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USAID

FUELING AFRICAN DEVELOPMENT

THE ENGINE OF SUSTAINABLE ECONOMIC GROWTH

CENTER FOR ENVIRONMENT

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List of Acronyms:

BOO	Build, Own and Operate
BOOT	Build, Own, Operate and Transfer
BOT	Build, Operate and Transfer
EET	Office of Energy, Environment and Technology
EIA	Energy Information Administration
EPP	Energy Partnership Programs
GDP	Gross Domestic Product
G/ENV/EET	US AID Global Environment Center / Office of Energy, Environment and Technology
gWh	Gigawatt-hours
IIE	Institute of International Education
IPP	Independent Power Producers
MW	Megawatts
NGO	Non-Governmental Organization
NIS	Newly Independent States
OPEC	Organization of Petroleum Exporting Countries
SADC	Southern Africa Development Community
SSA	Sub-Saharan Africa
USAID	United States Agency for International Development
USDOE	United States Department of Energy
USEA	United States Energy Association
USG	United States Government

EXECUTIVE SUMMARY

AFRICA WILL NOT GROW WITHOUT COMMERCIAL ENERGY

Africa is a continent with huge potential for growth where a virtual economic "renaissance" is now taking place. But a crucial factor in Africa's **sustainable development** is the production and consumption of commercial energy. Traditional energy, the principal source of energy in Sub-Saharan Africa, can only take an economy so far in its quest for modernization. Experience shows a strong correlation between a country's level of economic development and the amount of commercial energy it consumes. Simply put, modern economies require modern fuels. If Sub-Saharan African (SSA) countries are to progress and take their place among industrializing nations, they must have more electricity for residential, commercial, and industrial use, and more petroleum products for industry and transportation, and natural gas.

DEVELOPING AFRICA'S POTENTIAL

Africa has an enormous potential for the development of low-cost energy resources. This potential, if realized, can be a boon to American energy businesses, can help provide sorely needed political stability to the region, and may even contribute to the energy security of the United States and its allies.

Africa's abundance of energy could be a strong export base, generating major revenue streams that could provide the basis for gross capital formation within the countries. The abundance of hydro and natural gas have the potential to provide clean alternatives for energy hungry economies. Developing regional energy markets means that substantial opportunities exist to reap a **Greenhouse Gas bonus**. Developing hydro will forestall the use of coal and petroleum. Developing regional gas markets means that very large quantities of flared or vented gas can now be used productively, generating potential **carbon credits** for energy companies and an environmental premium for users. In addition, provision of commercial energy will go a long way in reducing pressure on SSA's important biomass resources – resources that should be saved in the case of forests or used more efficiently in the case of crop residue to be returned to the soil. Provision of commercial energy will significantly improve the health of SSA's people by reducing indoor air pollution usually associated with cooking and lighting from biomass fuels.

The SSA countries' low finding costs and high reserve additions per well have encouraged US energy companies to invest increasingly more in the SSA energy sector. US Energy companies such as AES, Chevron, El Paso, Enron, Exxon, Mobil, Texaco, and Western Geophysical have a presence in some of the SSA countries and are attempting to increase their operations. Given, Africa's colonial dominance by European nations, especially in the resources sector, the US is in a position to take advantage of more favorable attitudes toward it and to foster and establish critical relationships as part of both the democratization and development of the continent. US Government

assistance in commercialization of energy, combined with support to the US private sector, can prove pivotal to the SSA countries economic development.

US companies that undertake the design, construction, and project management of energy infrastructure facilities; such as refineries, pipeline networks, electric generation plants (based on oil, gas, and hydro resources), various transmission and distribution systems, and of other basic infrastructure, such as airports, harbors, and roadways, are faced with tremendous challenges and opportunities in these countries. This will be especially true if regional integration of national energy and other markets takes place. Privatization measures being undertaken by West African nations should also provide opportunities for US companies in the private power arena.

BARRIERS TO DEVELOPMENT

To be sure, there are barriers to this progress. Investments in infrastructure are immobile and, in the Africa context, very large relative to their economies. Their prices and rates of return are politically sensitive. War, civil unrest, transfer risk, and expropriation are still important concerns in SSA, albeit of declining importance. Thus, despite recent positive developments in Africa, political instability has been and remains an important barrier, if not to resource exploitation, then to the integration of energy into the region's economic infrastructure.

Throughout the history of Africa, governments have often mismanaged and improperly maintained assets, and economic rents from resources were either wasted and/or not fully captured. Recently, however, there has been hope for change, as many countries have made policy decisions to reduce state ownership and control of industry. Many, however, do not have the necessary enabling frameworks to support reform, lack the institutional capacity to deal appropriately with the private sector, or still have high levels of inflation, high external debts, and low saving rates associated with the past economic policies and practices.

Reform policy must embrace the concept of market liberalization and competition with the energy sector, in order to rationalize prices, promote energy efficiency, promote private ownership, increase investment, modernize infrastructure, provide for sustainable development, and expand consumer choices. Energy policy should create an environment in which the state's energy needs are best served and the economic growth of the nation is encouraged. This environment is a market-oriented one that will encourage new, private investors to make prudent investments in the energy sector for the benefit of its development as well as their own personal profit. Such an environment cannot exist within the bounds of rigid governmental planning and control. Government's role must be limited to that of regulatory oversight.

One of the most important barriers is the lack of adequate legal and regulatory frameworks to support even the best policies. Private investors have a definite need for written, codified rules of engagement. They need to know about such things as market entry and exit conditions, competition from government entities, the size and scope of their markets, and regulation of price and/or competition.

A framework is only a part of the required institutional change. The changing nature of the world's interconnected economies and environment calls for a cadre of personnel with training beyond narrow traditional skills operating within viable, functional institutional settings. Eliminating the barriers to rational development requires the building of institutional capacity to sustain energy sector reform through increased private sector participation.

SOLUTIONS

The US Agency for International Development (USAID) has played an active and catalytic role in energy and in market transformation for decades. It has provided key energy related assistance in much of the developing world excluding Africa. In particular, the Agency has led the international community's bi-lateral assistance efforts towards *energy sector reform and privatization of the power sector in developing countries.* This success can be repeated in Africa, and it can achieve even greater results than previous endeavors.

The role for joint US government and private sector activity can, and should be to:

- provide training and help to strengthen institutions;
- assist information exchanges;
- support regulatory and policy reforms through provision of technical assistance and review of relevant experiences from the US and developing countries;
- facilitate managerial and technical partnerships, as one element of a broader effort designed to enhance institutional and human capacity; and,
- broker commercial tie-ups and joint ventures

Within the Central and West African region, the US can provide on-going assistance and *support to those governments already undertaking reforms and privatizing the energy* sectors. The US can assist further by informing and building awareness with African stake-holders and key decision-makers that, given the liberalization and privatization measures and policies that are rapidly transforming many of the economic structures of other developing nations, there is imminent danger that African economies will suffer the consequences of inaction. The result of such inaction is that many of the *gains that could* be derived will be missed.

The US can assist the countries in the region in developing a template for energy sector reform. This would clearly recognize that competition is more effective than regulation in promoting efficiency and that separation of the potentially competitive portions of the industry from the natural monopoly parts that need to remain regulated would make very good public policy. The emphasis should be on the essential elements that will ensure and preserve competition - leading to efficient pricing of products, improving production levels in the short term, and allowing for pragmatic future investments.

The US could assist in explaining the various options for competition that may be available – these would include competition for the market, competition in the market (open access, pooling, and time-tabling) and competition among energy or other

infrastructure networks. US experience in the international energy markets may provide instructive case studies.

For West African economies, with their abundant energy and other resources, privatization is necessary to improve the performance of enterprises that have become inefficient, stagnant, and wasteful. The US will have to develop programs that show how African governments can overcome domestic perceptions that privatization only benefits the rich and politically powerful, or only foreign companies. Clearly defined roles for regulators, operators, and investors along with rules for ensuring accountability are extremely important to maximizing the potential gains.

Programs of training in market-oriented management techniques – such as the management of change and the use of International Accounting Standards (IAS) as a management tool – need to be provided in concert with focused technical assistance. In every case the goal should be to impart knowledge about processes and methodologies such that counterparts can continue the work independently after the assistance program is concluded.

In order to develop and nurture critical relationships with African stakeholders, the US must identify "twinning" partnerships between West African utility regulators and their counterparts here, as well as between technical and operational managers from the anticipated new African power pools and their US power pool colleagues. This would have the added benefit of being able to serve as the basis for "model" institutional mechanisms aimed at promoting African economic and energy development. More specific technical assistance may be required for energy tariff restructuring and performance contract design and in the bidding and award procedures as ways to sustain private power programs.

Around the world, USAID's programs have been both a catalyst and support of energy sector reforms. They have been coordinated, multi-disciplinary efforts addressing each of these the major barriers to the development of the energy sector in transitional economies. Such an approach will aid in the rapid development of the "African renaissance" and will be a vital element in the growth and progress of millions of Africa's people.

INTRODUCTION

After 20 years of stagnation, and even decline for some countries, real gross domestic product (GDP) in Sub-Saharan Africa (SSA) is growing at a rate of four to five percent per year. Not only is economic activity increasing but it is outpacing population growth – people are becoming better off. Real per capita GDP has risen in 40 countries. Inflation, once in double digits for most all countries, has significantly fallen from an "average of 45 percent in 1994 to 13 in 1997 and only 15 of the SSA countries still had double-digit inflation rates in 1997 compared with 35 in 1994.[1]" This resurgence in economic activity is due mostly to the African countries own initiatives. President Clinton's visit to Africa and the Economic Growth and Development Initiative for Africa attest to the "renaissance" of Africa.

While Africa has exhibited impressive growth, it still must make important changes, overcome large barriers, and increasingly tap its resources to sustain that momentum. This paper demonstrates that **energy is at the heart** of Sub-Saharan Africa's continued development. Simply put, Africa needs more energy, **more commercial energy**, to grow. Increased oil and gas production will provide additional revenues for growth. Increased consumption of energy brings growth opportunities to all segments of the economy. This paper also demonstrates that to help Africa achieve sustainable development and use of its energy resources deliberate steps must be taken by the US Government.

Africa comprises 12 percent of the world's population but consumes less than 3.5 percent of the world's commercial energy[2]. It consumes almost 21 percent of the world's traditional energy, however[3]. Reflecting this pattern, energy in SSA has long meant concentrating on traditional energy such as wood burning stoves, biomass, and charcoal. Although, immediately following the first Arab oil embargo there was wide spread interest in exploration in the SSA, little came of these efforts with a few exceptions such as Angola, Gabon, and Nigeria. Neither has there been widespread production nor measurable increases in energy consumption. Economic development and growth have been both lower and slower in SSA than most anywhere else in the world. Figure 1 shows night lights across the globe and is a reflection of the level of development and access to energy.

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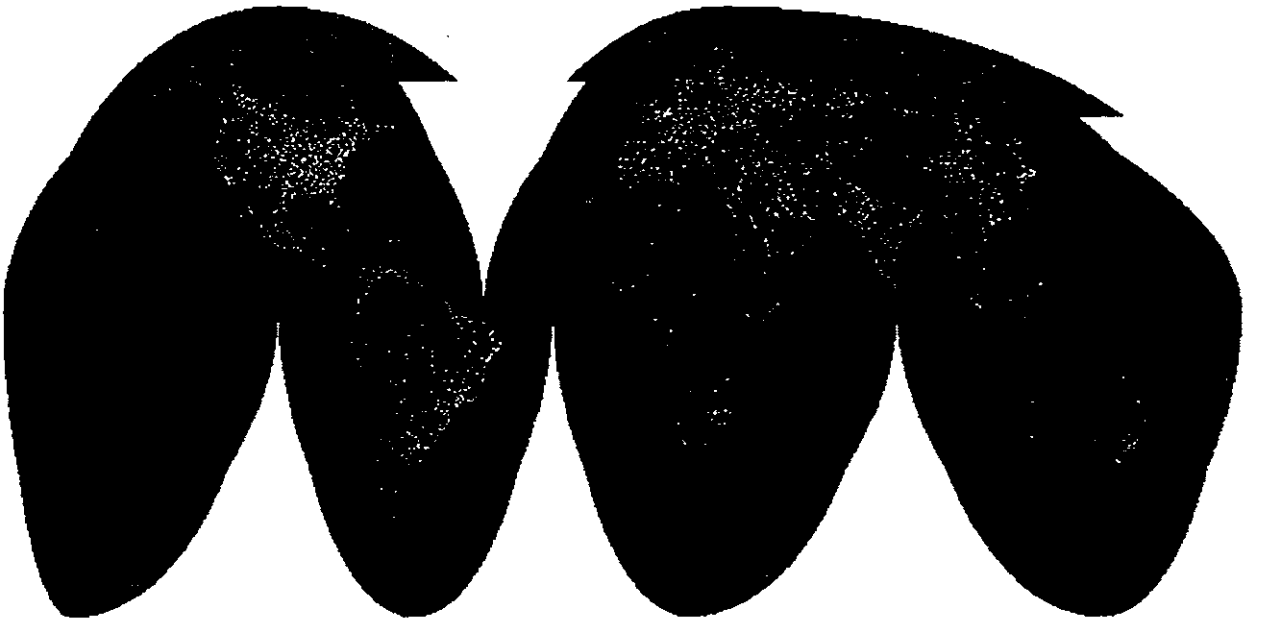
[1] "Africa's Recent Economic Performance and Challenges and the Role of the IMF", Evangelow A. Calamitsis, July 1998, Tokyo, Japan.
[2] Commercial energy includes petroleum, natural gas, coal, and electricity.
[3] 1998-99 World Resources, Energy Data Tables, World Resources Institute.

Figure 1



In spite of encouraging trends, most SSA countries are relatively poor. Only two of the SSA countries are considered upper middle income (Gabon and South Africa). Three are lower middle income, while the remainder are lower income with a per capita GDP less than US $750 per year.

There are six very compelling reasons for the US development community and commercial interests to increase their involvement.

- First, although Africa has been slower than most regions to embrace the private sector and market mechanisms, this factor is changing. Rates of return were, and are, often higher than in Asia and Latin America, even before the Asian economic crisis.
- Second, Africa has significant low-cost energy resources. The Energy Information Administration (EIA) reports that in Africa oil and gas finding costs were among the lowest and additions per well among the highest in the world for US major energy companies[4].

[4] *Performance Profiles of Major Energy Producers*, US Department of Energy, Energy Information Administration, Washington, DC, 1997.

These two factors will contribute to the exploitation of Africa's primary energy resources such as oil, natural gas, and hydroelectricity. These factors will not, however, ensure that energy consumption in local economies will benefit and increase.

- Third, US energy companies are investing increasingly more in the SSA energy sector. US Energy companies such as AES, Chevron, El Paso, Enron, Exxon, Mobil, Texaco, and Western Geophysical have a presence in some of the SSA countries and are attempting to increase their operations. Given Africa's colonial dominance by European nations, especially in the resources sector, the US is in a position to take advantage of more favorable attitudes toward it and to foster and establish critical relationships as part of both the democratization and development of the continent. US Government assistance in commercialization of energy, combined with support to the US private sector, can prove pivotal to SSA countries economic development.
- Fourth, and perhaps most importantly, Africa's sustainable development depends crucially on producing and consuming energy. Africa has the energy it needs to grow and, in some cases, the abundance of energy can be a strong export base generating major revenue streams that can provide the basis for gross capital formation within the countries. The abundance of hydro and natural gas can provide clean alternatives for energy hungry economies. Provision of commercial energy will go a long way in reducing pressure on SSA's important biomass resources – resources that should be saved in the case of forests or used more efficiently in the case of crop residue to be returned to the soil. Provision of commercial energy will significantly improve the health of SSA's people by reducing indoor air pollution usually associated with cooking and lighting from biomass fuels.
- Fifth, regional integration and the development of regional energy markets holds great environmental promise by: allowing the development of large generating capacity and the associated higher energy output per unit of input; the substitution of less carbon-emitting fuels sources for more carbon intense fuel sources; reduced market barriers and increased incentives for environmentally sound power sector investment; use of former waste for energy, such as flared or vented gas; and, the potential of developing carbon credits for qualifying energy investments.
- Sixth, in the past the US Agency for International Development (USAID) has focused on poverty alleviation, basic health, population, and rural energy in Africa. Given the pressing need for rapid socio-economic development in Africa, focussing exclusively on rural energy schemes will not provide the necessary catalyst and impetus to increasing economic activities that are a prerequisite for sustainable development. If USAID is to assist in "unleashing Africa's economic potential" then it will require a re-orientation and transition toward mechanisms geared to the promotion and

development of commercial energy (oil, natural gas, and hydro) as well as electricity for agricultural, industrial, and residential usage. This will, in turn, necessitate that the Agency commit and devote commensurate intellectual and resource capabilities towards this newly directed endeavor.

These benefits notwithstanding, there are a number of barriers that have slowed energy development and that will, if unaddressed, make it unsustainable. Many of these barriers are not unique to Africa but have been faced around the globe by developing as well as developed countries.

The major barriers are:

1. Transitional economies, previously centrally controlled, state owned and highly subsidized;
2. Small national markets;
3. Limited institutional capacity in government;
4. Missing or partial legal and regulatory frameworks;
5. Limited institutional and human capacity; and
6. Limited experience with and in attracting private sector investors.

The symptoms so often associated with these barriers include:

1. Lack of investment capital
2. Lack of developed infrastructure
3. Continued reliance on traditional energy
4. Very low rates of electrification
5. Scarcity of energy in energy rich exporting countries

These barriers are compounded by the enormity of necessary investments and the size of the energy sector relative to the overall economy. However, there is hope! Other regions of the world have successfully made the transition, are attracting private ownership and investment, and their economies are benefiting from liberalized energy, markets, and sectors. To be sure, there have been problems and the lessons learned, both positive and negative, in other parts of the world can greatly reduce the SSA learning curve and help to ensure a more balanced approach.

USAID has the ability to apply the valuable experiences it has gained in working in other developing countries and energy economies in transition to assist African nations in making the move to market-led economic structures. Specifically, in the energy sector, USAID can call upon its reference and resources base to develop programs of technical assistance to overcome and remove barriers and constraints such as those currently in

existence in Africa. In this respect, USAID already has well-designed and tested mechanisms for assistance in:

- Analysis of energy sector reform options;
- Provision of resident technical advisors to strengthen institutional and human capacity;
- Elaborating and drafting coherent and consistent policy and legal frameworks for private power development;
- Supporting financial and investment reforms for attracting private capital;
- Establishing training and utility partnerships for exchange of information, best practices, and operational techniques;
- Cooperation in clean energy technologies and transfer of energy efficiency techniques;
- Facilitating regional integration of energy and electricity markets; and
- Brokering commercial interactions between the US and foreign private sector firms.

WEAK MARKETS UNTIL BARRIERS ARE REMOVED

Unless and until these barriers are removed, energy markets and economic development will not reach their full potential. USAID's Global Bureau brings the necessary expertise and institutional memory to address these barriers. USAID's experience elsewhere has shown that successful exploitation and development of a country's energy resources requires a joint private-public sector approach with the private sector tackling commercial issues while the donor community works with the national government to remove institutional, legal, policy, and fiscal barriers.

USAID has experience from Asia, South America, Eastern Europe, and the New Independent States (NIS) in virtually every facet of energy sector promotion. The Agency has even been active in Africa, Egypt, and Morocco. More recently, the Global Bureau has begun to help Southern and West Africa address important issues in expanding regional energy trade, through a collaborative program with the **Southern African Development Community's (SADC)** Energy Sector and in Ghana with assistance in formulating a strategy to alleviate and resolve an energy crisis.

The remainder of this paper will more fully discuss the ideas developed in this introduction. The potential for development of the energy-development nexus is presented first. This section builds the case that there is a strong link between commercial energy and a country's development. There is a circular relationship between access to energy, economic development, political stability, and finally back to energy.

POTENTIAL FOR DEVELOPMENT

There are two aspects with regard to energy and the potential for development that are relevant to this presentation. The first aspect is the link between the access to commercial energy and a country's development, the increased economic activity and standard of living. The second aspect is the potential to develop energy resources or exploitation of energy and economic growth. This latter aspect is reflected in areas such as:

- A country's natural resource stock,
- The state of its legal, political, and economic frameworks that either inhibit or promote investment and/or rational and efficient use of energy,
- The existence of well functioning capital markets, and
- The institutional ability and ease with which countries can absorb large infrastructure projects.

Impact on Growth and Development

Economies grow on energy, whether traditional or commercial. However, traditional energy can only take an economy so far in its quest for modernization. Growing modern economies require petroleum products for transportation; electricity for residential, commercial, and industrial use, and natural gas and other forms of commercial energy. In 1995 traditional energy accounted for over 64 percent of Africa's (excluding Algeria, Egypt, and South Africa) total energy consumption compared to a low of 2.9 percent in North America and a high of 21.6 percent in Asia. Note that Africa as a region is the least developed.

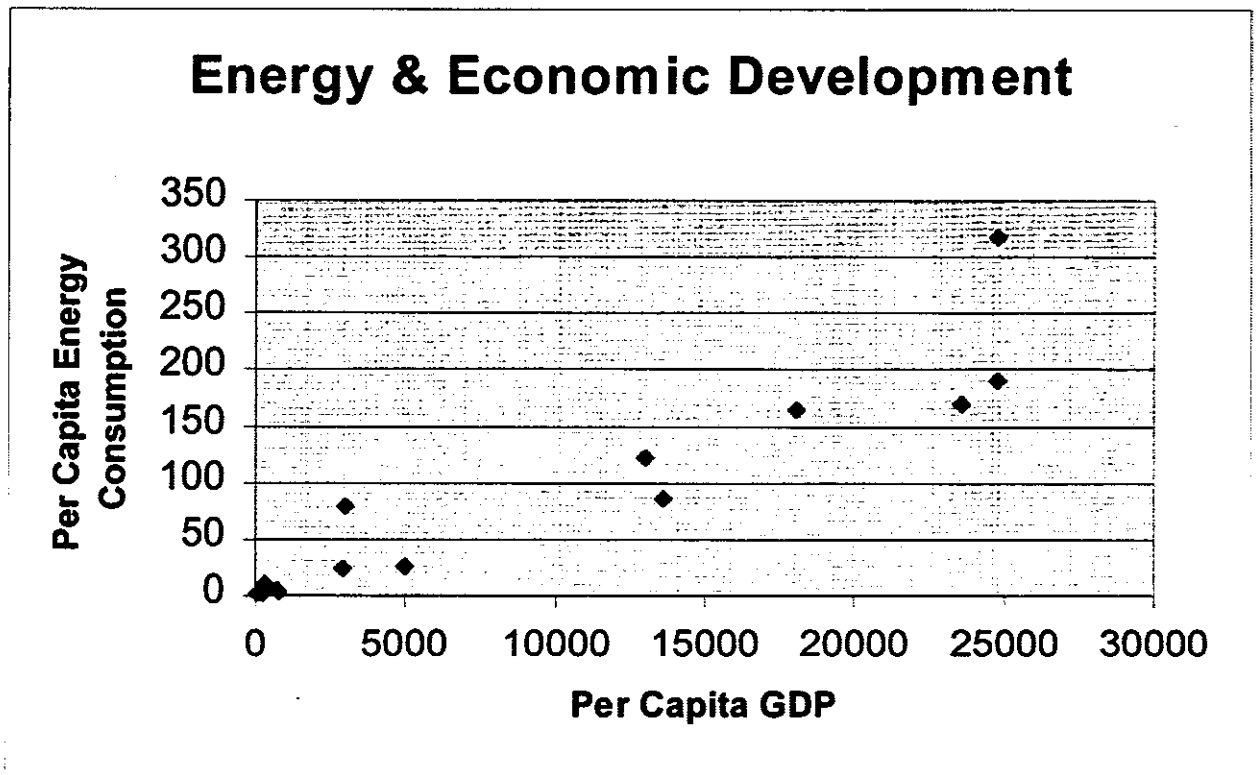
ASSUMING AFRICAN ECONOMIES GROW AT THE USDOE BASE CASE OF 4.1 PERCENT ANNUALLY, THEIR ANNUAL CONSUMPTION OF COMMERCIAL ENERGY AND ELECTRICITY MUST GROW BY 2.5 PERCENT AND 3.6 PERCENT, RESPECTIVELY. UNDER THE BEST OF CIRCUMSTANCES THIS WOULD REQUIRE US $91 BILLION FOR ELECTRICITY ALONE THROUGH THE YEAR 2010.

This connection between commercial energy and development is aptly shown in Figure 2 where per capita GDP is measured against per capita energy consumption. A major feature of economic development is that it is preceded and sustained by higher levels of energy consumption. Countries that have low energy consumption also

experience low levels of economic development. While there is debate over how much commercial energy is truly needed in an efficient economy, there is no debate over the direction, and more economic growth requires more commercial energy.

If SSA countries are to grow and take their place among industrializing nations, then they must have more electricity, petroleum products, and natural gas. Modern economies require modern fuels.

FIGURE 2



Resource Potential

The resource availability for Africa, in general, and for Western African nations, in particular, is significant, because of both the mix of resources and the size of exploitable reserves. Overall proved reserves of petroleum for all of Africa increased from about 59 billion barrels to almost 70 billion barrels between 1977 and 1997 for an increase of

about 18.6 percent during that period. For natural gas during the same period, overall African reserves rose from about 208 trillion cubic feet to just under 330 trillion cubic feet, recording a 59 percent increase in the reserves base. **Table 1** highlights the resource potential for selected West African nations.

Table 1

West Africa's Energy Resources – 1995

Country	PETROLEUM Billions of Barrels	NATURAL GAS Trillions of Cubic Feet	Hydro Potential gWh/Year
ANGOLA	5.4	1.7	65,000
CAMEROON	0.4	3.9	103,000
CHAD	1	-	-
CONGO-Brazzaville	1.5	3.2	n/a
CONGO-Kinshasa	0.2	-	419,210
COTE d' IVOIRE	0.1	0.8	12,400
EQUITORIAL GUINEA	-	1.3	-
GABON	1.3	0.5	32,500
GHANA	-	0.2	5,100
NAMIBIA	-	3	8,645
NIGERIA	15.5	104.7	n/a
Sub-Total	25.4	119.3	645,855
ALL AFRICA	67.6	328.6	1,000,000
W. Africa/Africa	38%	36%	65%

Source: Energy Information Administration, 1996.

One of the most significant potential energy resources in Africa is that derived from hydroelectric schemes. **Table 1** also shows that 65 percent of Africa's economically feasible hydroelectric power potential of approximately 1 million gigawatt-hours (gWh) per year is in West Africa.

Natural Gas

Four countries, Algeria, Egypt, Libya, and Nigeria account for 90 percent of all current natural gas proven reserves in Africa according to the US Energy Information Administration.

Within West Africa, Nigeria's onshore and offshore associated and unassociated natural gas fields contain an estimated 104.7 trillion cubic feet of proven reserves, the tenth largest in the world. Currently, Nigeria vents 70-75 percent of the gas it produces, but attempts have been underway to reduce flaring and to recover the gas and natural gas condensates from offshore oil fields. The country plans to develop a domestic network for industrial end-users and for electricity generation as well as for export to industrial customers in the region including Ghana, Benin, and Togo through the development of the West African Gas Pipeline Project. When completed, 75 percent of the natural gas exported will be consumed by a major electric generation facility at Takoradi in Ghana and by a Ghanaian aluminum smelting plant. The largest of Nigeria's natural gas projects, the Bonny LNG project to be completed in 1999 and estimated at a cost of $4.5 billion, will involve gas transmission systems, a two liquefication train plant and other export infrastructure with an expected capacity of 254 billion cubic feet. Nigeria will supply France, Italy, Portugal, Spain, and Turkey with natural gas from this project beginning in 2000.

Other Western African countries with large natural gas reserves include: Angola, Cameroon, Congo-Brazzaville, Cote d'Ivoire, Equatorial Guinea, Gabon, and Namibia. The majority of gas is currently flared, with some re-injection at oil fields taking place to boost the production of crude oil. The lack of any gas-based infrastructure is a major constraint to development and consumption of this resource within these countries.

Petroleum

Many of the Western African countries are significant producers and exporters of petroleum. Nigeria is the region's only current member of the Organization of Petroleum Exporting Countries (OPEC). Other petroleum producers include: Angola, Congo-Brazzaville, Equatorial Guinea, Gabon (a former OPEC member), Cote d'Ivoire, Cameroon, and Congo-Kinshasa.

Most of these countries are undertaking some basic revision of their hydrocarbon policies in order to attract private foreign direct investment. This is especially true where recent offshore discoveries have highlighted the potential for regional and international export earnings from crude oil and petroleum products. In addition, the new discoveries have the potential for reducing or eliminating some of the most severe bottlenecks to economic development in these countries.

Estimates of Nigeria's oil reserves are about 16 billion barrels. Nigeria is hoping to raise its oil reserves to 25 billion barrels by 2000, but the country has faced delays in long-

awaited exploration efforts because of its inability to meet its share of capital expenditures in joint ventures where the Nigerian National Petroleum Corporation is the major partner. In contrast, deepwater exploration areas off Nigeria have attracted the active interest of many foreign oil companies under attractive production sharing agreements. There is a mix of Nigerian and foreign firms involved in the upstream petroleum sector and the Oil Ministry recently issued new guidelines for "marginal" and under-exploited fields.

Angola was the sixth largest supplier of crude oil to the US in 1997 and the second largest oil producer in Sub-Saharan Africa, behind Nigeria. Nearly two-thirds of Angola's crude production comes from offshore of the Cabinda Province. Recent offshore discoveries have attracted the interest of American, Australian, Belgian, Canadian, and French companies in acquiring licenses for unclaimed exploration blocks. It is expected that along Angola's as yet unexplored southern coast new exploration blocks will also be made available for foreign participation.

Gabon, the third largest of Sub-Saharan Africa's crude oil producers and a former OPEC member, has substantial mineral and natural resources in addition to petroleum. Gabon has proven oil reserves of 1.34 billion barrels, and it has expressly sought foreign oil company investment as a means to maintain and increase its petroleum reserves, especially in ultra-deep offshore areas. American, Canadian, French, Italian, and South African firms are all actively involved in various exploration and development deals in Gabon.

In 1994, the Congo (Brazzaville) introduced new hydrocarbon legislation to spur production sharing agreements with foreign oil companies, and since then American, British, French, Italian, and South African firms have been more actively involved in oil operations.

With the discovery of crude oil reserves in 1991 Equatorial Guinea's economy changed dramatically, and during the past two years (1996 and 1997) expansion of the petroleum sector has boosted GDP growth to 37.3 percent and 50.0 percent, respectively. Total proven crude oil reserves are only about 12 million barrels, but projects to utilize the associated gas from existing fields have also been a major attraction for foreign companies. Raytheon is constructing a $300 million methanol gas plant to be completed at the end of 2000 that will provide 2,500 metric tons of methanol.

The current market size of most of the West African countries, with the exception of Nigeria, generally precludes them from absorbing the majority share of the product stream from either the oil or gas industries.

Hydropower

Angola has an estimated potential for hydropower of 150,000 gWh/year, of which 65,000 gWh/year is considered to be firm potential (technically and economically feasible). Of the 10 hydro plants in Angola, several are out of service and in need of reconstruction. There is the potential for a major hydro plant to serve the needs of both Angola and Namibia from a scheme on the Epupa river.

In Cameroon, over 100,000 gWh/year of hydropower is considered to be firm potential. Currently, less than 6 percent of the firm potential has been developed. At this time there are no hydropower plants under construction. Refurbishing and uprating of existing hydro plants is considered to be of significance in strengthening the national power system.

Congo-Brazzaville has a firm hydro potential, approximately 50,000 gWh/year. At present, hydropower provides only 352 gWh/year or more than 99 percent of electricity production from two schemes.

The Democratic Republic of the Congo (Congo-Kinshasa) has by far the largest potential for hydropower development, not only in West Africa but all of Africa. The estimated firm potential is about 420,000 gWh/year, corresponding to about 60 gW of installed capacity. In 1996 the generation was less than two percent of the firm potential.

Similarly, in other countries of the region the vast potential of hydroelectric power goes beyond the immediate or even foreseeable future requirements of those countries with large hydro resources. Yet, the mere availability of abundant energy resources is not enough to realize their optimal production and utilization. Real economic growth and development will more easily be achieved through policies that spur trade and integration of relatively small national structures into viable entities.

Regional integration of West African electricity (for instance, along the lines of planned integration efforts by the Southern African Development Community, SADC) will go a long way toward relieving bottlenecks to domestic consumption and toward providing impetus to economic activity by making available reliable electric power for industries and consumers alike. Exports of energy resources, like electricity, petroleum products,

and natural gas need to be viewed from broader regional perspectives in terms of enhancing the development processes and not just as earners of export revenues from overseas markets. Projects like the venture between Exxon, Shell, and Elf and the two governments to construct a 1,050 kilometer oil pipeline from oil fields in Chad to an export facility in Cameroon is a prime example of the regional perspective that needs to be taken.

US Business Interests

It has been estimated that about 15 percent of the US major energy producers' foreign exploration and development spending were directed at Africa during 1996. Between 1994 and 1996, their exploration and development spending more than doubled, increasing by about US $1.4 billion. Most of the upstream petroleum investment by US companies in Africa was targeted at projects in Algeria, Angola, and Nigeria. Some US majors also have operations in Egypt, Namibia, and Niger. In addition, due to a number of factors such as political difficulties most exploration and development activities have been offshore.

US oil companies have been, and continue to be, actively involved in exploration and development of the crude oil and natural gas potential of West Africa. They are involved in joint ventures with the respective national oil and gas companies in the countries as well as in production sharing agreements. They have also been asked to provide assessments for needed work to refurbish, conduct turn-around maintenance, and for operation of refineries, and they have expressed interest in some of the major pipeline networks that will have to be built in West Africa. In some cases, they are also considering participating in "Build, Own, and Operate" and "Build, Operate and Transfer" projects in the electric power sector. They are not only involved in the upstream activities but are active in refining, marketing, and distribution of petroleum products in some of the countries. **Table 2** gives a snapshot of some of the US firms involved in selected West African countries in the energy sector.

TABLE 2

US BUSINESSES INVOLVED IN SELECTED WEST AFRICAN ENERGY

Company:	ANGOLA	CHAD	CONGO-Brazzaville	COTE d' IVOIRE	EQUAT. GUINEA	GABON	NAMIBIA	NIGERIA	NIGER
Amoco	X					X		X	
Apache				X					
Amerada Hess						X			
Ashland								X	
Chevron	X		X					X	
CMS-			X		X				
Exxon	X	X	X					X	X
Marathon						X			
Mobil	X	X		X	X			X	
Occidental	X					X			
Ocean/ UMC	X			X	X				
Phillips				X		X		X	
Santa Fe				X		X			
Sun Oil								X	
Tenneco								X	
Texaco	X			X			X	X	X
Triton					X				
Raytheon					X				

Source: EIA Country Analysis Briefs 1997 & 1998; EIA Performance Profiles of Major Energy Producers 1996; Mbendi Oil Industry Profiles 1998

Companies with a vested interest in the region have built needed facilities or developed options such as floating production, storage and off-loading vessels as part of their operations. US companies have also renegotiated their production sharing agreements in Equatorial Guinea to allow the government to receive revenues earlier in the life of the production contract. One of the biggest hurdles facing US companies is that, taken individually, the countries of the region, with the exception of Nigeria, are characterized by small markets and inadequate basic infrastructure.

US companies that undertake the design, construction and project management of energy infrastructure facilities such as refineries, pipeline networks, electric generation plants (based on oil, gas, and hydro resources), various transmission and distribution systems and other basic infrastructure, such as airports, harbors, and roadways, are faced with tremendous challenges and opportunities in these countries. This will be

especially true if regional integration of national energy and other markets takes place. Privatization measures being undertaken by West African nations should also provide opportunities for US companies in the private power arena. Some countries, Angola, Cameroon, Cote d'Ivoire, Congo, and Nigeria among them have begun making moves toward deregulation of some energy markets and are encouraging independent power producers (IPP) to participate in various electric generation schemes.

Competition with US business interests comes mainly from the multinational Australian, British/Dutch, Canadian, French, Italian, and South African firms among other. In the areas of private power and specific petroleum/natural gas projects, the competition may broaden to include non-European and non-American firms as Chinese, Libyan and Israeli groups have begun discussions with West African governments. In some cases, they are already participating in energy projects.

BARRIERS

It has been shown that energy is important to Africa's development, that Africa has significant energy resource potential, and that the level of energy integration into and consumption in African economies is quite low. There are a number of important barriers to the more complete exploitation and utilization of energy. These barriers are grouped into four main areas:

- Political/non-commercial risk,
- Macro or structural problems,
- Sectoral related barriers, and
- Institutional barriers.

Each of these is discussed in greater detail below with relevant examples from USAID activities throughout the world.

Political/ Non commercial Risks

Investments in infrastructure are immobile and, in the Africa context, very large relative to their economies. Their prices and rates of return are politically sensitive. So political stability and interference are important considerations in investment and operations. War, civil unrest, transfer risk, and expropriation are still important concerns in SSA, albeit of declining importance in some countries.

It can be argued that political stability appears to be returning to much of Africa. Nigeria just held local elections that have been certified by foreign observers to be fair and relatively free of interference. However, political instability has been and remains an important barrier, if not to resource exploitation, then to the integration of energy into the country's economic infrastructure. Examples abound such as Nigeria, which has been able to develop and maintain its position as an energy exporter, but has been unable to significantly increase its own economic development in concert with energy revenues. Often the outflow of energy can be assured even if there is relatively little inflow to the country as a whole. Another example has been that of the Democratic Republic of the Congo.

While development of energy and the subsequent economic development can be threatened by political instability, it is also clear that energy availability strengthens political stability and the economy. This past summer, civil and political unrest in Nigeria may have been sparked by the frustration over chronic fuel shortages and the prospect of long-term imports of petroleum products because the national refineries were on the verge of total collapse. Suspected sabotage of oilfield systems was one aspect of the unrest, especially in politically sensitive provinces. The government was forced to impose fuel rationing, despite being a major crude oil exporter to both Europe and the US.

It is not the purpose of this paper to discuss in detail the political stability issues on resource development. This will be the topic, no doubt, of many other papers and speakers. Suffice it to say that there is a circular relationship in the long run between energy and political stability.

Macro/Structural Barriers

Much progress has been made in SSA countries. However, they are still living with the decisions made in the past. For example, for the most part they have traditionally had centrally planned (or at least controlled) economies, characterized by state ownership and control of key resources and they have been largely undemocratic in political structure. These characteristics have contributed to the fact that resources have been inefficiently exploited, assets mismanaged and improperly maintained, and economic rents from resources either wasted and/or not fully captured. Many countries have made the policy decisions to reduce state ownership and control of industry but lack the necessary enabling frameworks and the institutional capacity to deal appropriately with the private sector, or they still have high levels of inflation, high external debts, and low

saving rates associated with the past economic policies and practices. In West Africa, Angola, Chad, the Congo-Brazzaville, Equatorial Guinea, Namibia, and others suffer from one or more of these types of problems.

To further complicate the issues, the size of most SSA economies is too small to fully support infrastructure that can achieve the full economies of scale. Thus, by itself, for example, a refinery built to serve Benin would not be at the lower end of the cost per litre scale. It may have to be large enough to serve the markets many times that size before unit costs are optimal.

Legal and Regulatory Frameworks

One of the most important of the macro-level barriers in SSA is nonexistent or inadequate legal and regulatory frameworks. Several legal and regulatory reforms are essential to successful economic development. These include the reforms of:

1. Contract law - are businesses free to make contracts and can they be enforced at a reasonable cost?
2. Property rights;
3. Access to credit - who can borrow and at what premium, can collateral be repossessed and disposed of quickly?
4. Labor law - what claim does labor have on earnings? What are the company's responsibilities to workers?
5. Business entry and exit - can businesses be easily created and made legally functional? Can private firms enter the business? Do the laws and regulations protect key economic functions? Are there exit restrictions?
6. Regulation of monopolies; and
7. Licensing of business operations.

Such reforms benefit the entire economy, fostering growth and alleviating poverty.

When the state runs most areas of commerce, there are often no clear written "rules of the game". Each entity operates with relative impunity in its sphere of influence and rules of the game are only written when one or more government entities have overlapping areas of interest. Private investors, on the other hand, have a definite need for written codified rules of engagement. They need to know about such things as market entry and exit conditions, competition from government entities, the size and scope of their markets, and regulation of price and/or competition. One conclusion from a recent World Bank analysis indicates that most countries in Sub-Saharan Africa do not

have well-developed frameworks. "Moreover, many governments have weak regulatory capacity, reflecting a limited tradition of adhering to the rule of law, a scarcity of skilled resources and, in many cases, widespread corruption."[5]

Sector Reforms

A rational program for energy development is one element of the foundation for a state's economic progress. Nevertheless, the development of commercially viable energy sectors is neither an easy nor natural evolution for transitional economies. Long-standing policies of resource allocation and socio-political control create formidable barriers to reform. These inherent barriers occur in three aspects of a country's socio-political infrastructure: (1) policy, (2) legal, and (3) regulatory.

1. *Policy*

At the heart of the problem is the state's energy policy. By definition a transitional state is one that is moving from economic actions controlled by the government to economic conditions resulting from unconstrained market transactions. This transition covers a continuum over which democratically chosen governments can impose a range of restrictions. Nonetheless, the over-arching goal of reform is that of having policies that envision free choice as the ultimate determinant of economic action.

Corrupt and dictatorial regimes notwithstanding, US national and commercial interests would best be served by the minimization of policies that allocate resources or impose restrictive oversight in the name of national security. Except during extraordinary periods of national emergency, the rationale for this opposition is simple: Government's mandate is so broad that fiscal attention cannot remain focused on any single sector. Limited budgets and political expedients will necessarily require that support for the energy sector must compete with support for other social sectors. This competition may result in politically acceptable compromise, but the recipients of this social service will pay the price of the resulting insufficient service. And those recipients, even in the most democratic of states, are effectively disenfranchised from the important decisions that have promulgated their distress.

One can see in the example of the Indian electric power system, the wholesale failure of that centrally planned system to sustain its early, impressive growth and guarantee

[5] Privatizing Africa's Infrastructure, World Bank, 1998.

reliable electric service to support India's commercial aspirations. From 1947 until 1991, India's nationalized energy sector made great strides in bringing electricity to that nation's vast population. By the early 1990's the Indian budget, collapsing under the colossal burden of its broad social responsibility, found itself unable to continue its subsidy of the power sector. Similarly, without budgetary support – and saddled with politically supported policies of non-rational pricing – the local electricity boards (distribution companies) found themselves unable to maintain their systems. A national policy in 1991 attempted to introduce foreign investment to shore up the collapsing system, but the elaborate, political infrastructure, designed to allocate resources, was wholly unable to amend its protectionist policies and allow the needed infusion of capital. The system limps on, critically in need of a broad rethinking of the energy policy under which it can no longer function.

Reform must begin as a policy: the clear, unambiguous expression of political will to support the view that the best guarantee of safe, reliable, reasonably priced energy supplies is the minimally regulated exercise of free market forces over those decisions that are properly left to the owners and managers of utilities.

The policy must embrace the concept of market liberalization and competition with the energy sector, in order to rationalize prices, promote energy efficiency, promote private ownership, increase investment, modernize infrastructure, provide for sustainable development, and expand consumer choices. This concept implies that there must be a rational and economic utilization of energy resources through application of least-cost principles and the promotion of energy efficiency, including demand-side management, open access to international markets, and the promotion of environmentally sound energy practices.

Energy policy should create an environment in which the state's energy needs will best be served. We strongly believe that this environment is a market-oriented one that will encourage new, private investors to make prudent investments in the energy sector for the benefit of its development as well as their own personal profit. Such an environment cannot exist within the bounds of rigid governmental planning and control. Government's role must be limited to that of regulatory oversight.

2. *Legal*

The state's legal structure derives from the national policy and is a critical support for its implementation. Most states enact legislation – an energy law or laws – to codify the policy framework by assigning duties and responsibilities to various participants. This

legitimacy is an important step in demonstrating political stability – itself an essential for attracting constructive, equity investment.

The Central and Eastern European countries in the post Communist era provide an example of the complexity of these legal issues. In the past few years, these countries have begun to re-cast their laws to implement market-oriented policies in line with the directives of the European Union, to which many are proactively seeking admission. Unfortunately, legislation enacted by a national government on behalf of its wholly owned energy enterprises is typically protectionist and prescriptive. Reflective of an allocative and centrally structured system, the law often has the effect of restricting new entrants and innovation in the ownership and management of the sector. In the broadest view, the energy law must foster an environment in which constructive change will occur for the general benefit. This view transcends political control, however, to embrace the principles of open and transparent market participation.

The effort to develop an energy law in Bulgaria is illustrative. The law that now winds its way through parliament has been drafted over several years of changing governments but unchanging philosophy. Despite extensive consultations with multinational donors, the draft law reflects the belief that it would be a dereliction of the government's duty to hand-over control of the energy sector to market interests. Legal linguistics skirt the issue, but it remains that the law, if enacted as presently written, may only codify a protectionist imperative. Serious new investors seeking the security of a legal framework for their equity will likely find more attractive opportunities elsewhere, and speculative investment may fill the void to the ultimate cost of the Bulgarian consumer.

In the legal area, reform is focused upon the drafting of legislation that will remove government from the day-to-day operation of energy enterprises and allow free market signals to dictate operational and entrepreneurial decisions. Toward this end there are two general principles:

a) The energy law should establish an independent regulatory authority that represents broad constituencies and encourage free-market operation of the energy companies.

b) Operational decisions and day-to-day management of the companies should be controlled by corporate officers, company managers, etc., and not by the energy law.

3. *Regulatory*

The independent regulator is the necessary proxy for the public interest as ownership and operational decisions move from state control toward the more rational control of the marketplace. While divestiture of state authority is to be encouraged, it is important that state control be replaced by an unimpeachable panel that can review actions and ensure the honest functioning of the competitive process.

Throughout Africa, as throughout other transitional economies, the record of establishing an independent energy regulatory authority is mixed. There are independent regulators in South Africa and Zambia. A National Electricity Council resolves disputes and makes recommendations to the government in Mozambique. An Electricity Regulation Board was established in Kenya in 1997, but it reports to the Ministry of Energy. Electricity supply is still administered through an old colonial law in Namibia, and the Electricity Act of 1963 is still the basis for energy regulation in Swaziland. There are no Regulators in the Democratic Republic of Congo or Lesotho, and only the possibility of one, within the Electricity Act of 1996, in Angola.

The critical implementing provision of a sound and sustainable, market-oriented energy law is the establishment of an independent regulatory authority. To ensure independence, the regulators should be on staggered terms that divorce the term of the regulator from the terms of those who make appointments. Decisions by the authority must reflect a majority of the regulatory body and yet be subject to an appropriate appellate process.

In setting or reviewing prices and tariffs, the regulatory body should be given the flexibility to promote rational, market-based pricing; having considered the actual cost of the energy, the cost of reserve capacity, the cost associated with environmental compliance, and the need to provide a return of and on investment. The final determination of a price, however, will require a finding that the price is fair, reasonable, non-discriminatory, and transparent, and that it will promote competition and minimize cross-subsidies.

Institutional Capacity

Assisting Africa to overcome the problems and achieving the goals outlined throughout this paper requires well-trained and motivated people working within functional and supportive institutional structures, both nationally and organizationally. But well-trained people are only part of the required institutional change. Eliminating these barriers to rational development requires the building of institutional capacity to sustain energy sector reform through increased private sector participation. USAID's vast experience with capacity-building programs in developing countries has shown that the best training will simply be wasted if the institutional structure is not supportive and cannot take advantage of the often expensive foreign training. Institutional structure is not about organizational diagrams. Fundamentally, it is about the allocation of *authority, responsibility, and resources.* The traditional highly centralized and hierarchical institutional structure found throughout Africa does not lend itself to the kinds of efficiencies required for moving to a modern economy, and eventually to sustainability.

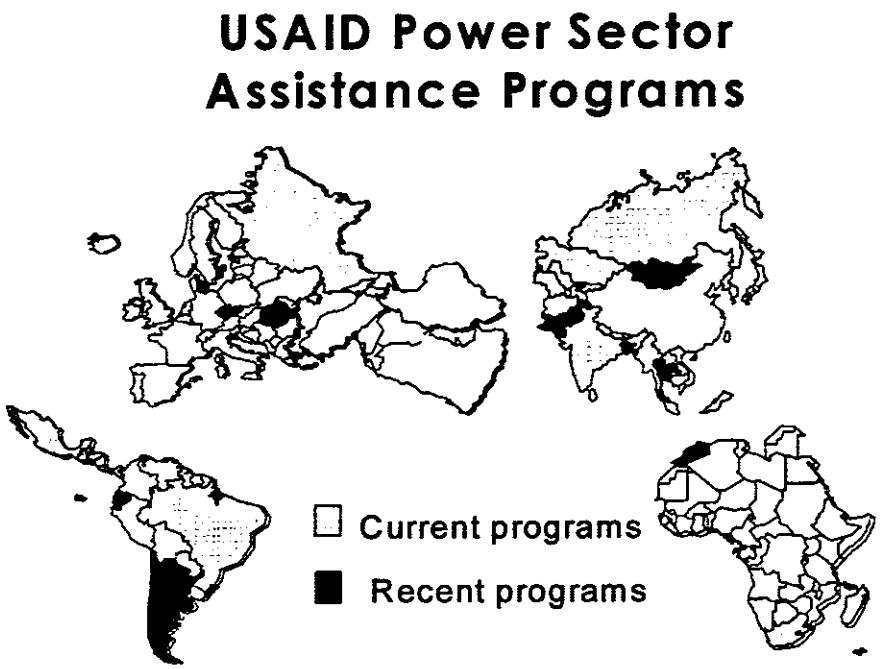
Changes in institutions and attitudes are needed to solve energy/environmental problems for the long-term. New technologies alone will not solve these problems. The changing nature of the world's interconnected economies and environment calls for a cadre of personnel trained beyond narrow traditional skills, operating within viable, functional institutional settings. Institutional reform, however, is not separate from training.

In approaching the problems of a transitional economy, it is often misleading to see the solutions as a purely technical in nature. In many instances technical training programs may have been in existence at very high levels; the country's technical progress may appear to be retarded but it is for lack of infrastructure and equipment rather than incompetence. These deficiencies can be met by the private sector's investment in new equipment and in modernization. The more serious deficiency is likely to be in managerial competence. While this skill, like new equipment, can also be brought in by the private sector – particularly the foreign, private investor – it would be unwise to create a separate, foreign, managerial class of employee.

SOLUTIONS

USAID has played an active and catalytic role in energy and in market transformation for decades. Its involvement includes rural electrification and cooperatives in Asia and Latin America, the first fully integrated private power assistance program in Pakistan, energy

efficiency and conservation programs in Africa and the New Independent States, and renewable energy programs from South Africa to India. In all, USAID has provided key energy-related assistance in much of the developing world except Africa. The map below portrays the extent of USAID's assistance in the power sector.



USAID has led the international community's bilateral assistance efforts toward energy sector reform and privatization of the power sector in developing countries. USAID sponsored several studies identifying the issues and assessing the benefits and bottlenecks from a global, regional, and local perspective. USAID then developed a multi-pronged approach of technical assistance for addressing the burgeoning demand for electricity and the problems of scarce capital and continual environmental degradation.

Early on it was clear to USAID that available multilateral, bilateral, and internal funds would be insufficient to sustain developing countries' power expansion needs and, consequently, their economies. And, regardless of funding source, too little attention was being given to the environmental consequences of increased power production.

Initial efforts to develop private power programs involved the Philippines and Pakistan. Subsequent efforts were in Central and South America and India. It is not coincident that these regions are at the forefront of developing countries for installed or planned private power capacity additions.

The model used by USAID began with the conviction that a concerted effort in the USAID's office for reform and privatization was a worthwhile option for developing countries' power needs. Understanding the broad and specific issues was the second step. Designing a comprehensive intervention program in collaboration with others in USAID and the host country was the third step. Generally, a series of workshops and reverse missions to broaden understanding and increase knowledge of the benefits and potential shortcomings were held. Specific assistance was then provided depending upon the host countries' interest and needs. Often these included collaborative efforts with government officials and other relevant entities to establish policies, regulations, and transparent procurement programs and to identify and assess technology needs.

In the Philippines, for example, USAID began with assessing the government's level of interest and knowledge base. A series of workshops in the Philippines and in the U.S were held. Several training programs were developed and provided. Specific assistance efforts ranged from institutional strengthening to developing transparent procurement processes and the evaluation of private power proposals. In another example, USAID recently provided specific assistance to assist the government of Sri Lanka in negotiating the terms of their first private power facility. USAID also recently provided Bangladesh with several scenarios where private power could offer solutions to their power needs. Courses of action ranged from small distributive generation to large central generating facilities using indigenous natural gas. Today, a major program is underway to determine the potential of this clean energy resource for meeting their energy needs.

Within the Central and West African region, the US can provide on-going assistance and support to those governments already undertaking reforms and privatizing the energy sectors. The US could help further to inform and build awareness with African stake-holders and key decision-makers that, given the liberalization and privatization measures and policies that are rapidly transforming many of the economic structures of developing countries in Asia, Europe, Central America, and South America, there is imminent danger that African economies will suffer the consequences of inaction and will miss many of the gains that could be derived. *Governments that are serious about attracting* private investors have no choice but to adopt new regulatory systems that are coherent and consistent in their overall policy framework and that fully encompass elements that

will ensure access, transparency, enforcement procedures and that will be free from "interference" in operational matters.

For West African economies, with their abundant energy and other resources, privatization is necessary to improve the performance of enterprises that have become inefficient, stagnant, and wasteful. The US will have to develop programs that show how African governments can overcome domestic perceptions that privatization will benefit only the rich and politically powerful or foreign companies. Ideas with respect to public offerings, collective investment programs, and voucher schemes to achieve widespread ownership can help boost political support for privatization. This is especially important for Africa, where financial and capital markets are non-existent or weak at best, with the exception of South Africa. The familiarity and stability of the policy environment is a key to keeping transactions costs associated with power projects minimized. Clearly defined roles for regulators, operators, and investors along with rules for ensuring accountability are extremely important to maximizing the potential gains.

The US can assist the countries in the region in developing a template for energy sector reform. This would clearly recognize that competition is more effective than regulation in promoting efficiency and that separation of the potentially competitive portions of the industry from the natural monopoly parts that need to remain regulated would make very good public policy. The emphasis should be on the essential elements that will ensure and preserve competition - leading to efficient pricing of products, improving production levels in the short term, and allowing for pragmatic future investments.

Again, specific to Africa, the US can provide assistance in explaining the various options for competition that may be available – these would include competition for the market, competition in the market (open access, pooling, and time-tabling), and competition among energy or other infrastructure networks. US experience in the energy markets of Argentina, Brazil, Chile, China, India, and elsewhere may provide instructive case studies.

The role for the US could be:

- Support regulatory and policy reforms through provision of technical assistance and review of relevant experiences from the US and developing countries;
- Provide training and help to strengthen institutions;
- Assist information exchanges;
- Facilitate managerial and technical partnerships, as one element of a broader effort designed to ehance institutional and human capacity; and,
- Broker commercial tie-ups and joint ventures.

Technical Assistance

A key aspect of any US effort will be to provide support to West African nations in formulating and developing credible commercial capital markets and in establishing regional electricity trading markets.

USAID's programs have been both a catalyst and support of energy sector reforms. They have been coordinated, multi-disciplinary efforts addressing each of the major barriers to the development of the energy sector in transitional economies. One of the principal hallmarks of USAID's approach has been the establishment and facilitation of public-private partnerships.

For example, the primary goal of USAID's Eastern European Regional Energy Efficiency Project was to develop a more economically sound and environmentally sustainable energy sector. The project also worked within the energy sector to increase the transfer of state-owned assets to the private sector and accelerate the development and growth of private enterprises. These objectives foster the emergence of a competitive, market-oriented economy in which the majority of the economic resources are privately owned and managed. Supporting targets of these objectives included:

- The development of policy and institutional framework for more efficient and rational energy production, use, private investment in energy companies, and improved technologies;
- The strengthening of intra-regional cooperation in energy and stimulating the development of new energy supply arrangements that integrate Eastern Europe with Western Europe and international markets;
- The enhancement of the coordination of assistance among the European Community, the World Bank, and the International Energy Agency to avoid duplication of efforts and to leverage limited US resources;
- The establishment of a business environment that supports private sector growth.
- The sustainable use of natural resources; and,
- The enactment of laws and legal institutions which support democratic and market-oriented values.

USAID has provided legal assistance to work with local counterparts in several transitional economies to draft energy legislation. Exemplary of this effort was a program in Poland where US attorneys worked to draft an energy law that was subsequently enacted and that now serves as a model for the development of laws in

other countries. An important aspect of this assistance is that the legal work was fully coordinated with other economic and operational advisory services to provide a consistent and effective program of support for energy reform in Poland.

A Philippines Success Story

Catalysts for change:
- Government canceled commissioning of nuclear plant that equaled 10 percent of installed capacity
- Manila, Outer Islands suffered frequent outages and brownouts
- Unmet electricity demand cost $3 billion/ year in economic losses in the early 1990s

USAID's Assistance Program (1990s)
- Identification of options for privatization and restructuring
- Assistance for the development of a natural gas industry to diversify fuel mix and reduce environmental impacts
- Development of an energy conservation action plan

Power outages eliminated:
- IPPs added 3,500 MW accounting for 30 percent of total capacity
- Successful BOT program that has resulted in more than $10 billion in mostly foreign power project investments

Planned restructuring of power sector:
- Streamline generation sector to reap benefits of private investment and competition
- Improved efficiency, accountability, transparency

New natural gas industry:
- Private investment will build gas pipelines, gas-fired generation plants, and other infrastructure
- By 2025, gas will account for 11 percent of energy consumption
- Reduced dependence on imported oil

Similar projects have been mounted in the Czech Republic and Hungary, where legal assistance was coordinated with a broader program advising the Hungarian Energy Office on both the development and implementation of energy policy.

USAID has been highly successful in coordinating the development of an independent regulatory framework throughout Central and Eastern Europe. USAID organized two major conferences in November 1997 and 1998. These conferences brought together

the executives of newly created regulatory authorities – a well as prospective regulators from countries where authorities have not yet been established – for intensive four-day sessions to address such topics as organization, tariffs and licensing.

Contractors organize the meetings with broad experience in supporting regulatory development in a number of transitional economies. As such these working meetings have provided valuable information for regulators who must advance quickly up a learning curve for which there is no in-country institutional experience.

In addition, and perhaps most important, these occasions are opportunities for network building and the establishment of a sustainable, international regulatory community that will be able to interact beyond the terms of the USAID assistance.

Training

Limited resources for institutional capacity building in Africa have provided for energy training in only a few selected countries. However, due to various factors enumerated throughout this paper, the U.S. is now able to consider an expanded, more active role in support of sustainable energy development in Africa. This shift is timely, because there continues to be an urgent need to train Africa's energy sector policy/decision-makers in how to best assess, use, and manage their energy resources. Via integrated and comprehensive institutional capacity building programs, the U.S. can play an integral role in supporting sustainable energy development on the African continent. Practical training will provide African energy sector professionals with access to U.S. technologies, methodologies, and management techniques, and this technology cooperation will enable African countries to meet the growing demands for energy without creating greater damage to the environment. At the same time, this cooperation will help U.S. industry capture a larger share of the potential market in Africa.

Programs of training in market-oriented management techniques – such as the management of change and the use of IAS accounting as a management tool – need to be provided in concert with focused technical assistance. In every case the goal should be to impart knowledge about processes and methodologies such that counterparts can continue the work independently after the assistance program is concluded.

AN EXAMPLE OF USAID'S SUCCESS IN INSTITUTIONAL CAPACITY BUILDING

USAID's Power Sector Institutional Capacity Building Project for India

Since 1993, USAID and the IIE Energy Group have designed and implemented a series of institutional capacity building programs to introduce private power, restructuring and regulation to India. Key policy and decision-makers have been trained in private power financing, managerial restructuring, regulatory reform, environmental protection, and energy efficiency. As a result of their USAID training, these participants have served as the primary agents for change at the local and state levels. Whether in the private or public sector, USAID trainees have been the driving force behind private power development, restructuring and regulation. With USAID start-up support, they established India's first energy sector NGO, the India Energy Training Program Alumni Association (IETPAA), which is dedicated to promoting sustainable energy development in India. At present, the IETPAA is playing a vital role as an independent, Indian, non-governmental voice, and it continues to raise the level of dialogue on key energy issues, as well as to affect national and state energy policy.

Having seen the successful restructuring and regulatory initiatives at the State Electricity Boards enabled by USAID training, the Government of India has initiated serious efforts at electric sector reform at the national level: legislation in August 1998 required every state to set up regulatory commissions and rationalize the electricity tariffs. The results should build a financially sound electricity industry, able to address serious problems of inefficiency, inadequate generating capacity and financial mismanagement. More important, relieving electricity outages will help strengthen an economy, which is striving to grow, and a healthy economy will be better able to deal with pervasive social and environmental problems.

The national-level reforms now in progress demand even greater volumes of training if they are to be successful. In 1999-2000, USAID training will focus primarily on strengthening institutional capacity in regulatory reform and energy efficiency commercialization. The IIE Energy Group will conduct approximately 28 in-country workshops, study tours, and executive seminars, training about 900 participants. Several of the most essential workshops will be turned over to Indian institutions, along with faculty training, in an effort to reach larger numbers of participants.

Partnerships

In order to develop and nurture critical relationships with African stakeholders, the US must identify "twinning" partnerships between West African utility regulators and their counterparts here, as well as between technical and operational managers from the anticipated new African power pools and their US power pool colleagues. This would have the added benefit of being able to serve as the basis for "model" institutional mechanisms aimed at promoting African economic and energy development. More specific technical assistance may be required for energy tariff restructuring and performance contract design and in the bidding and award procedures as ways to sustain private power programs.

Currently, the United States Energy Association (USEA) is managing almost 40 USAID sponsored Energy Partnership Programs (EPP) in the energy area, in about 20 countries. The programs are very active India, Indonesia, and the Philippines and have expanded the partnerships in the NIS and Russia, while continuing programs in Central and Eastern Europe. New partnerships are now in place in South America and Africa (Egypt and Senegal) and further partnerships are being developed.

The EPP matches US utilities and trade associations with their counterparts in the developing regions. The program, which began in 1992, is an effective mechanism for assisting those interested developing countries in implementing commercial reforms and privatizing electric and natural gas utilities, respectively. As part of the program, utility managers and regulatory officials from the US are able to experience working conditions in the developing regions and to present information on a variety of issues such as customer service, regulatory affairs, information systems, metering, rates and accounting, contracting and procurement, and safety. The partnerships are an effective platform for transfer of US experiences in market-based energy production, transmission, distribution, regulation, and climate change mitigation to key counterparts in developing countries and regions and allows US executives to comprehend the dynamics of non-US energy markets.

EPP thereby provides invaluable opportunities for senior executives of foreign utilities and regulatory agencies to observe and learn how US utilities are structured, financed, managed, and regulated under free-market conditions. The program assists US companies to identify and develop strategic partners and to identify both short and log-term commercial opportunities.

CONCLUSIONS

There is significant potential in Sub-Saharan Africa to use energy as the engine of economic development and to promote commercial energy in such a way as to reduce the environmental impact over other alternatives. Every assistance activity targeted at promoting regional supply solutions will mean a significant environmental bonus as either large-scale hydro resources are brought into play or flared gas becomes available for regional markets. Because of their size and the number of players involved, these activities will require cooperation and encouragement in order to take place. There is also an opportunity to generate a sizable amount of carbon credits, which could provide a large and immediate boost to the trading of carbon and associated projects. Despite these potentially large benefits, it is likely that they will not be fully realized or only realized over a long period of time unless external assistance is provided. USAID can and should play a pivotal role in reducing the barriers to expanded private sector participation and regional energy markets.

In the past USAID has focused on poverty alleviation, basic health, population, and rural energy in Africa. Given the pressing need for rapid socio-economic development in Africa, focussing exclusively on rural energy schemes will not provide the necessary catalyst and impetus to increasing the economic activities that are a prerequisite for sustainable development. If USAID is to assist in "unleashing Africa's economic potential" then it will require a re-orientation and transition toward mechanisms geared to the promotion and development of commercial energy (oil, natural gas and hydro) as well as electricity for agricultural, industrial, and residential usage. This will, in turn, necessitate that USAID commit and devote commensurate intellectual and resource capabilities towards this new endeavor.

USAID has the ability to apply the valuable experiences it has gained in working in other developing countries and energy economies in transition to assist African nations in making the move to market-led economic structures. Specifically, in the energy sector, USAID can call upon its reference and resources base to develop programs of technical assistance to overcome and remove barriers and constraints such as those currently in existence in Africa. In this respect, USAID already has well designed and tested mechanisms for assistance in:

- Analysis of energy sector reform options;
- Provision of resident technical advisors to strengthen institutional and human capacity;
- Elaborating and drafting coherent and consistent policy and legal frameworks for private power development;
- Supporting financial and investment reforms for attracting private capital;
- Establishing training and utility partnerships for exchange of information, best practices, and operational techniques;
- Cooperation in clean energy technologies and transfer of energy efficiency techniques;
- Facilitating regional integration of energy and electricity markets; and
- Brokering commercial interactions between the US and foreign private sector firms.