Oil Refinery, which is wholly-owned by the government. Diversifying the sources of supply of LPG for the Ghanaian market is critical for sustainable development of the industry. There is a need to get LPG closer to consumers by increasing imports and effectively decentralizing storage away from the refinery.

4.8 Refinery: Inefficiency and limited storage and loading facilities at the Tema Oil Refinery have greatly affected the LPG industry in Ghana. Long down times at the refinery and inadequate loading facilities when LPG is available are impeding LPG availability on the Ghanaian market. The operating efficiency of the TOR has to be improved and other refineries may need to be established to supplement supply from the TOR. In addition, there is a need to increase storage, loading and unloading facilities across the country.

4.9 Distribution Infrastructure: The LPG distribution infrastructure in the country is limited. It is mainly private-sector owned and concentrated in a few urban centers leaving the rural and peri-urban areas without service. The LPG distribution infrastructure of the country has to be extended and improved to facilitate service delivery and availability of LPG to all Ghanaians.

4.10 Transportation: the main mode of transport for LPG in Ghana is by road. The poor nature of the road network increases the risk of transporting the product by this means. The establishment of LPG storage depots in strategic locations across the country will help improve the efficiency of road transportation and reduce risk. In addition, alternative modes of transport such as rail and pipeline will have to be considered in the near future to augment road transportation of the product.

4.11 Cylinders: The country has no cylinder management system in place and many of the cylinders in circulation are in poor condition and are either due for maintenance or disposal. The issue of who owns, who fills, and who maintains cylinders in the country needs to be clarified. An appropriate cylinder management system should be established to handle the increasing

volume of dangerous cylinders circulating in the country.

4.12 **Household Appliances:** there are a variety of LPG household appliances on the Ghanaian market. There is however a need to improve the technology for locally designed appliances to make them cheaper and more efficient. Adaptation of existing appliances to meet local needs at home will help improve the acceptability of LPG among Ghanaians.

4.13 **Safety Image:** There are currently no nationally accepted operational and safety standards in the LPG industry, which has a bad reputation for its poor safety standards. Appropriate safety legislation and guidelines for the LPG industry are required to streamline safety standards in the industry. Public education for all stakeholders is necessary to improve the safety environment in the industry and to instill consumer confidence in the product. In addition, the media should be properly engaged to support public education on LPG safety.

4.14 **Investment/Funding:** Significant investments will be required in the LPG supply-distribution infrastructure to facilitate end-user access to the product. Potential funding sources for the LPG industry include the provision of incentives to the private sector to invest in the LPG industry and the promotion of Public-Private Partnerships. This involves securing private sector investment in partnership with the public sector for capitalization of the LPG supply system to expand supply and distribution networks to all parts of the country.

4.15 **Access by the Poor:** There are a number of barriers limiting access to LPG by the poor. Key amongst them are financial constraints. The high upfront cost of end-use equipment such as cylinders and stoves and the high recurrent cost of filling large cylinders is a factor that inhibits access by the poor. An increased number of LPG retail outlets in the rural and peri-urban areas is essential to improve access by the poor. In addition, targeted subsidies on LPG appliances and financial support systems will be required to assist the poor to acquire LPG end-use appliances. Small cylinder sizes will also have to be promoted to reduce the recurrent refilling cost.

4.16 **Unique Ghanaian Issue:** Ghana is ranked seventieth out of 163 countries listed in the 2006 Corruption Perceptions Index published by the German-based Internet Center for Corruption Research. It is ranked fifth (along with Egypt and Senegal) among African Nations. Moreover, the Millennium Challenge Corporation, using a sixteen-variable rating system that emphasizes political and economic freedom, investments in education and health, control of corruption, and respect for civil liberties and the rule of law, has declared Ghana eligible for program assistance and has signed a \$547 million compact with the country. The goal of the Ghana Compact Program is to reduce poverty through a private-sector led agribusiness development. Interventions aim to increase farmer incomes and export earnings by increasing the production and productivity of high-value cash and food staple crops in some of Ghana's poorest regions and to enhance Ghana's agricultural products in regional and international markets. The two largest items in the assistance budget are agriculture development (\$241 million) and transport development (\$143 million). The first of these will stimulate demand for LPG by providing purchasing power to rural regions and the second item will improve the supply infrastructure thereby enhancing Ghana's LPG delivery system. A meeting with Jonathan Bloom, Managing Director, Africa, is recommended to coordinate assistance efforts, as is a similar meeting with Ned Cabot, Regional Director of Sub-Saharan Africa. An comparable USTDA linkage proved to be highly beneficial in the Nigerian LPG assistance work.

Strategies/Action Plans

Table 4.1: Objectives/Targets - Ghana

Objectives	Target
Develop a Strategy for stimulating and expanding the LPG industry in Ghana.	<ul style="list-style-type: none">• LPG per capita consumption of 3.7 kg per year.
Expand LP Gas access by the poor.	<ul style="list-style-type: none">• Ensure that at least 20% of households currently using traditional biomass for cooking are provided with access to LPG by 2015

Table 4-2: Action Plan/Strategies Matrix - Ghana

	Critical Issues	Strategy	Action Plan
1	<i>Objectives:</i> The study has two main objectives, 1. Revival of the domestic LPG market. 2. Expanded access to LPG by the poor.	Pursue both objectives concurrently.	Completion of a business plan in accordance with the finalized road map. Determine priorities and timescale for implementation of the roadmap.
2	<i>Government Policy on LPG Program</i> 1. The government LPG program which commenced in the early 1990s has not been sustained. The LPG industry is plagued by a number of challenges and the majority of Ghanaians still do not have access to LPG. 2. The study objective is in line with the government's proposal to provide 15,000 households in 300 rural communities with access to LPG over a four-year period under the Ghana Poverty Reduction Strategy paper (GPRS II paper).	Make government an active partner of the ongoing process and obtain government's formal endorsement of the study's roadmap.	Complete and present the report to secure acceptance from the relevant government agency, that is, the Ministry of Energy. Organize a forum to discuss content of report with all relevant stakeholders. Secure endorsement of the Minister of Energy and key stakeholders for the target set (per capita usage and access by the poor). Secure clarification of government's long-term and short-term plans for the LPG industry and role of LPG in the development agenda of the country.
3	<i>LP Gas Industry Structure/Market Controls:</i> The industry is composed of a variety of players -large and small - but lacks a single authoritative and representative organization to serve as its mouth piece and coordination point.	Develop an effective LPG industry association with national recognition and clearly defined roles and mandates.	Establish an LPG industry association for Ghana - the Ghana LPG Association (GLPGA). Affiliate the GLPGA with the WLPGA to benefit from available technical and financial support. Empower and provide resources for the GLPGA to deal with industry problems.
4	<i>Regulation:</i> 1. There is no explicit and specific LPG legislation regulating the industry in Ghana. Legal aspects of the LPG industry are covered as part of the legislation for the petroleum industry. 2. The regulatory authority (National Petroleum Authority or NPA) has a limited capacity and inadequate resources rendering it unable to police the LPG industry nationwide. The LPG regulatory functions of the NPA need to be clarified.	Strengthen the weak legislative and regulatory environment for the industry to facilitate its revitalization.	In consultation with the Ministry of Energy (MoEN) and the NPA, prepare a report which highlights regulatory and structural impediments in the industry, and make recommendations, as appropriate, for legislative actions by government. Develop a constructive dialogue with the relevant agencies and authorities for collaboration in efforts to streamline the legislative and regulatory environment in the LPG sector. Advocate the establishment of an LPG Division under the NPA with a clear mandate for regulating the industry.

	Critical Issues	Strategy	Action Plan
5	<p>LP Gas Supply/Refineries/Storage/Distribution:</p> <ol style="list-style-type: none"> 1. The Tema Oil Refinery which is the sole bulk supplier of LPG in the country has limited storage capacity of 9,000 cubic meters (5,000 metric tons). There is therefore inadequate reserve capacity for the supply of LPG in Ghana. Additional LPG delivery points (loading points) and storage facilities in and outside of the refinery are needed to facilitate access to the product. 2. The road transport infrastructure, which is the major mode of transport for the industry, is underdeveloped. 	LPG marketing companies, oil marketing companies, and private investors are to be encouraged to establish private storage depots to provide adequate and reliable product supply in all parts of Ghana. In addition, new cost-effective and efficient transport modes such as rail and pipelines should be developed.	<p>Encourage the LPG industry to initiate a constructive dialogue with the TOR/MoEN regarding the economic and social benefits that will accrue from timely and efficient LPG evacuation when the product is available at the refinery.</p> <p>Encourage suppliers and supply chain operators to improve inland transport performance and standards.</p> <p>Promote the introduction of alternative transportation modes, for example rail and pipeline, for safer and more economical inland supply of LP Gas.</p> <p>Raise and enforce technical standards in order to remove substandard equipment and practices.</p> <p>Advocate the removal of import duties on LPG equipment.</p>
6	<p>LP Gas Cylinders:</p> <p>Most cylinders in circulation are in poor condition due to the absence of a cylinder management system (maintenance and renewal) for Ghana.</p>	Clarify who owns, who fills, and who maintains the cylinders and establish standard cylinder sizes for the Ghanaian market.	<p>Make mandatory the periodic inspection and re-certification of all LPG cylinders in the country.</p> <p>Prepare and cost a central pressure testing facility for cylinders.</p> <p>Encourage the LPG industry association to work with the appropriate regulatory authority to phase out dangerous cylinders.</p> <p>Empower and provide resources to the Ghana Standards Board to monitor cylinders at various ports of entry.</p>
7	<p>LP Gas Appliances:</p> <p>A variety of LPG appliances can be found in the Ghanaian market. Conspicuously missing are appliances for applications such as refrigeration and mechanical power.</p>	Suitable and affordable appliances to be made available to prospective LPG consumers throughout the country.	Encourage LPG marketers to work with the manufacturers and vendors to secure suitable, affordable appliances for the consuming populace.
8	<p>Safety/Image:</p> <p>The existing Code of Practice for the industry is outdated. Although records of LPG accidents in Ghana are limited, the industry has a poor safety image. There are currently no nationally accepted operational and safety standards in the LPG industry.</p>	Improve LP Gas safety throughout the distribution chain and at the point of use.	<p>Clarify cylinder ownership and maintenance obligation</p> <p>Make mandatory the periodic inspection and re-certification of all LPG cylinders in the country.</p> <p>Strengthen the NPA and other Regulatory bodies to monitor and undertake periodic checks on refilling plants and LPG distribution facilities.</p> <p>Educate the public on the life span of equipment.</p> <p>Form LPG Associations (from Oil Marketing Co's to End Users) to assist in the formulation of regulatory policy.</p>

	Critical Issues	Strategy	Action Plan
			<p>Produce a readily accessible document on regulatory and safety procedures for the industry.</p> <p>Effectively enforce the ban on the importation of used cylinders into the country.</p>
9	<p><i>Access by the Poor:</i> The initial hardware-related cost of switching to LPG is a real barrier for the poor, not least because consumer credit is a rarity in Ghana.</p> <p>Uncertainty regarding availability and pricing, together with safety concerns, are deterrents.</p>	Promoting access by poor people to LPG should be formally adopted as a guiding principle for all industry stakeholders.	<p>Provide access to credit for private entrepreneurs to establish refilling plants in rural and peri-urban communities.</p> <p>Provide access to credit for end users, to buy LPG equipment and cylinders if necessary.</p> <p>Promote extensive use of smaller cylinders (3kg - 6kg) to reduce the recurrent high cost of refilling for the poor.</p> <p>Use of cooperatives (LPG User Associations) to guarantee LPG cylinder and equipment purchases for rural consumers and the poor.</p>
10	<p><i>Investment/Funding/Implementation:</i></p> <p>Both external and internal sources of financing have to be explored to meet the funding requirements for the sector. Grants and public investments will be needed in areas such as institutional capacity building and public education since they may not meet commercial investment criteria.</p>	Attract local and external or foreign investment and skills essential for improving access and service delivery in the LPG industry.	<p>Prepare a comprehensive business plan for the LPG industry.</p> <p>Organize a donor/investor forum to sell various investment opportunities to potential investors.</p> <p>Encourage government to provide incentives and an improved regulatory and safety environment to attract private investors.</p> <p>Establish a specialized fund for the LPG industry with seed funds from the petroleum levy.</p>
11	<p><i>Special Issues- Linkage with Other Donors:</i></p> <p>There is a strong emphasis among many donor institutions, including the World Bank, to encourage transparency and political integrity among recipient nations. Ghana is among the top African countries in terms of moving towards free markets and political and financial integrity. To the extent that this has attracted international donors, coordination with them is recommended.</p>	Coordinate assistance with other international donors to maximize the impact of the Ghana LPG project.	<p>Get in touch with the Millennium Challenge Corporation, which has a \$547 million assistance compact in place to reduce poverty in the Ghanaian agricultural sector.</p> <p>Establish contact with USTDA to determine if there is interest in taking on all or part of the action plan and, if so, to coordinate the work with USTDA and the MCC.</p> <p>Establish contact with USAID to determine interest and, if present, effect similar coordination.</p>

The Way Forward

4.17 Implementation of the final, agreed roadmap depends critically on commitment from key stakeholders—government and industry. Commitment to LP Gas sector recovery and extended access, together with clarification of the respective roles of government and industry, are essential outcomes. They must also be set in an agreed, realistic timeframe.

4.18 The thrust of this study is that the LP Gas industry/private sector should initiate and carry through the various action plans while the government/public sector acts as the enabler. In order to achieve this the LP Gas industry will need to put in place the resources and structures necessary to implement many of the action plans essential for achievement of the study objectives.

APPENDIX

POST-POWER-POINT-PRESENTATION NOTES Cameroon Ghana LPG Sector Study May 27, 2007

This presentation was given at the World Bank. Present were:

- Mr. Mourad Belguedj, Lead Energy Specialist, Oil and Gas Policy Division; Oil, Gas, Mining & Chemicals Division,(COCPO)
- Mr. Helmut Merklein, Consultant to COCPO
- Mr. Peter A. Van der Veen, Division Chief COCPO, Acting-Director, COC
- Mr. Jose Espejo, Sr. Investment Officer, Oil, Gas and Chemicals, IFC
- Mr. Oleodoro Mayorga Alba, Lead Energy Economist, COPCO
- Mr. Robert Bacon, Consultant COPCO

Mr. Belguedj provided an overall review of the origin and purpose of the study, “Lessons learned from the Nigeria LPG Study” and its deliverable. It was followed by a PP Presentation and description of the strengths and deficiencies of the Cameroonian LPG market and an action plan designed to restore it to sustainable growth. Mr. Merklein then reviewed and presented an action plan of the Ghanaian LPG market with proposed solutions to structural problems and bottlenecks. The discussion which followed was centered on what next steps would be useful to develop in order to implement the conclusions and recommendations which emerged from the two studies. They can be summarized as follows:

On Cameroon:

Of the two countries discussed, Cameroon has a better chance to rapidly move forward, if only because the supply issue is likely to be resolved sooner. Cameroon is moving towards full recovery of the Rio del Rey associated gas through the Equatorial Guinean gas export deal. It will thus be assured of a substantial increase in LPG supply from this project. Also, the World Bank has a good ongoing dialogue with the Government of Cameroon, which will likely require further support in the project’s preparation and implementation by identifying and working with a local “Champion” at the Government and/or at the Parastatal level. It is recommended that a market-driven approach, as opposed to mere demand stimulation, be designed as well as making the case for meeting the requirements of the local LPG market and improving its operations and safety by “developing the S&D numbers” and identifying the need for critical investments and ways to mitigate the appalling safety record of the industry.

On Ghana:

This is a more complex case especially because the LPG market is almost entirely dependent on imports. These imports enter the country either in the form of direct LPG deliveries to the storage facilities of the Tema Refinery or they are produced at the refinery from imported crude. Either way, all of the LPG destined to reach Ghanaian consumers must pass through the Tema Refinery facilities, which is the main bottleneck to any serious development of the industry that is characterized by a lack of access throughout the country, even in urban centers where most consumption is concentrated.

The Bank does not at this time have an ongoing dialogue with the Government of Ghana on the LPG sub-component in the energy sector, but it is engaged in serious discussions regarding the country's deforestation problems. Both the Forestry Ministry and the Environment Ministry have a vested interest in seeing the LPG market developed since the fuel is a natural alternative to wood that, if widely used in the household sector, will attenuate current deforestation and desertification trends. Either the Forestry or Environment Ministry would likely be an ally and a high-level insider Champion to lead the LPG Market development effort within the Government of Ghana. Talking to Mats Karlson, the Bank's Country Director, to investigate further this option is a good starter. Making the Forestry & Environment Authorities the entry points to the Ghana industry and from there making the case to the Ministry of Finance to deal with policy and logistical issues is a possible strategy.

In the face of the political impossibility to privatize the Tema refinery, it is necessary to bypass it altogether in starting this initiative. One way to approach the problem is to set the LPG price free with the support of the Finance Ministry and allow anyone to freely import LPG. In short, leave out the refinery, which would be free to export its LPG or to supply it to the domestic market, in competition with local private importers. Let the private sector build storage capacity where and when needed, including port facilities, to allow-market dictated growth of the storage facilities, first to major urban centers where the critical mass of demand resides and from there, as time goes by, let the market grow to outlying regions.

This two-prong approach will be summarized for and discussed with ESMAP, to seek funding for further work in this critical field and to move the clean energy agenda in both countries.