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# RESTORING ENERGY SERVICES FOR LIBERIA: NEEDS AND OPPORTUNITIES

BRIEFING BOOK FOR THE USAID OFFICE OF  
INFRASTRUCTURE AND ENGINEERING

**February 2006**

This publication was produced for review by the United States Agency for International Development. It was prepared by International Resources Group (IRG).

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**International Resources Group**  
1211 Connecticut Avenue, NW, Suite 700  
Washington, DC 20036  
202-289-0100 Fax 202-289-7601  
[www.irg ltd.com](http://www.irg ltd.com)

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## Section 1

# BACKGROUND AND APPROACH: PREPARATION OF THE BRIEFING BOOK

The Briefing Book is the product of a desk study by Matthew Mendis, Will James, and Jerome Weingart of IRG. The report was prepared over a one-week period in response to an urgent request by USAID for these materials. The report was prepared specifically for the use of Mr. Gordon Weynand, Energy Team Leader, Office of Infrastructure and Engineering at the USAID Bureau for Economic Growth, Agriculture, & Trade.

Our approach has included developing contacts with relevant organizations (World Bank, UNDP, Liberia Electricity Corporation, European Community, etc.); obtaining internal sector notes, memos, and reports from the World Bank, EU, USAID, and others; and mining the Internet. *The report is a synthesis of materials drawn from many sources; attribution is shown throughout the report and Annexes.*

The IRG team was able to meet with representatives of the World Bank, and have phone conversations and Internet dialogue with senior representatives of the Liberian Electricity Corporation (the new acting director), the World Bank (Washington, DC and Liberia), the European Community, and others.

The Briefing Book was presented in DRAFT form to USAID on February 17, 2006 for review and comment. It includes the following components:

- Main report and short annexes
- Printed Annexes – relevant major reports from UNDP, World Bank, FAO, and others
- CD-ROM with relevant background reports and articles

The report will be finalized upon receipt of comments from USAID.



## Section 2

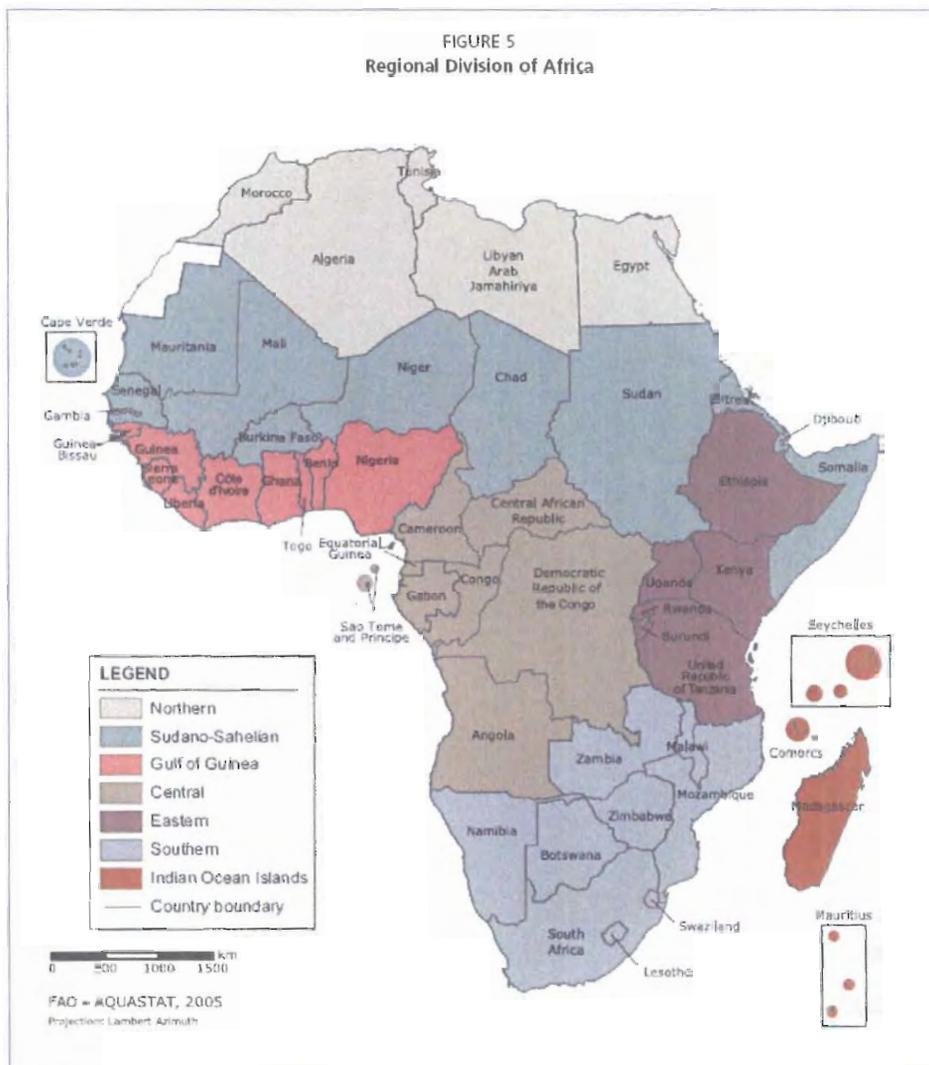
# INTRODUCTION TO THE REPUBLIC OF LIBERIA



## Location and Geography<sup>1</sup>

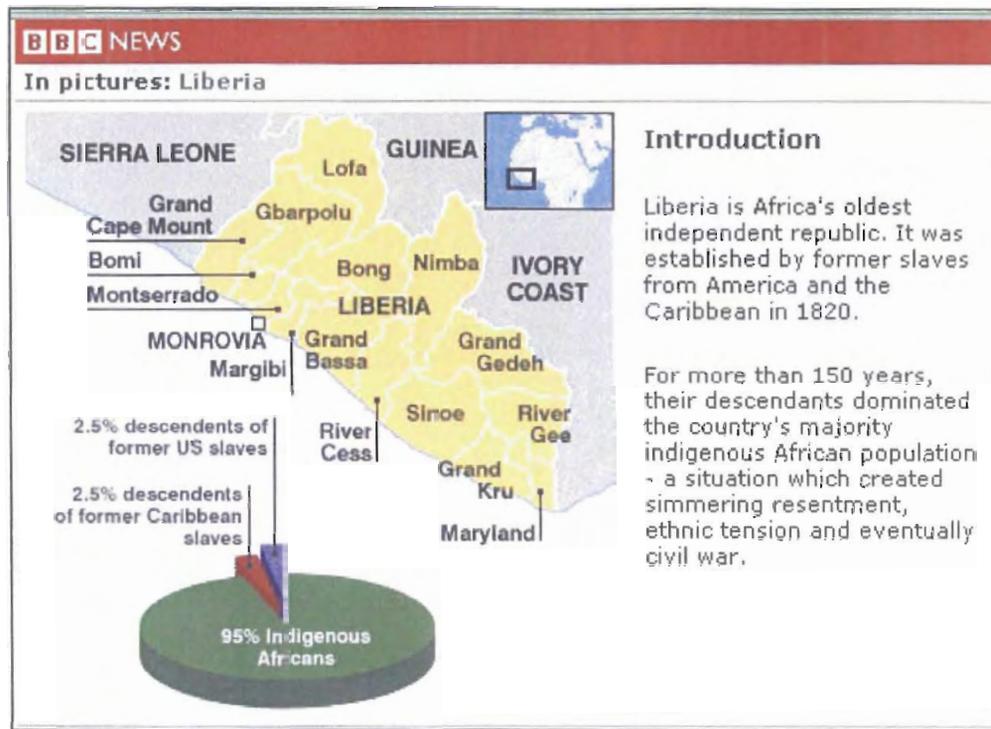
Liberia is located in West Africa and is one of the countries in the Gulf of Guinea (see figure below). It has a land area of 111 370 sq. km (roughly the size of Tennessee). It borders Sierra Leone to the northwest, Guinea to the north, Cote d'Ivoire to the northeast and east, and the Atlantic Ocean to the south and southwest. From north to south is 465 km and the Atlantic Ocean coastline is 520 km long. The terrain is mostly flat to rolling coastal plains, rising to rolling plateau and low mountains in the northeast. The coastline is characterized by lagoons, mangrove swamps, and river-deposited sandbars.

The country can be divided according to elevation into four main physical regions parallel to the coast: (1) coastal plains up to 100 m; (2) hills from 100 to 300 m; (3) plateaus from 300 to 600 m; and (4) mountainous areas above 600 m. In 2002, the cultivated area was estimated at 600 000 ha (about 5% of total land area), of which arable land covers 380 000 ha, while 220 000 ha were covered by permanent crops.



<sup>1</sup> Source: UN Food and Agriculture Organization (FAO). Irrigation in Africa in figures – AQUASTAT Survey 2005

## Brief History of Liberia<sup>2</sup>



Source: BBC News online (February 2006)

Portuguese explorers established contacts with Liberia as early as 1461 and named the area *Grain Coast* because of the abundance of grains of Malegueta Pepper. In 1663 the British installed trading posts on the Grain Coast, but the Dutch destroyed these posts a year later. There were no further reports of European settlements along the Grain Coast until the arrival of freed slaves in the early 1800s.

Liberia, which means "land of the free," was founded by freed slaves from the United States in 1820. These freed slaves, called Americo-Liberians, first arrived in Liberia and established a settlement in Christopolis, now Monrovia (named after U.S. President James Monroe) on February 6, 1820. This group of 86 immigrants formed the nucleus of the settler population of what became known as the Republic of Liberia. *The chronology of events from that date to the present (February 2006) is presented below.*

Thousands of freed slaves from America soon arrived during the following years, leading to the formation of more settlements and culminating in a declaration of independence on July 26, 1847 of the Republic of Liberia. The idea of resettling free slaves in Africa was nurtured by the American Colonization Society (ACS), an organization that governed the Commonwealth of Liberia until independence in 1847. The new Republic of Liberia adopted American styles of life and established thriving trade links with other West Africans.

The formation of the Republic of Liberia was difficult. The settlers periodically encountered stiff opposition from African tribes whom they met upon arrival, usually resulting in bloody battles. At the same time, the newly independent Liberia was encroached upon by colonial expansionists who forcibly took over much of the original territory of independent Liberia.

<sup>2</sup> Based on text from US Dept. of State. The chronology of events (below) is drawn from the BBC Online.

Liberia's history until 1980 was largely peaceful. For 133 years after independence, the Republic of Liberia was a one-party state ruled by the Americo-Liberian-dominated True Whig Party (TWP). Joseph Jenkins Roberts, who was born and raised in America, became Liberia's first President. The style of government and constitution was fashioned on that of the United States. The True Whig Party dominated all sectors of Liberia from independence until April 12, 1980, when indigenous Liberian Master Sergeant Samuel K. Doe--from the Krahn ethnic group--seized power in a coup d'etat. Doe's forces executed President William R. Tolbert and several officials of his government, mostly of Americo-Liberian descent. As a result, 133 years of Americo-Liberian political domination ended with the formation of the People's Redemption Council (PRC).

Doe's government increasingly adopted an ethnic outlook as members of his Krahn ethnic group soon dominated political and military life in Liberia. This caused a heightened level of ethnic tension, leading to frequent hostilities between the politically and militarily dominant Krahns and other ethnic groups in the country.

Political parties remained banned until 1984. Elections were held on October 15, 1985, in which Doe's National Democratic Party of Liberia (NDPL) was declared winner. The elections were characterized by widespread fraud and rigging. The period after the elections saw increased human rights abuses, corruption, and ethnic tensions. The standard of living, which had been rising in the 1970s, declined drastically. On November 12, 1985, former Army Commanding Gen. Thomas Quiwonkpa invaded Liberia by way of neighboring Sierra Leone and almost succeeded in toppling the government of Samuel Doe. Members of the Krahn-dominated Armed Forces of Liberia repelled Quiwonkpa's attack and executed him in Monrovia.

**The Start of the 14 Years Civil War:** On December 24, 1989, a small band of rebels led by Doe's former procurement chief, Charles Taylor, invaded Liberia from the Ivory Coast. Taylor and his National Patriotic Front rebels rapidly gained the support of Liberians because of the repressive nature of Samuel Doe and his government. Barely 6 months after the rebels first attacked, they had reached the outskirts of Monrovia.

The 1989-1996 Liberian civil war, which was one of Africa's bloodiest, claimed the lives of more than 200,000 Liberians and further displaced a million others into refugee camps in neighboring countries. The Economic Community of West African States (ECOWAS) intervened and succeeded in preventing Charles Taylor from capturing Monrovia. Prince Johnson--who had been a member of Taylor's National Patriotic Front of Liberia (NPFL) but broke away because of policy differences--formed the Independent National Patriotic Front of Liberia (INPFL). Johnson's forces captured and killed Doe on September 9, 1990.

An Interim Government of National Unity (IGNU) was formed in Gambia under the auspices of ECOWAS in October 1990, and Dr. Amos C. Sawyer became President. Taylor refused to work with the interim government and continued fighting. By 1992, several warring factions had emerged in the Liberian civil war, all of which were absorbed in the new transitional government. After several peace accords and declining military power, Taylor finally agreed to the formation of a five-man transitional government.

After considerable progress in negotiations conducted by the United States, United Nations, Organization of African Unity (now the African Union), and ECOWAS, disarmament and demobilization of warring factions were hastily carried out. Special elections were held on July 19, 1997, with Charles Taylor and his National Patriotic Party emerging victorious. Taylor won the election by a large majority, primarily because Liberians feared a return to war had Taylor lost.

For the next 6 years, the Taylor government did not improve the lives of Liberians. Unemployment and illiteracy stood above 75%, and little investment was made in the country's infrastructure. Liberia is still trying to recover from the ravages of war; six years after the war, pipe-borne water and electricity were still unavailable, and schools, hospitals, roads, and infrastructure remained derelict. Rather than work to improve the lives of Liberians, Taylor supported the bloody Revolutionary United Front in Sierra Leone, fomenting unrest and brutal excesses in the region, and leading to the resumption of armed rebellion from among Taylor's former adversaries.

**The End of the War, but not yet Peace:** On June 4, 2003 in Accra, Ghana, ECOWAS facilitated the inauguration of peace talks among the Government of Liberia, civil society, and the rebel groups called "Liberians United for Reconciliation and Democracy" (LURD) and "Movement for Democracy in Liberia" (MODEL). LURD and MODEL largely represent elements of the former ULIMO-K and ULIMO-J factions that fought Taylor during Liberia's previous civil war (1989-1996). Also on June 4, 2003, the Chief Prosecutor of the Special Court for Sierra Leone issued a press statement announcing the opening of a sealed March 7 indictment of Liberian President Charles Taylor for "bearing the greatest responsibility" for atrocities in Sierra Leone since November 1996. By July 17, 2003 the Government of Liberia, LURD, and MODEL signed a cease-fire that envisioned a comprehensive peace agreement within 30 days. The three combatants subsequently broke that cease-fire repeatedly, which resulted in bitter fighting that eventually reached downtown Monrovia.

On August 11, 2003 under intense U.S. and international pressure, President Taylor resigned office and departed into exile in Nigeria. This move paved the way for the deployment by ECOWAS of what became a 3,600-strong peacekeeping mission in Liberia (ECOMIL). Since then, the United States has provided limited direct military support and \$26 million in logistical assistance to ECOMIL and another \$40 million in humanitarian assistance to Liberia. On August 18, leaders from the Liberian Government, the rebels, political parties, and civil society signed a comprehensive peace agreement that laid the framework for constructing a 2-year National Transitional Government of Liberia, effective October 14. On August 21, they selected businessman Gyude Bryant as Chair and Wesley Johnson as Vice Chair of the National Transitional Government of Liberia (NTGL). Under the terms of the agreement the LURD, MODEL, and Government of Liberia each selected 12 members of the 76-member Legislative Assembly (LA). The NTGL was inducted on October 14, 2003 and will serve until January 2006, when the winners of the October/November 2005 presidential and congressional elections take office.

The October 11, 2005 elections and the subsequent November 8, 2005 run-off elections were the most free, fair, and peaceful elections in Liberia's history. Ellen Johnson-Sirleaf defeated George Weah 59.4% to 40.6%. Johnson-Sirleaf became Africa's first democratically elected female president. The National Electoral Commission (NEC) certified Johnson-Sirleaf as the winner on November 23, 2005. Johnson-Sirleaf's inauguration is scheduled for January 16, 2006.

## **Government and Political Conditions**

Liberia is currently under a transitional government that took office in October 2003 and served until January 16, 2006, when the government of President-elect Johnson-Sirleaf took office. The transitional government includes a chair and vice chair and a 76-member Legislative Assembly.

On September 19, 2003 the UN Security Council adopted Resolution 1509, which established a peacekeeping operation (UN Mission in Liberia, or UNMIL) under Chapter VII authority. In keeping with the UN Secretary General's recommendations, it called for a force of 15,000 peacekeepers, with 250 military observers and 160 staff officers, a robust police component of up to 1,115, and a significant civilian component and support staff. Those forces essentially have been close to fully deployed throughout Liberia. By November 1, 2004, UNMIL had disarmed and demobilized over

103,000 individuals characterized as ex-combatants. UNMIL also advised the reformed National Election Commission as it executed the October/November 2005 legislative and presidential elections.

Historically, Liberia has had a bicameral legislature which consists of 64 representatives and 26 senators. The legislature was set up on a proportional representation basis after the 1997 special election. Historically, the executive branch heavily influences the legislature and judicial system, the latter being largely dysfunctional for now.

There is a Supreme Court, criminal courts, and appeals court and magistrate courts in the counties. There also are traditional courts and lay courts in the counties. Trial by ordeal is practiced in various parts of Liberia. The basic unit of local government is the town chief. There are clan chiefs, paramount chiefs, and district commissioners. Mayors are elected in principal cities in Liberia. For now, superintendents appointed by the president (or Chairman under the NTGL) govern the counties. There are 15 counties in Liberia.

**Principal Government Officials:** [See the box on page 7, below. The Government is in the process of restructuring; the best current information will be available in Monrovia during the USAID field visit.]

Liberia maintains an embassy in the United States at 5201 16th Street, NW, Washington DC, 202-723-0094.

### **President Ellen Johnson Sirleaf**

**Age:** 67. Born October 29, 1938 in Monrovia, Liberia.

**Education:** M.P.A., Harvard University, 1971. She also earned an economics diploma from the University of Colorado in 1970, and a B.B.A. in accounting from Madison Business College in 1964.

**Career:** A long-standing member of Liberia's political elite, Sirleaf served as finance minister under ex-President William Tolbert before he was toppled and killed in 1980 coup. She fled the country shortly afterward, taking up top jobs at Citibank, the United Nations, and the World Bank.

**Return to Politics:** In 1997, she made a failed bid for the presidency, losing to ex-president-turned-warlord Charles Taylor in a vote he won amid a climate of fear. After Taylor was forced into exile as part of a deal to end Liberia's civil war in 2003, Sirleaf returned to make a successful run for the presidency in late 2005.

**Family:** Sirleaf is a widowed mother of four, and has eight grandchildren.

*SOURCE: The Associated Press*

<http://www.cnn.com/2006/WORLD/africa/01/16/liberia/index.html>



MONROVIA, 2 Feb 2006 (IRIN) - Liberia's new president, "Iron Lady" Ellen Johnson-Sirleaf has sacked every political appointee from the outgoing administration at the ministry of finance as part of her crackdown on corruption.

Initial reports that Sirleaf had sacked the entire finance ministry including civil servants were a result of "confusion", said Presidential Press Secretary Spencer Browne in a statement late Thursday.

All finance ministry officials appointed by the outgoing transitional government have been sacked, clarified the statement, but civil servants will remain in place pending an investigation.

Sirleaf marched into the finance ministry unexpected on Wednesday when she reportedly dismissed "all staff" including civil servants without notice and announced that corruption investigations would begin.

Source: UN Office for the Coordination of Humanitarian Affairs, Sunday 12 February 2006

[www.IRINnews.org](http://www.IRINnews.org)

## The Economy of Liberia

Before the civil war the Liberian economy relied heavily on iron ore production and on the export of natural rubber. Liberia was a major exporter of iron ore on the world market. In the 1970s and 1980s, iron mining accounted for more than half of Liberia's export earnings. Following the coup d'etat of 1980, the country's economic growth rate slowed down because of a decline in the demand for iron ore on the world market and political upheavals in Liberia. Liberia's foreign debt amounts to about \$3.5 billion. *[It is likely that most or all of this debt will be forgiven by the international donor community.]*

The 1989-1996 civil war had a devastating effect on the country's economy. Most major businesses were destroyed or heavily damaged, and most foreign investors and business people left the country. Iron ore production has stopped completely. Liberia depends heavily on timber and rubber exports and revenues from its maritime registry program. Rubber now accounts for a significant fraction of Liberia's export earnings. Relatively few foreign investors have returned to the country since the end of the civil war due to the depressed business climate and continuing instability. The one bright light in the economy is the Firestone rubber plantation, the largest in the world. It was founded in 1926 and is now owned by Bridgestone Tire Company of Japan. The plantation is presently operating at about 60% of pre-war capacity, and some 20,000 Liberians are living on the plantation, where housing and other facilities are being rebuilt. Liberia earns more than \$85 million and more than \$57 million annually from timber and rubber exports, respectively. Alluvial diamond and gold mining activities also account for some economic activity.

Being the second-largest maritime licensor in the world--with more than 1,800 vessels registered under its flag, including 35% of the world's tanker fleet--Liberia earned more than \$15 million from its maritime program in 2004. There is increasing interest in the possibility of commercially exploitable offshore crude oil deposits along Liberia's Atlantic Coast.

Liberia's business sector is largely controlled by foreigners, mainly of Lebanese and Indian descent. There also are limited numbers of Chinese engaged in agriculture. There also are significant numbers of West Africans engaged in cross-border trade.

Liberia is a member of ECOWAS. With Guinea and Sierra Leone, it formed the Mano River Union (MRU) for development and the promotion of regional economic integration. The MRU became all but defunct because of the Liberian civil war, which spilled over into neighboring Sierra Leone and Guinea. There was some revival of MRU political and security cooperation discussions in 2002.

Beyond imposing a travel ban on individuals most closely associated with the Taylor regime, the United Nations imposed sanctions on rough diamond imports from, and arms exports to, Liberia in May 2001 for Liberia's support to the brutal rebels of the Revolutionary United Front (RUF) in neighboring Sierra Leone. The UN renewed these sanctions in 2002 and in 2003, it sanctioned Liberia's export of timber. In December 2004, the UN essentially renewed these sanctions for one year.

## **Foreign Relations**

Liberia is a founding member of the United Nations and its specialized agencies and is a member of the African Union (AU), the Economic Community of West African States (ECOWAS), the African Development Bank (ADB), the Mano River Union (MRU), and the Non-Aligned Movement. Liberia has generally maintained cordial relations with the West. Liberia currently also maintains diplomatic relations with Libya, Cuba, and China.

## **U.S. – Liberia Relations**

U.S. relations with Liberia date back to the 1820s when the first group of settlers arrived in Liberia from the United States. As early as 1819, Congress appropriated \$100,000 for the establishment of Liberia (and resettlement of freemen and freed slaves from North America) by the American Colonization Society, led by such statesmen as Francis Scott Key, George Washington's nephew Bushrod, Henry Clay, Daniel Webster, and presidents Monroe, Adams, and Jackson. U.S.-Liberia relations have mostly been very cordial since independence. The United States had been Liberia's closest ally until a 7-year civil war (1989-1996), regional instability, gross human rights abuses, and good governance problems led to the souring of bilateral relations. Bilateral ties are once again improving.

During the 1980s, the United States donated hundreds of millions of dollars toward the development of Liberia. The United States also donated hundreds of tons of rice (a staple of Liberians) through its PL-480 Program. The United States, followed by the European Union, is the largest donor of relief aid which is channeled through the United Nations and other international aid and relief agencies working in the country.

## **The International Reconstruction Conference**

In February 2004 in New York, the United States co-hosted an international reconstruction conference on Liberia. Donors pledged over \$522 million in total assistance. The United States contributed \$200 million for critical humanitarian needs of refugees and displaced persons, reintegration, community revitalization, policing, independent media, rule of law, social services, agriculture, and reform of the judicial system, military, police, financial, and forest sectors. The United States also contributed \$245 million for the establishment of UNMIL. In fiscal year 2005, the United States is spending close to \$70 million to rehabilitate and reintegrate former combatants, reform Liberia's military, police, and financial sector, and provide humanitarian and medical relief, among other objectives. The United States has joined the European Commission, World Bank, International Monetary Fund, Economic Community of West African States, and African Union in supporting and funding the Governance and Economic Management Assistance Program (GEMAP), which aims to improve governance, combat corruption, and build capacity in Liberia.

## **Principal U.S. Officials**

Ambassador--Donald E. Booth  
Deputy Chief of Mission--Lou Mazel  
Political-Economic Counselor--Alfreda Meyers  
Public Affairs Officer--Meg Riggs  
Consular Officer--John Marietti  
USAID Director--Wilbur Thomas

The U.S. Embassy is located on 111 United Nations Drive, Mamba Point, Monrovia, tel: 011-231-226370, fax: 231-226148.

## **Liberia – a Chronology of Key Events<sup>3</sup>**

**1822** – Liberia founded in 1822 as haven for freed slaves from Americas. Named after US President James Monroe

**1847** – Constitution modeled on that of the US is drawn up.

**1847** July – Liberia becomes independent.

**1917** – Liberia declares war on Germany, giving the Allies a base in West Africa.

**1926** – Firestone Tire and Rubber Company opens rubber plantation on land granted by government. Rubber production becomes backbone of economy.

**1936** – Forced-labor practices abolished.

**1943** – William Tubman elected president.

**1944** – Government declares war on the Axis powers.

**1951** May – Women and indigenous property owners vote in the presidential election for the first time.

**1958** – Racial discrimination outlawed.

**1971** – Tubman dies and is succeeded by William Tolbert Jr.

**1974** – Government accepts aid from the Soviet Union for the first time.

**1978** – Liberia signs trade agreement with the European Economic Community.

**1979** – More than 40 people are killed in riots following a proposed increase in the price of rice.

### **Years of instability**

**1980** – Master Sergeant Samuel Doe stages military coup. Tolbert and 13 of his aides are publicly executed. A People's Redemption Council headed by Doe suspends constitution and assumes full powers.

**1984** – Doe's regime allows return of political parties following pressure from the United States and other creditors.

**1985** – Doe wins presidential election.

**1989** – National Patriotic Front of Liberia (NPFL) led by Charles Taylor begins an uprising against the government.

**1990** – Economic Community of West African States (ECOWAS) sends peacekeeping force. Doe is executed by a splinter group of the NPFL.

**1991** – ECOWAS and the NPFL agree to disarm and set up an Interim Government of National Unity.

**1992** – The NPFL launches an all-out assault on West African peacekeepers in Monrovia, the latter respond by bombing NPFL positions outside the capital and pushing the NPFL back into the countryside.

### **Tentative ceasefire**

**1993** – Warring factions devise a plan for a National Transitional Government and a ceasefire, but this fails to materialize and fighting resumes.

**1994** – Warring factions agree a timetable for disarmament and the setting up of a joint Council of State.

**1995** – Peace agreement signed.

**1996** April – Factional fighting resumes and spreads to Monrovia.

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<sup>3</sup> Story from BBC NEWS Published: 2005/11/23 10:40:51 GMT  
[http://news.bbc.co.uk/go/pr/fr/-/1/hi/world/africa/country\\_profiles/1043567.stm](http://news.bbc.co.uk/go/pr/fr/-/1/hi/world/africa/country_profiles/1043567.stm)

**1996** August – West African peacekeepers begin disarmament program, clear land mines and re-open roads, allowing refugees to return.

**1997** July – Presidential and legislative elections held. Charles Taylor wins a landslide and his National Patriotic Party wins a majority in the National Assembly. International observers declare the elections free and fair.

### **Border fighting**

**1999** January – Ghana and Nigeria accuse Liberia of supporting Revolutionary United Front rebels in Sierra Leone. Britain and the US threaten to suspend aid to Liberia.

**1999** April – Rebel forces thought to have come from Guinea attack town of Voinjama. Fighting displaces more than 25,000 people.

**1999** September – Guinea accuses Liberian forces of entering its territory and attacking border villages.

**2000** September – Liberian forces launch “massive offensive” against rebels in the north. Liberia accuses Guinean troops of shelling border villages.

**2001** February – Liberian government says Sierra Leonean rebel leader Sam Bockarie, also known as Mosquito, has left the country.

**2001** May – UN Security Council reimposes arms embargo to punish Taylor for trading weapons for diamonds from rebels in Sierra Leone.

**2002** January – More than 50,000 Liberians and Sierra Leonean refugees flee fighting. In February Taylor declares a state of emergency.

### **Rebel offensives**

**2003** March – Rebels advance to within 10 km of Monrovia.

**2003** June – Talks in Ghana aimed at ending rebellion overshadowed by indictment accusing President Taylor of war crimes over his alleged backing of rebels in Sierra Leone.

**2003** July – Fighting intensifies; rebels battle for control of Monrovia. Several hundred people are killed. West African regional group ECOWAS agrees to provide peacekeepers.

### **Taylor in exile**

**2003** August – Nigerian peacekeepers arrive. Charles Taylor leaves Liberia after handing power to his deputy Moses Blah. US troops arrive. Interim government and rebels sign peace accord in Ghana. Gyude Bryant chosen to head interim administration.

**2003** September/October – US forces pull out. UN launches major peacekeeping mission, deploying thousands of troops.

**2004** February – International donors pledge more than \$500m in reconstruction aid.

**2004** October – Riots in Monrovia leave 16 people dead; the UN says former combatants were behind the violence.

**2005** June – UN extends a ban on Liberian diamond exports – a source of funding for the civil war – and urges Liberia to freeze Charles Taylor’s assets.

**2005** September – Liberia signs an agreement under which the international community will supervise the state’s finances in an effort to counter corruption.

### **A new chapter and the road to peace and development**

**2005** 23 November – Ellen Johnson-Sirleaf is proclaimed the winner of presidential elections, becoming the first woman to be elected as an African head of state.

**2006** International donor community coordination and support for the new Government and financing near-term support for human well being and medium-term infrastructure development for economic and social development.

## Liberia: Statistics from the US State Department, UNDP, and the World Bank

Note that there are poor and often on-existent data and statistics for 2005 / 2006. However, virtually all of the indicators of individual well being and overall economic health of the country appear to have declined since 2003, and the real situation is probably far worse than indicated by the numbers.

### Introduction Liberia

**Background:** Liberia is a western African country that has suffered from some 15 years of instability and violent conflict. Since 2003, when deposed former President Charles Taylor was forced into exile, substantial progress has been made in the resettlement of refugees and displaced persons and the reintegration of former combatants. Reconstruction of the country's infrastructure is ongoing, but the process has been very slow. Respect for human rights and the rule of law has improved. Economic development and the elimination of corruption remain problematic.

In August 2003, a comprehensive peace agreement ended 14 years of civil war and prompted the resignation of former president Charles TAYLOR, who was exiled to Nigeria. After two years of rule by a transitional government, democratic elections in late 2005 brought President Ellen JOHNSON-SIRLEAF to power. The legislative and presidential polls were broadly deemed free and fair despite fraud allegations from JOHNSON-SIRLEAF's rival George WEAH. the first woman president on the African continent. Harvard-educated and former World Bank economist, Ellen Johnson Sirleaf, was sworn into office in January 2006. The United Nations Mission in Liberia (UNMIL) maintains a strong presence throughout the country, with 15,000 peace keepers. UNDP completed a disarmament program for former combatants in late 2004, but the security situation is still volatile and the process of rebuilding the social and economic structure of this war-torn country remains sluggish.

### Geography Liberia

**Location:** Western Africa, bordering the North Atlantic Ocean, between Cote d'Ivoire and Sierra Leone. Nine countries form this region: Benin, Côte d'Ivoire, Ghana, Guinea, Guinea-Bissau, Liberia, Nigeria, Sierra Leone and Togo. They cover a total area of 2.1 million km<sup>2</sup>, or 7 percent of the continent, with Nigeria accounting for 44 percent of this area. Of the total cultivable area of 120 million ha, about 55 million ha were cultivated in 2002 (46 percent of the potential).

The region is bordered in the north by the Sudano-Sahelian Region and in the south by the Atlantic Ocean. The climate is Sudanese in the north and wet tropical in the south. The annual average precipitation of the region is 1 356 mm, with large variations between countries: from 1 039 mm/year in Benin to 2 526 mm/year in Sierra Leone. Evapotranspiration increases from 1 500 mm/year in the south of Togo to 5 200 mm/year in the north of Nigeria.

**Geographic coordinates:** 6 30 N, 9 30 W

- Map references:** (See the maps of Liberia contained in the map annex to the briefing book)
- Area:** *total:* 111,370 sq km  
*land:* 96,320 sq km  
*water:* 15,050 sq km
- Area - comparative:** slightly larger than Tennessee
- Land boundaries:** *total:* 1,585 km  
*border countries:* Guinea 563 km, Cote d'Ivoire 716 km, Sierra Leone 306 km
- Coastline:** 579 km
- Maritime claims:** *territorial sea:* 200 nm
- Climate:** tropical; hot, humid; dry winters with hot days and cool to cold nights; wet, cloudy summers with frequent heavy showers
- Terrain:** mostly flat to rolling coastal plains rising to rolling plateau and low mountains in northeast
- Elevation extremes:** *lowest point:* Atlantic Ocean 0 m  
*highest point:* Mount Wuteve 1,380 m
- Natural resources:** iron ore, timber, diamonds, gold, hydropower potential, tin, and rubber
- Land use:** *arable land:* 3.95%  
*permanent crops:* 2.28%  
*other:* 93.77% (2001)  
Note: In 2000 the forests were estimated to cover 35,000 sq. km. out of a total of 114,000 sq. km. of land area. **Liberia has a significant fraction of the tropical forest land of West Africa.**
- Irrigated land:** 30 sq km (1998 est.)
- Agricultural products**
- Natural hazards:** dust-laden *harmattan* winds blow from the Sahara (December to March), often blocking the sun and creating difficult breathing conditions.
- Environment - current issues:** tropical rain forest deforestation; soil erosion; loss of biodiversity; pollution of coastal waters from oil residue and raw sewage
- Environment - international agreements:** *party to:* Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94  
*signed, but not ratified:* Environmental Modification, Law of the Sea, Marine Life Conservation
- Geography - note:** facing the Atlantic Ocean, the coastline is characterized by lagoons, mangrove swamps, and river-deposited sandbars; the inland grassy plateau supports limited agriculture

**People**

**Liberia**

**Population:** 3,482,211 (July 2005 est.) 3.24 million (2004)

**The People** There are 16 ethnic groups that make up Liberia's indigenous population. The Kpelle in central and western Liberia is the largest ethnic group. Americo-Liberians who are descendants of freed slaves that arrived in Liberia early in 1821 make up an estimated 5% of the population.

There also are sizable numbers of Lebanese, Indians, and other West African nationals who make up a significant part of Liberia's business community. Because of the 1989-1996 civil war and its accompanying problem of insecurity, the number of Westerners in Liberia is low and is confined largely to Monrovia and its immediate surroundings. The Liberian constitution restricts citizenship only to people of Negro descent.

**Ethnic groups:** Kpelle 20%, Bassa 16%, Gio 8%, Kru 7%, 49% spread over 12 other ethnic groups.

**Religions:** Christian 30%, Muslim 10%, animist 60%.

**Age structure:** *0-14 years:* 43.6% (male 765,662/female 751,134)  
*15-64 years:* 52.8% (male 896,206/female 940,985)  
*65 years and over:* 3.7% (male 64,547/female 63,677) (2005 est.)

**Median age:** *total:* 18.06 years  
*male:* 17.69 years  
*female:* 18.42 years (2005 est.)

**Population growth rate:** 2.64% (2005 est.)  
2.40% (2004 est.)

**Birth rate:** 44.22 births/1,000 population (2005 est.)

**Death rate:** 17.87 deaths/1,000 population (2005 est.)

**Net migration rate:** 0 migrant(s)/1,000 population  
*note:* at least 200,000 Liberian refugees are in surrounding countries; the uncertain security situation has hindered their ability to return (2005 est.)

**Sex ratio:** *at birth:* 1.03 male(s)/female  
*under 15 years:* 1.02 male(s)/female  
*15-64 years:* 0.95 male(s)/female  
*65 years and over:* 1.01 male(s)/female  
*total population:* 0.98 male(s)/female (2005 est.)

**Infant mortality rate:** *total:* 128.87 deaths/1,000 live births  
*male:* 135.64 deaths/1,000 live births  
*female:* 121.9 deaths/1,000 live births (2005 est.)

**Life expectancy at birth:** *total population:* 38.89 years  
*male:* 37.03 years  
*female:* 40.81 years (2005 est.)

**Total fertility rate:** 6.09 children born/woman (2005 est.)

**HIV/AIDS - adult prevalence rate:** 5.9% (2003 est.) *Note: this is an intermediate value, with estimates ranging from 3% to 12% of the population infected in 2006.*

**HIV/AIDS - people living with HIV/AIDS:** 100,000 (2003 est.)

**HIV/AIDS - deaths:** 7,200 (2003 est.)

**Major infectious diseases:** *degree of risk: very high*  
*food or waterborne diseases:* bacterial and protozoal diarrhea, hepatitis A, and typhoid fever  
*vector borne diseases:* malaria and yellow fever are high risks in some locations  
*water contact disease:* schistosomiasis  
*aerosolized dust or soil contact disease:* Lassa fever (2004)

**Nationality:** *noun:* Liberian(s)  
*adjective:* Liberian

**Ethnic groups:** indigenous African tribes 95% (including Kpelle, Bassa, Gio, Kru, Grebo, Mano, Krahn, Gola, Gbandi, Loma, Kissi, Vai, Dei, Bella, Mandingo, and Mende), Americo-Liberians 2.5% (descendants of immigrants from the US who had been slaves), Congo People 2.5% (descendants of immigrants from the Caribbean who had been slaves)

**Religions:** indigenous beliefs 40%, Christian 40%, Muslim 20%

**Languages:** English 20% (official), some 20 ethnic group languages, of which a few can be written and are used in correspondence

**Literacy:** *Definition:* age 15 and over can read and write  
*total population:* 57.5%  
*male:* 73.3%  
*female:* 41.6% (2003 est.)

<b>Government</b>	<b>Liberia</b>
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**Country name:** *conventional long form:* Republic of Liberia  
*conventional short form:* Liberia

**Government type:** republic

**Capital:** Monrovia

**Administrative divisions:** 15 counties; Bomi, Bong, Gbarpolu, Grand Bassa, Grand Cape Mount, Grand Gedeh, Grand Kru, Lofa, Margibi, Maryland, Montserrado, Nimba, River Cess, River Gee, Sinoe

**Independence:** 26 July 1847

**National holiday:** Independence Day, 26 July (1847)

**Constitution:** 6 January 1986

**Legal system:** dual system of statutory law based on Anglo-American common law for the modern sector and customary law based on unwritten tribal practices for indigenous sector

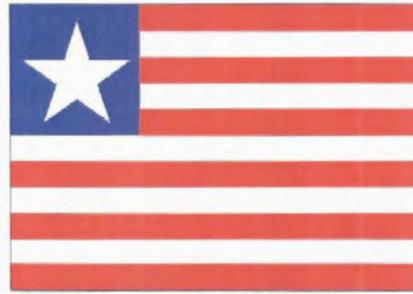
**Suffrage:** 18 years of age; universal

<b>Executive branch:</b>	<p><i>chief of state:</i> President Ellen JOHNSON-SIRLEAF (since 16 January 2006) note - the President is both the chief of state and head of government</p> <p><i>head of government:</i> President Ellen JOHNSON-SIRLEAF (since 6 January 2006); note - the President is both the chief of state and head of government</p> <p><i>cabinet:</i> Cabinet appointed by the president and confirmed by the Senate;</p> <p><i>elections:</i> president elected by popular vote for a six-year term (renewable); election last held 8 November 2005 (next to be held NA 2011)</p> <p><i>election results:</i> Ellen JOHNSON-SIRLEAF elected president; percent of vote (second round - Ellen JOHNSON-SIRLEAF (UP) 59.6%, George WEAH (CDC) 40.4%</p> <p><i>note:</i> a UN-brokered cease-fire among warring factions and the Liberian government resulted in the August 2003 resignation of former president Charles TAYLOR; a jointly agreed upon replacement, Chairman Gyude BRYANT, assumed office as head of the National Transitional Government on 14 October 2003; free elections were held 11 October 2005 with a runoff election between the two leading candidates on 8 November 2005</p>
<b>Legislative branch:</b>	<p>bicameral National Assembly consists of the Senate (30 seats - number of seats changed in 11 October 2005 elections; members elected by popular vote to serve nine-year terms) and the House of Representatives (64 seats; members elected by popular vote to serve six-year terms)</p> <p><i>elections:</i> Senate - last held 11 October 2005 (next to be held NA 2014 ); House of Representatives - last held 11 October 2005 (next to be held NA 2011)</p> <p><i>election results:</i> Senate - percent of vote by party - NA%; seats by party - COTOL 7, NPP 4, CDC 3, LP 3, UP 3, APD 3; House of Representatives - percent of vote by party - NA%; seats by party - CDC 15, LP 9, UP 8, COTOL 8, APD 5, NPP 4</p> <p><i>note:</i> the current six-year term for junior senators - those who received the second most votes in the election - is mandated by the Liberian constitution to stagger Senate elections and ensure continuity of government</p>
<b>Judicial branch:</b>	Supreme Court
<b>Political parties and leaders:</b>	Alliance for Peace and Democracy or APD [Togba-na TIPOTEH]; Congress for Democratic Change or CDC [George WEAH]; Liberian Action Party or LAP [H. Varney SHERMAN]; Liberty Party or LP [Charles BRUMSKINE]; National Patriotic Party or NPP [Cyril ALLEN]; Unity Party or UP [Charles CLARKE]
<b>Political pressure groups and leaders:</b>	NA
<b>International organization participation:</b>	ACP, AfDB, AU, ECOWAS, FAO, G-77, IAEA, IBRD, ICAO, ICct, ICFTU, ICRM, IDA, IFAD, IFC, IFRCS, ILO, IMF, IMO, Interpol, IOC, IOM, ITU, NAM, OPCW (signatory), UN, UNCTAD, UNESCO, UNIDO, UPU, WCL, WCO, WFTU, WHO, WIPO, WMO
<b>Diplomatic representation in the US:</b>	<p><i>chief of mission:</i> Ambassador (vacant); Charge d'Affaires Aaron B. KOLLIE</p> <p><i>chancery:</i> 5201 16th Street NW, Washington, DC 20011</p> <p><i>telephone:</i> [1] (202) 723-0437</p> <p><i>FAX:</i> [1] (202) 723-0436</p>

*consulate(s) general:* New York

**Diplomatic representation from the US:** *chief of mission:* Ambassador Donald E. BOOTH  
*embassy:* 111 United Nations Drive, P. O. Box 10-0098, Mamba Point, 1000 Monrovia, 10 Liberia  
*mailing address:* use embassy street address  
*telephone:* [231] 226-370 through 226-380  
*FAX:* [231] 226-148

**Flag description:** 11 equal horizontal stripes of red (top and bottom) alternating with white; there is a white five-pointed star on a blue square in the upper hoist-side corner; the design was based on the US flag



**Liberia**

### **Health, Sanitation, and Clean Water**

**Water and Sanitation**

Between 1990 and 2002, the percentage of the population with access to improved sanitation fell from 38% to 26%; the figures are lower, probably much lower, in 2006. The percentage with access to an improved water sources increased from 56% in 1990 to 62% in 2002. In 2006 that access is very low, but good figures are not available.

**Undernourished population**

34% (1990 – 1992)  
46% (2000-2002)  
?? (2006)

**HIV Prevalence**

Est. in 2003: 3% – 12% of the population between 15 and 49 years of age

**Economy - overview:** Civil war and government mismanagement have destroyed much of Liberia's economy, especially the infrastructure in and around Monrovia, while continued international sanctions on diamonds and timber exports will limit growth prospects for the foreseeable future. The electricity system has been destroyed, and piped water is no longer available; access to clean water is a major health hazard.

Many businessmen have fled the country, taking capital and expertise with them. Some have returned, but many will not. Richly endowed with water, mineral resources, forests, and a climate favorable to agriculture, Liberia had been a producer and exporter of basic products - primarily raw timber and rubber. Local manufacturing, mainly foreign owned, had been small in scope.

The departure of the former president, Charles TAYLOR, to Nigeria in August 2003, the establishment of the all-inclusive Transitional Government, and the arrival of a UN mission have helped diffuse the political crisis, but have done little to encourage economic development. Wealthy international donors, who are ready to assist reconstruction efforts, are withholding funding until Liberia's National Assembly signs onto a Governance and Economic Management Action Plan (GEMAP). The Plan was created in October 2005 by the International Contact Group for Liberia to help ensure transparent revenue collection and allocation - something that was lacking under the Transitional Government and that has limited Liberia's economic recovery. The reconstruction of infrastructure and the raising of incomes in this ravaged economy will largely depend on generous financial support and technical assistance from donor countries.

**Aid and development funding**

The United States, followed by the European Union, is the largest donor of relief aid, which is channeled through the United Nations and other international aid and relief agencies working in the country. In February 2004 in New York, the United States co-hosted an international reconstruction conference on Liberia. Donors pledged over \$522 million in total assistance.

The United States contributed \$200 million for critical humanitarian needs of refugees and displaced persons, reintegration, community revitalization, policing, independent media, rule of law, social services, agriculture, and reform of the judicial system, military, police, financial, and forest sectors.

The United States also contributed \$245 million for the establishment of the United Nations Mission in Liberia (UNMIL).

In fiscal year 2005, the United States is spending close to \$70 million to rehabilitate and reintegrate former combatants, reform Liberia's military, police, and financial sector, and provide humanitarian and medical relief, among other objectives.

The United States has joined the European Commission, World Bank, International Monetary Fund, Economic Community of West African States, and African Union in supporting and funding the Governance and Economic Management Assistance Program (GEMAP), which aims to improve governance, combat corruption, and build capacity in Liberia.

<b>GDP (purchasing power parity):</b>	\$2.593 billion (2005 est.)
<b>GDP (official exchange rate):</b>	NA
<b>GDP - real growth rate:</b>	8% (2005 est.)
<b>GDP - per capita:</b>	Purchasing power parity - \$700 (2005 est.)
<b>GDP - composition by sector:</b>	<i>Agriculture: 76.9%</i> <i>Industry: 5.4%</i> <i>services: 17.7% (2002 est.)</i>
<b>Labor force - by occupation:</b>	Agriculture 70%, industry 8%, services 22% (2000 est.)
<b>Unemployment rate:</b>	85% (2003 est.)
<b>Population below poverty line:</b>	80%
<b>Household income or consumption by percentage share:</b>	<i>lowest 10%: NA</i> <i>highest 10%: NA</i>

**Inflation rate (consumer prices):** 15% (2003 est.)

**Budget:** *Revenues:* \$85.4 million  
*expenditures:* \$90.5 million, including capital expenditures of NA (2000 est.)

**Agriculture - products:** rubber, coffee, cocoa, rice, cassava (tapioca), palm oil, sugarcane, bananas, plantains; sheep, goats; timber, citrus, pineapple, sweet potatoes, corn, and vegetables.

**Industries:** rubber processing, palm oil processing, timber, diamonds

**Industrial production growth rate:** NA

**Electricity - production:** 509.4 million kWh (2003)

**Electricity - production by source:** *fossil fuel:* 100%  
*hydro:* 0%  
*nuclear:* 0%  
*other:* 0% (2001)

**Electricity - consumption:** 473.8 million kWh (2003)

**Electricity - exports:** 0 kWh (2003)

**Electricity - imports:** 0 kWh (2003)

**Oil - production:** 0 bbl/day (2003 est.)

**Oil - consumption:** 3,400 bbl/day (2003 est.)

**Oil - imports:** NA (2001)

**Exports:** \$910 million f.o.b. (2004 est.)

**Exports - partners:** Denmark 28.1%, Germany 18%, Poland 13.6%, US 8.5%, Greece 7.6%, Thailand 4.8% (2004)

**Imports:** \$4.839 billion f.o.b. (2004 est.)

**Imports - partners:** South Korea 38.8%, Japan 21.2%, Singapore 12.2%, Croatia 5.3%, Germany 4.2% (2004)

**Debt - external:** \$3.2 billion (2005 est.)

**Economic aid - recipient:** \$94 million (1999)

**Currency (code):** Liberian dollar (LRD)

**Currency code:** LRD

**Exchange rates:** Liberian dollars per US dollar - NA (2005), 54.906 (2004), 59.379 (2003), 61.754 (2002), 48.583 (2001)

**Fiscal year:** calendar year

## Communications Liberia

**Telephones - main lines in use:** 7,000 (2001). **For 2006 it is reported that the land line system is essentially non-functional.**

**Telephones - mobile cellular:** 2,000 (2001). In 2006 there are some [10,000] mobile customers. Liberia's mobile phone companies are extending services to residents in the 16 counties of Liberia. Lone Star Cell and Libercell now lead the extension of mobile phone services, even though CellCom and Comium are also in the business. Besides providing services in Montserrado County, Lone Star Cell and Libercell are providing mobile phone communication in Maryland, Grand Gedeh, Nimba, Bong, Lofa, Margibi, Grand Bassa, Bomi and Grand Cape Mount Counties respectively. **[See briefing module on Liberia's growing mobile phone services and markets.]**

Africa is the first continent to have more mobile phone users than fixed-line subscribers. More Africans have begun using phones since 2000 than in the whole of the previous century. It seems inevitable that mobile phones will play a rapidly growing role in communications and commerce in Liberia.

**Telephone system:** *general assessment:* the limited services available are found almost exclusively in the capital Monrovia. February 2006: the land line system is essentially non-functional.  
*domestic:* fully automatic system with very low density of .21 fixed mainlines per 100 persons; limited wireless service available  
*international:* country code - 231; satellite earth station - 1 Intelsat (Atlantic Ocean)

**Radio broadcast stations:** AM 0, FM 7, shortwave 2 (2001)

**Radios:** 790,000 (1997)

**Television broadcast stations:** 1 (plus four low-power repeaters) (2001). **In 2006 there are no functioning TV broadcast stations.**

**Televisions:** 70,000 (1997)

**Internet country code:** .lr

**Internet hosts:** 14 (2004)

**Internet Service Providers (ISPs):** 2 (2001)

**Internet users:** 1,000 (2002)

**Transportation Liberia**

**Airports:** 53 (2004 est.)

**Airports - with paved runways:** *total:* 2  
*over 3,047 m:* 1  
*1,524 to 2,437 m:* 1 (2005 est.)

**Airports - with unpaved runways:** *total:* 51  
*1,524 to 2,437 m:* 5  
*914 to 1,523 m:* 8  
*under 914 m:* 38 (2005 est.)

**Railways:** *total:* 490 km  
*standard gauge:* 345 km 1.435-m gauge  
*narrow gauge:* 145 km 1.067-m gauge  
*note:* none of the railways are in operation because of the civil war (2004)

**Roadways:** *total:* 10,600 km  
*paved:* 657 km  
*unpaved:* 9,943 km (1999)  
The extreme deterioration of the roads in Liberia is a major obstacle to economic development. The World Bank is the lead donor for the road transport sector.

**Merchant marine:** *total:* 1,465 ships (1,000 GRT or over) 50,555,752 GRT/79,125,329 DWT  
*by type:* barge carrier 3, bulk carrier 275, cargo 91, chemical tanker 173, combination ore/oil 22, container 388, liquefied gas 78, passenger 2, passenger/cargo 2, petroleum tanker 324, refrigerated cargo 57, roll on/roll off 6, specialized tanker 9, vehicle carrier 35  
*foreign-owned:* 1,392 (Argentina 8, Australia 2, Austria 13, Bahamas 3, Brazil 6, British 1, Canada 2, Chile 1, China 36, Croatia 7, Cyprus 1, Denmark 5, France 3, Germany 511, Greece 149, Hong Kong 29, India 4, Indonesia 1, Isle of Man 5, Israel 7, Italy 12, Japan 106, Latvia 18, Monaco 10, Netherlands 18, Nigeria 1, Norway 57, Pakistan 1, Poland 14, Romania 1, Russia 63, Saudi Arabia 23, Singapore 29, Slovenia 1, South Korea 4, Sweden 12, Switzerland 10, Taiwan 54, Turkey 4, Ukraine 7, UAE 10, United Kingdom 56, United States 84, Uruguay 3) (2005)

**Ports and terminals:** Buchanan, Monrovia

**Military Liberia**

**Military branches:** Armed Forces of Liberia (AFL): Army, Navy, Air Force

**Military service age and obligation:** 18 years of age for voluntary military service; no conscription (2001)

**Manpower available for military service:** *males age 18-49:* 659,795 (2005 est.)

**Manpower fit for military service:** *males age 18-49: 360,373 (2005 est.)*

**Military expenditures - dollar figure:** \$1.5 million (2004)

**Military expenditures - percent of GDP:** 0.2% (2004)

Transnational Issues	Liberia
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**Disputes - international:** although Liberia's domestic fighting among disparate rebel groups, warlords, and youth gangs was declared over in 2003, civil unrest persists, and in 2004, 133,000 Liberian refugees remained in Guinea, 72,000 in Cote d'Ivoire, 67,000 in Sierra Leone, and 43,000 in Ghana; Liberia, in turn, shelters refugees fleeing turmoil in Cote d'Ivoire and Sierra Leone; since 2003, the UN Mission in Liberia (UNMIL) has maintained about 18,000 peacekeepers in Liberia; the Cote d'Ivoire Government accuses Liberia of supporting Ivoirian rebels; UN sanctions ban Liberia from exporting diamonds and timber

**Refugees and internally displaced persons:** *refugees (country of origin):* 13,941 (Sierra Leone) 38,325 (Cote d'Ivoire)  
*IDPs:* 500,000 (civil war from 1990-2004; IDP resettlement began in November 2004) (2004)

**Illicit drugs:** transshipment point for Southeast and Southwest Asian heroin and South American cocaine for the European and US markets; corruption, criminal activity, arms-dealing, and diamond trade provide significant potential for money laundering, but the lack of well-developed financial system limits the country's utility as a major money-laundering center

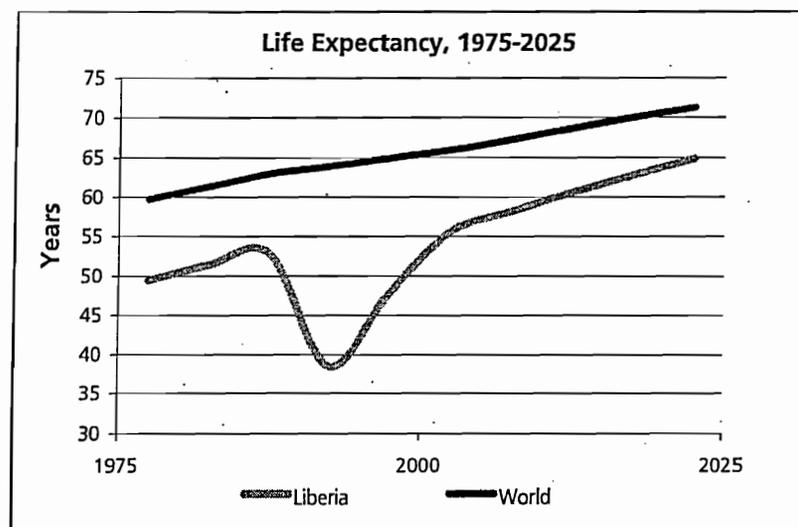
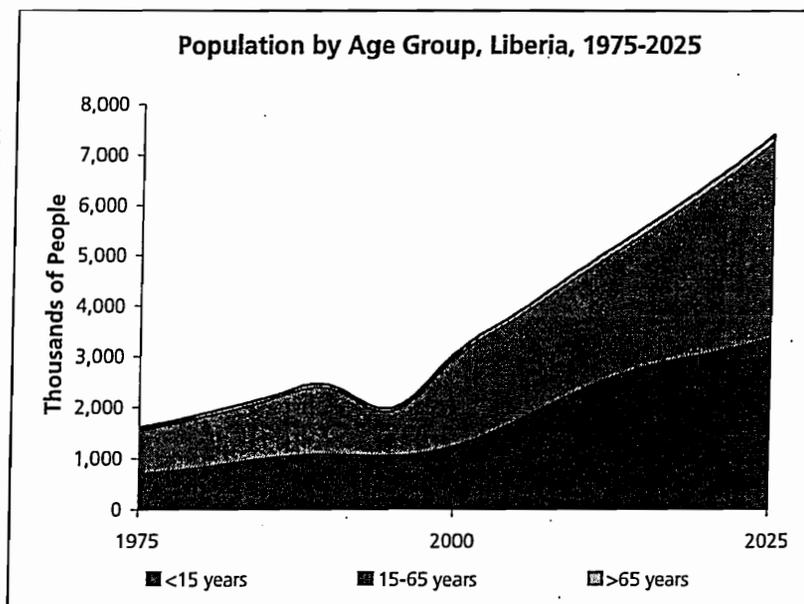
The information from the US Dept. of State on this page was last updated on 10 January, 2006. Materials from other sources have been added as noted.



## Section 3

# STATISTICAL INFORMATION

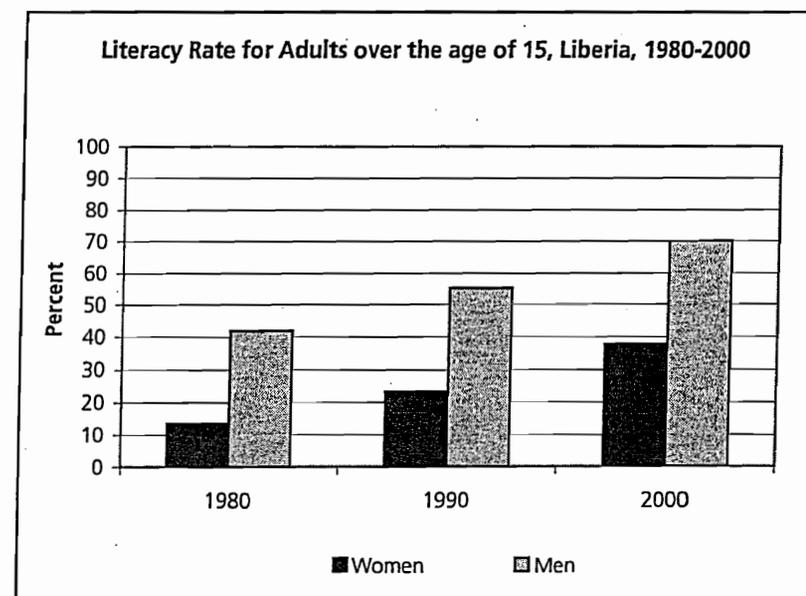
Demographic and Health Indicators	Liberia	Sub-Saharan Africa	World
<b>Total Population (in thousands of people)</b>			
1950	824	176,775	2,519,495
2002	3,298	683,782	6,211,082
2025 (projected)	7,638	1,157,847	7,936,741
<b>Population Density (people per square km), 2000:</b>	26.2	25.3	45.1
<b>Average Annual Population Growth Rate, 1980-2000</b>			
Total	2.6%	2.7%	1.6%
In rural areas	1.8%	1.9%	0.9%
In urban areas	3.8%	4.7%	2.4%
<b>Percentage of Population:</b>			
Under age 15, 2002	43%	44%	29%
Over age 65, 2002	3%	3%	7%
Living in Urban Areas, 2000	45%	34%	47%
<b>Average Total Fertility Rate {a}</b>			
1975-1980	6.8	6.7	3.9
2000-2005	6.8	5.6	2.7
<b>Infant Mortality Rate {b}, 2000-2005</b>	79	89	55
<b>Under-Five Mortality Rate {b}, 2000</b>	235	175	83
<b>Life Expectancy at birth (years), 2000-05</b>			
Female	56.7	49.8	68.1
Male	54.6	48.3	63.9
<b>Births Attended by Trained Personnel, 1994-2000 {c}</b>	X	39%	57%
<b>Adults and Children Infected with HIV/AIDS, 2001 (number)</b>	X 28,500,000		40,000,000
<b>Percent of Adults Ages 15-49 infected with HIV or AIDS, 2001</b>	X 9.0%		1.2%
<b>Number of Children Orphaned by AIDS since the beginning of epidemic, 2001</b>	X 11,000,000		14,000,000
<b>Safe Water and Sanitation {c}</b>			
<b>Access to Improved Sanitation, 2000</b>			
Urban	X	72%	85%
Rural	X	44%	40%



View more Country Profiles on-line at <http://earthtrends.wri.org>

## Population, Health and Human Well-Being- Liberia

	Liberia	Sub-Saharan Africa	World
<b>Safe Water and Sanitation {c}</b>			
Access to an Improved Water Source, 2000			
Urban	X	82%	95%
Rural	X	47%	71%
<b>School Enrollment and Literacy {c}</b>			
Net Primary School Enrollment, both sexes			
1980	X	X	X
1997-1999 {c}	41%	X	X
Net Secondary School Enrollment, 1997-1999 {c}			
Female	X	X	X
Male	X	X	X
Gross Tertiary School Enrollment, 1996-99 {c}	7%	X	X
Adult Literacy Rate, 2002			
Female	39%	55%	75%
Male	72%	71%	86%
Youth Literacy Rate (ages 15-24), both sexes			
1980	44%	55%	80%
2002	72%	79%	87%



### Other Resources:

Country Profiles of the Food and Agriculture Organization  
of the United Nations, Economic Situation:

<http://www.fao.org/countryprofiles/index.asp?subj=3&iso3=LBR>

### Footnotes:

- Total fertility rate is an estimate of the number of children an average woman would have if current age-specific fertility rates remain constant during her reproductive years.
- In deaths per 1,000 live births. Infant mortality rate refers to children under one year of age.
- Data are for the most recent year within the range specified.

View more Country Profiles on-line at <http://earthtrends.wri.org>

## Population, Health, and Human Well-Being—Sources and Definitions

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### Demographic and Health Indicators

**Total Population** refers to the de facto midyear population of a country. The U.N. Population Division compiles and evaluates census and survey results from all countries, adjusting data for the miscalculation of certain age and sex groups, misreporting of age and sex distributions, and changes in definitions, when necessary. These adjustments incorporate data from civil registrations, population surveys, earlier censuses, and population models based on information from socioeconomically similar countries. All projections assume medium levels of fertility.

View full technical notes at: [http://earthtrends.wri.org/searchable\\_db/variablenotes\\_static.cfm?varid=363&themeid=4](http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=363&themeid=4)

**Population Density** is calculated by WRI as the number of persons per square kilometer of land area. Population data are from the United Nations Population division. Total land area is from FAOSTAT.

**Average Annual Population Growth Rate** refers to the percentage growth in the midyear population of each country. The values are estimated using demographic models based on several kinds of demographic parameters: a country's population size, age and sex distribution, levels of internal and international migration, fertility and mortality rates by age and sex groups, and growth rates of urban and rural populations. Information collected through recent population censuses and surveys is used to calculate or estimate these parameters.

View full technical notes at: [http://earthtrends.wri.org/searchable\\_db/variablenotes\\_static.cfm?varid=449&themeid=4](http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=449&themeid=4)

**Urban and Rural** areas are defined by parameters that vary slightly from country to country. Many countries define an urban area by the total number of inhabitants in a population agglomeration. Typically the threshold for considering a region urban is between 1,000 and 10,000 inhabitants. Any person not inhabiting an area classified as urban is counted in the rural population.

View full technical notes at: [http://earthtrends.wri.org/searchable\\_db/variablenotes\\_static.cfm?varid=451&themeid=4](http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=451&themeid=4)

Percentage of Population **Under age 15** or **Over age 65** refer to the de facto population of a given country or region in the given age groups as of July 1 of a given year. All projections assume medium levels of fertility. View full technical notes at:

[http://earthtrends.wri.org/searchable\\_db/variablenotes\\_static.cfm?varid=370&themeid=4](http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=370&themeid=4)

**Living in Urban Areas** refers to the midyear population of areas defined as urban in each country. View full technical notes at:

[http://earthtrends.wri.org/searchable\\_db/variablenotes\\_static.cfm?varid=446&themeid=4](http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=446&themeid=4)

**Average Total Fertility Rate** is an estimate of the number of children an average woman would have if current age-specific fertility rates remained constant during her reproductive years. All projections are for the medium-case fertility scenario, which makes three assumptions. 1) Fertility in high-fertility countries will decline at an average pace of nearly one child per decade starting in 2005 or later, so that some of these countries do not reach replacement level (2.1 children per woman) by 2050. 2) Fertility in medium-fertility countries is assumed to reach replacement level before 2050. 3) Fertility in low-fertility countries is generally assumed to remain below replacement level during most of the projection period, reaching by 2045-2050 the fertility of the cohort of women born in the early 1960s or, if that information is lacking, reaching between 1.7 and 1.9 children per woman.

View full technical notes at: [http://earthtrends.wri.org/searchable\\_db/variablenotes\\_static.cfm?varid=369&themeid=4](http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=369&themeid=4)

**Infant Mortality Rate** is an approximation of the number of deaths per 1,000 live births per year who die within one year of birth. The data are based on a review of all available national sources by the Population Division of the UN Secretariat. In developing countries where civil registration data are deficient, the most reliable sources are demographic surveys of households. Where these are not available, other sources and general estimates are made which are necessarily of limited reliability.

**Under-Five Mortality Rate** is the probability of a child dying between birth and age five expressed per 1,000 live births. The data is reported by countries from their national civil registration systems. Some are estimates prepared by national and international statistical services from population surveys. The completeness and accuracy of the data which these systems produce vary from one country or area to another.

View full technical notes at: [http://earthtrends.wri.org/searchable\\_db/variablenotes\\_static.cfm?varid=385&themeid=4](http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=385&themeid=4)

**Female Life Expectancy at Birth** and **Male Life Expectancy at Birth** is the average number of years that a newborn baby is expected to live if the age-specific mortality rates effective at the year of birth apply throughout his or her lifetime. The Population Division of the UN Secretariat prepares estimates and projections based on data from national statistical sources. When needed, other sources, mainly population censuses and demographic surveys, are consulted. In countries highly affected by the HIV/AIDS epidemic, estimates of the impact of the disease are made explicitly by projecting the yearly incidence of HIV infection.

View full technical notes at: [http://earthtrends.wri.org/searchable\\_db/variablenotes\\_static.cfm?varid=379&themeid=4](http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=379&themeid=4)

**Births Attended by Trained Personnel** is the percentage of births attended by physicians, nurses, midwives, or primary health care workers trained in midwifery skills. Women are most in need of skilled care during delivery and the immediate postpartum period, when roughly three-quarters of all maternal deaths occur. [http://earthtrends.wri.org/searchable\\_db/variablenotes\\_static.cfm?varid=395&themeid=4](http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=395&themeid=4)

**Adults and Children Infected with HIV/AIDS** is the estimated number of people with HIV infection, whether or not they have developed symptoms of AIDS, alive at the end of 2001. The 1999 prevalence rate published by UNAIDS was applied to the country's 2001 population to produce these estimates. Children are defined as those aged 0–14. Adults are defined as those aged 15–49.

View full technical notes at: [http://earthtrends.wri.org/searchable\\_db/variablenotes\\_static.cfm?varid=396&themeid=4](http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=396&themeid=4)

**Percent of Adults Ages 15-49 infected with HIV/AIDS** is the estimated percentage of people aged 15–49 living with HIV/AIDS. These estimates include all people with HIV infection, whether or not they have developed symptoms of AIDS; alive at the end of 2001. To calculate the adult HIV prevalence rate, the estimated number of adults living with HIV/AIDS at the end of 2001 was divided by the 2001 adult population (aged 15–49).

View full technical notes at: [http://earthtrends.wri.org/searchable\\_db/variablenotes\\_static.cfm?varid=397&themeid=4](http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=397&themeid=4)

**Number of Children Orphaned by AIDS since the beginning of the epidemic** is the estimated number of children under 15 who have lost their mother or both parents to AIDS since the beginning of the epidemic.

View full technical notes at: [http://earthtrends.wri.org/searchable\\_db/variablenotes\\_static.cfm?varid=399&themeid=4](http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=399&themeid=4)

*Sources:*

Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, 2002. *World Population Prospects: The 2000 Revision. Dataset on CD-ROM*. New York: United Nations.

Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (1998). World Urbanization Prospects: The 1999 Revision. Urban and Rural Areas Dataset (POP/DB/WUP/Rev.1999/Table A.3), dataset in digital form.

United Nation's Children's Fund (UNICEF), State of the World's Children 2002 (New York 2001), available on-line at: <http://www.unicef.org/sowc02/>.

Joint United Nations Programme on HIV/AIDS (UNAIDS), 2002. HIV/AIDS estimates of data, end 2001. Electronic table available at: <http://www.unaids.org/barcelona/presskit/barcelona%20report/contents.html>. Geneva, UNAIDS.

### **Improved Water and Sanitation**

**Access to Improved Sanitation.** Improved Sanitation includes any of the following excreta disposal facilities: connection to a public sewer, connection to a septic tank, pour-flush latrine, simple pit latrine, and ventilated improved pit latrine. The World Health Organization (WHO) emphasizes that these data measure access to an *improved* excreta disposal system—access to a *sanitary* system cannot be adequately measured on a global scale. The dataset did not provide a standard definition of **Urban** or **Rural** areas. The countries' own working definition of urban and rural was used. View full technical notes at: [http://earthtrends.wri.org/searchable\\_db/variablenotes\\_static.cfm?varid=403&themeid=4](http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=403&themeid=4)

**Access to Improved Water.** An improved water source includes any of the following types of drinking water sources: household connections, public standpipes, boreholes, protected dug wells, protected springs, and rainwater collection. At least 20 liters per person per day of this water must be available within one kilometer of a user's dwelling. WHO emphasizes that these data measure access to an *improved* water supply—access to a *safe* water supply cannot be adequately measured on a global scale. The dataset did not provide a standard definition of **Urban** or **Rural** areas. The countries' own working definition of urban and rural was used.

View full technical notes at: [http://earthtrends.wri.org/searchable\\_db/variablenotes\\_static.cfm?varid=402&themeid=4](http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=402&themeid=4)

#### *Sources:*

United Nation's Children's Fund (UNICEF). 2001. State of the World's Children 2002. Available on-line at <http://www.unicef.org/sowc02/>. New York: UNICEF. Data were originally collected under the UNICEF- WHO Joint Monitoring Program.

### **School Enrollment and Literacy**

**Net Primary School Enrollment** is defined as the enrollment of the official age-group for a primary level of education, expressed as a percentage of the population from the same age group. If the value is below 100%, users should not assume that the remaining school-aged population is not enrolled in any school; they could be enrolled in school at other grade levels. Primary Education is defined by the International Standard Classification of Education (ISCED) as the "beginning of systematic apprenticeship of reading, writing and mathematics". Programs are typically six years long and represent the beginning of compulsory education in many countries.

View full technical notes at: [http://earthtrends.wri.org/searchable\\_db/variablenotes\\_static.cfm?varid=411&themeid=4](http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=411&themeid=4)

**Net Secondary School Enrollment** is defined as the enrollment of the official age-group for a secondary level of education, expressed as a percentage of the population from the same age group. If the value is below 100%, users should not assume that the remaining school-aged population is not enrolled in any school; they could be enrolled in school at other grade levels. Secondary education follows primary education, and is characterized as being subject-oriented with specialized fields of learning. Programs may be vocational or technical in nature, and students achieve a full implementation of basic skills.

View full technical notes at: [http://earthtrends.wri.org/searchable\\_db/variablenotes\\_static.cfm?varid=418&themeid=4](http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=418&themeid=4)

**Gross Tertiary School Enrollment** is defined as the total enrollment, regardless of age, expressed as a percentage of the official school-age population for a tertiary level of education. Gross enrollment ratio can be over 100% due to the inclusion of over-aged and under-aged students. Such values indicate that a country is, in principle, able to accommodate all of its school-age population. Tertiary education provides the level of education required for entry into an advanced research program or a profession with high skills requirements. Faculty are typically required to have advanced research credentials. View full technical notes at: [http://earthtrends.wri.org/searchable\\_db/variablenotes\\_static.cfm?varid=423&themeid=4](http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=423&themeid=4)

**Literacy Rates** are determined through census and survey data. If that information is lacking, estimates are based on neighboring countries with similar characteristics, including life expectancy at birth, enrollment ratio in secondary education, and fertility rate.

**Adult Literacy Rate** is defined as the population of women or men aged 15 years and over who cannot both read and write with understanding a short, simple statement on their everyday life. This indicator can be used to measure gender parity in education, the achievement of literacy programs and the effectiveness of primary education.

View full technical notes at: [http://earthtrends.wri.org/searchable\\_db/variablenotes\\_static.cfm?varid=409&themeid=4](http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=409&themeid=4)

**Youth Literacy Rate** is defined as the percentage of the population aged 15 to 24 years old who can both read and write with understanding a short, simple statement on their everyday life. Youth illiteracy rates are increasingly used to gauge the impact of primary education as well as the speed with which illiteracy can be eradicated.

View full technical notes at: [http://earthtrends.wri.org/searchable\\_db/variablenotes\\_static.cfm?varid=499&themeid=4](http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=499&themeid=4)

*Sources:*

United Nations Educational Scientific, and Cultural Organization (UNESCO) Institute for Statistics. 2002. *World Education Indicators*. Paris: UNESCO.

United Nations Educational Scientific, and Cultural Organization (UNESCO) Institute for Statistics, Literacy and Non Formal Education Sector. 2002. *Special Estimates and Projections of Adult Illiteracy for Population Aged 15 Years Old and Above, By Country and By Gender*. Paris: UNESCO.

United Nations Educational Scientific, and Cultural Organization (UNESCO) Institute for Statistics, Literacy and Non Formal Education Sector. 2002. *Special Estimates and Projections of Adult Illiteracy for Countries With No Census Data*. Paris: UNESCO. Data are provided to WRI directly from UNESCO.

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*Sources:*

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United Nations Educational Scientific, and Cultural Organization (UNESCO) Institute for Statistics, Literacy and Non Formal Education Sector. 2002. *Special Estimates and Projections of Adult Illiteracy for Population Aged 15 Years Old and Above, By Country and By Gender*. Paris: UNESCO.

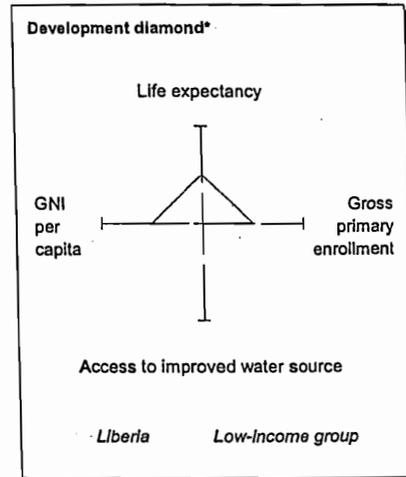
United Nations Educational Scientific, and Cultural Organization (UNESCO) Institute for Statistics, Literacy and Non Formal Education Sector. 2002. *Special Estimates and Projections of Adult Illiteracy for Countries With No Census Data*. Paris: UNESCO. Data are provided to WRI directly from UNESCO.

# Liberia at a glance

8/25/05

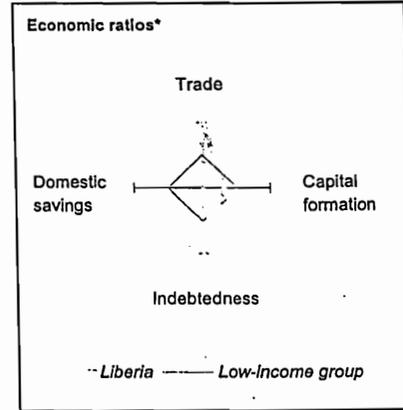
## POVERTY and SOCIAL

	Liberia	Sub-Saharan Africa	Low-income
<b>2004</b>			
Population, mid-year (millions)	3.4	719	2,338
GNI per capita (Atlas method, US\$)	110	600	510
GNI (Atlas method, US\$ billions)	0.38	432	1,184
<b>Average annual growth, 1998-04</b>			
Population (%)	2.5	2.2	1.8
Labor force (%)	2.7	1.0	2.1
<b>Most recent estimate (latest year available, 1998-04)</b>			
Poverty (% of population below national poverty line)	..	..	..
Urban population (% of total population)	47	37	31
Life expectancy at birth (years)	47	46	58
Infant mortality (per 1,000 live births)	157	101	79
Child malnutrition (% of children under 5)	27	..	44
Access to an improved water source (% of population)	62	58	75
Literacy (% of population age 15+)	56	65	61
Gross primary enrollment (% of school-age population)	105	95	94
Male	122	102	101
Female	89	88	88



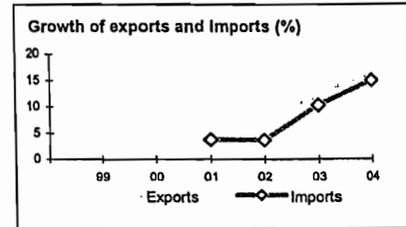
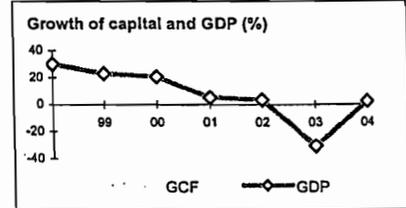
## KEY ECONOMIC RATIOS and LONG-TERM TRENDS

	1984	1994	2003	2004	
GDP (US\$ billions)	0.93	0.13	0.44	0.45	
Gross capital formation/GDP	..	..	8.7	13.5	
Exports of goods and services/GDP	50.4	..	30.0	38.3	
Gross domestic savings/GDP	-0.3	..	-2.9	-0.7	
Gross national savings/GDP	..	..	0.5	12.8	
Current account balance/GDP	..	..	-7.6	-10.4	
Interest payments/GDP	1.1	0.1	0.0	..	
Total debt/GDP	115.2	1,555.1	580.6	..	
Total debt service/exports	13.1	..	0.1	..	
Present value of debt/GDP	..	..	621.8	..	
Present value of debt/exports	..	..	1875.6	..	
<b>(average annual growth)</b>					
GDP	-22.6	16.5	-31.0	2.0	..
GDP per capita	-24.2	13.5	-32.6	-0.2	..
Exports of goods and services	..	..	12.2	16.7	..



## STRUCTURE of the ECONOMY

	1984	1994	2003	2004
<b>(% of GDP)</b>				
Agriculture	35.5	52.4	37.4	31.9
Industry	28.5	14.1	5.5	4.9
Manufacturing	5.2	..	4.7	4.0
Services	36.1	33.5	57.1	63.2
Household final consumption expenditure	80.3	..	95.1	90.0
General gov't final consumption expenditure	20.0	..	7.9	10.7
Imports of goods and services	45.6	..	41.7	52.5
<b>(average annual growth)</b>				
Agriculture	..	..	..	..
Industry	..	..	..	..
Manufacturing	..	..	..	..
Services	..	..	..	..
Household final consumption expenditure	..	..	..	..
General gov't final consumption expenditure	..	..	..	..
Gross capital formation	..	..	..	..
Imports of goods and services	..	..	10.3	14.9

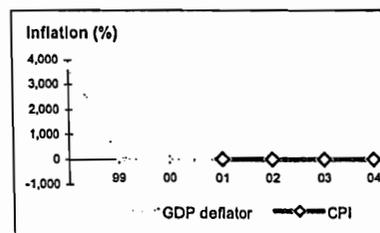


Note: 2004 data are preliminary estimates.

\* The diamonds show four key indicators in the country (in bold) compared with its income-group average. If data are missing, the diamond will be incomplete.

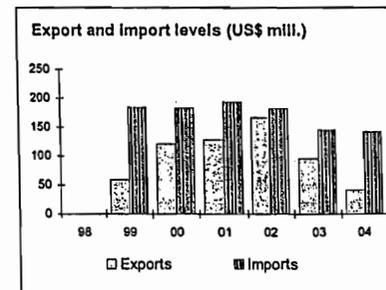
## PRICES and GOVERNMENT FINANCE

	1984	1994	2003	2004
<b>Domestic prices</b>				
<i>(% change)</i>				
Consumer prices	1.2	..	15.0	15.0
Implicit GDP deflator	4.7	5.3	9.7	-8.1
<b>Government finance</b>				
<i>(% of GDP, Includes current grants)</i>				
Current revenue	..	..	8.9	5.5
Current budget balance	..	..	4.3	0.1
Overall surplus/deficit	..	..	0.5	-0.9



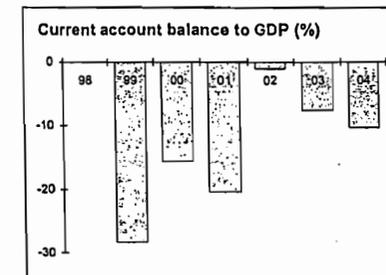
## TRADE

	1984	1994	2003	2004
<i>(US\$ millions)</i>				
Total exports (fob)	..	..	95	41
Commodity 1	..	..	..	..
Commodity 2	..	..	..	..
Manufactures	..	..	..	..
Total imports (cif)	..	..	145	142
Food	..	..	..	..
Fuel and energy	..	..	..	..
Capital goods	..	..	..	..
Export price Index (2000=100)	..	..	..	..
Import price Index (2000=100)	..	..	..	..
Terms of trade (2000=100)	..	..	..	..



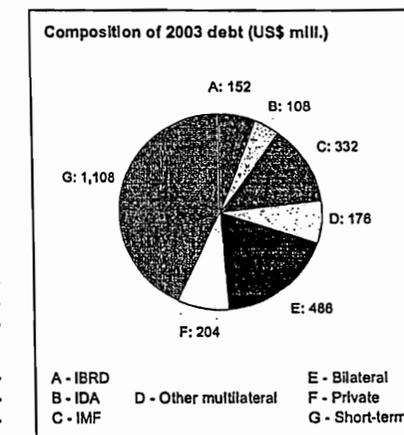
## BALANCE of PAYMENTS

	1984	1994	2003	2004
<i>(US\$ millions)</i>				
Exports of goods and services	484	..	96	35
Imports of goods and services	418	..	145	142
Resource balance	66	..	-49	-107
Net income	-127	..	-64	-64
Net current transfers	..	..	80	125
Current account balance	..	..	-34	-47
Financing Items (net)	..	..	35	..
Changes in net reserves	31	0	-2	..
<b>Memo:</b>				
Reserves including gold (US\$ millions)	..	..	0	..
Conversion rate (DEC, local/US\$)	1.0	1.0	59.4	54.9



## EXTERNAL DEBT and RESOURCE FLOWS

	1984	1994	2003	2004
<i>(US\$ millions)</i>				
Total debt outstanding and disbursed	1,076	2,056	2,568	..
IBRD	83	151	152	..
IDA	60	107	108	..
Total debt service	64	15	0	..
IBRD	13	0	0	..
IDA	1	0	0	..
<b>Composition of net resource flows</b>				
Official grants	60	53	99	..
Official creditors	91	-14	0	..
Private creditors	0	0	0	..
Foreign direct investment (net inflows)	36	0	0	..
Portfolio equity (net inflows)	0	0	0	..
<b>World Bank program</b>				
Commitments	18	0	0	..
Disbursements	25	0	0	..
Principal repayments	5	0	0	..
Net flows	20	0	0	..
Interest payments	8	0	0	..
Net transfers	12	0	0	..



## Liberia 2003 statistical indicators

<http://hdr.undp.org/statistics/data/countries.cfm?c=LBR>

### 1. Human development index

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Human development index (HDI) value, 2003	Not known
Life expectancy at birth (years) (HDI), 2003	42.4
Adult literacy rate (% ages 15 and above) (HDI), 2003	55.9
Combined gross enrolment ratio for primary, secondary and tertiary schools (%), 2002/03	61
GDP per capita (PPP US\$) (HDI), 2003	..
Life expectancy index	..
Education index	..
GDP index	..
GDP per capita (PPP US\$) rank minus HDI rank	..

### 2. Human development index trends

---

Human development index (trend), 1975	..
Human development index (trend), 1980	..
Human development index (trend), 1985	..
Human development index (trend), 1990	..
Human development index (trend), 1995	..
Human development index (trend), 2000	..
Human development index (trend), 2003	..

### 3. Human and income poverty: developing countries

---

Human poverty index (HPI-1) Rank	..
Human Poverty Index (HPI-1) Value (%)	..
Probability at birth of not surviving to age 40 (% of cohort), 2000-05	45.5
Adult illiteracy rate (% ages 15 and above), 2003	44.1
Population without sustainable access to an improved water source (%), 2002	38
Children underweight for age (% under age 5) (HPI..1), 1995-2003	26
Population living below \$1 a day (%), 1990-2003	..
Population living below \$2 a day (%), 1990-2003	..
Population living below the national poverty line (%), 1990-2002	..
HPI-1 rank minus income poverty rank	..

### 4. Human and income poverty: OECD countries, Eastern Europe & CIS

---

Human poverty index (HPI-2) Rank	..
Human poverty index (HPI-2) Value (%)	..
Probability at birth of not surviving to age 60 (% of cohort), 2000-05	63.3
People lacking functional literacy skills (% ages 16-65), 1994-2003	.. 1

Long-term unemployment (as % of labour force), 2003	..
Population living below 50% of median income (%), 1990-2000	..
Population living below \$11 a day (1994 PPP US\$), 1994-95	..
Population living below \$4 a day (1990 PPP US\$), 1996-99	..
HPI-2 rank minus income poverty rank	..

## 5. Demographic trends

---

Total population (millions), 1975	1.6
Total population (millions), 2003	3.2
Total population (millions), 2015	4.4
Annual population growth rate (%), 1975-2003	2.5
Annual population growth rate (%), 2003-2015	2.6
Urban population (% of total), 1975	30.3
Urban population (% of total), 2003	46.7
Urban population (% of total), 2015	54.1
Population under age 15 (% of total), 2003	46.9
Population under age 15 (% of total), 2015	47.8
Population age 65 and above (% of total), 2003	1.8
Population age 65 and above (% of total), 2015	2.2
Total fertility rate (births per woman), 1970-75	6.9
Total fertility rate (births per woman), 2000-05	6.8

## 6. Commitment to health: resources, access and services

---

Public health expenditure (% of GDP), 2002	1.4
Private health expenditure (% of GDP), 2002	0.7
Health expenditure per capita (PPP US\$), 2002	11
One-year-olds fully immunized against tuberculosis (%), 2003	43
One-year-olds fully immunized against measles (%), 2003	53
Children with diarrhoea receiving oral rehydration and continued feeding (% under age 5) 1, 1994-2003	.. 1
Contraceptive prevalence rate (%), 1995-2003	6
Births attended by skilled health personnel (%), 1995-2003	51
Physicians (per 100,000 people), 1990-2004	2

## 7. Water, sanitation and nutritional status

---

Population with sustainable access to improved sanitation (%), 1990	38
Population with sustainable access to improved sanitation (%), 2002	26
Population with sustainable access to an improved water source (%), 1990	56
Population with sustainable access to an improved water source (%), 2002	62
Population undernourished (% total), 1990-1992	34
Population undernourished (% total), 2000-2002	46
Children underweight for age (% under age 5), 1995-2003	26 1

Children under height for age (% under age 5), 1995-2003	39
Infants with low birthweight (%), 1998-2003	.. 1

## 8. Inequalities in maternal and child health

---

Survey year for inequality data in table 8	..
Births attended by skilled health personnel (%). Bottom quintile	..
Births attended by skilled health personnel (%). Top quintile	..
One-year-olds fully immunized (%). Bottom quintile	..
One-year-olds fully immunized (%). Top quintile	..
Children under height for age (% under age 5). Bottom quintile	..
Children under height for age (% under age 5). Top quintile	..
Infant mortality rate (per 1,000 live births). Bottom quintile	..
Infant mortality rate (per 1,000 live births). Top quintile	..
Under-five mortality rate (per 1,000 live births). Bottom quintile	..
Under-five mortality rate (per 1,000 live births). Top quintile	..

## 9. Leading global health crises and risks

---

HIV prevalence (% ages 15-49), 2003	5.9 [2.7 - 12.4]
Condom use at last high-risk sex (% ages 15-24), women, 1998-2003	..
Condom use at last high-risk sex (% ages 15-24), men, 1998-2003	..
Malaria cases (per 100,000 people), 2000	26,699 2
Children under age 5 with insecticide-treated bed nets (%), 1999-2003	..
Children under age 5 with fever treated with anti-malarial drugs (%), 1999-2003	..
Tuberculosis cases (per 100,000 people), 2003	484
Tuberculosis cases detected under DOTS (%), 2003	..
Tuberculosis cases cured under DOTS (%), 2003	..
Prevalence of smoking (% of adults), women, 2000-2002	..
Prevalence of smoking (% of adults), men, 2000-2002	..

## 10. Survival: progress and setbacks

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Life expectancy at birth (years), 1970-1975	42.6
Life expectancy at birth (years), 2000-2005	42.5
Infant mortality rate (per 1,000 live births), 1970	180
Infant mortality rate (per 1,000 live births), 2003	157
Under-five mortality rate (per 1,000 live births), 1970	263
Under-five mortality rate (per 1,000 live births), 2003	235
Probability at birth of surviving to age 65, female (% of cohort), 2000-2005	33.4
Probability at birth of surviving to age 65, male (% of cohort), 2000-2005	28.4
Maternal mortality ratio reported (per 100,000 live births), 1985-2003	580
Maternal mortality ratio adjusted (per 100,000 live births), 2000	760

## 11. Commitment to education: public spending

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Public expenditure on education (as % of GDP), 1990	..
Public expenditure on education (as % of GDP), 2000-2002	..
Public expenditure on education (as % of total government expenditure), 1990	..
Public expenditure on education (as % of total government expenditure), 2000-2002	..
Public expenditure on education, pre-primary and primary (as % of all levels), 1990	..
Public expenditure on education, pre-primary and primary (as % of all levels), 2000-2002	..
Public expenditure on education, secondary (% of all levels), 1990	..
Public expenditure on education, secondary (% of all levels), 2000-2002	..
Public expenditure on education, tertiary (% of all levels), 1990	..
Public expenditure on education, tertiary (% of all levels), 2000-2002	..

## 12. Literacy and enrolment

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Adult literacy rate (% ages 15 and above), 1990	39.2
Adult literacy rate (% ages 15 and above), 2003	55.9 3
Youth literacy rate (% ages 15-24), 1990	57.2
Youth literacy rate (% ages 15-24), 2003	70.8 3
Net primary enrolment ratio (%), 1990/91	..
Net primary enrolment ratio (%), 2002/03	70 4
Net secondary enrolment ratio (%), 1990/91	..
Net secondary enrolment ratio (%), 2002/03	18 4 5
Children reaching grade 5 (%), 1990/91	..
Children reaching grade 5 (%), 2001/02	..
Tertiary students in science, math and engineering (% of all tertiary students), 1998-2003	.. 1

## 13. Technology: diffusion and creation

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Telephone mainlines (per 1,000 people), 1990	4
Telephone mainlines (per 1,000 people), 2003	..
Cellular subscribers (per 1,000 people), 1990	0
Cellular subscribers (per 1,000 people), 2003	..
Internet users (per 1,000 people), 1990	..
Internet users (per 1,000 people), 2003	..
Patents granted to residents (per million people), 2002	0
Receipts of royalties and license fees (US\$ per person), 2003	..
Research and development (R&D) expenditures (as % of GDP), 1997-2002	..
Researchers in R&D (per million people), 1990-2003	..

## 14. Economic performance

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GDP (US\$ billions), 2003	0.4
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GDP (PPP US\$ billions), 2003	..
GDP per capita (US\$), 2003	131
GDP per capita (PPP US\$), 2003	..
GDP per capita annual growth rate (%), 1975-2003	-9.1
GDP per capita annual growth rate (%), 1990-2003	4.2
GDP per capita, highest value (PPP US\$), 1975-2003	..
GDP per capita, year of highest value	..
Average annual change in consumer price index (%), 1990-2003	..
Average annual change in consumer price index (%), 2002-03	..

## 15. Inequality in income or consumption

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Survey Year	..
Share of income or consumption (%) - Poorest 10%	..
Share of income or consumption (%) - Poorest 20%	..
Share of income or consumption (%) - Richest 20%	..
Share of income or consumption (%) - Richest 10%	..
Inequality measures - Ratio of richest 10% to poorest 10%	..
Inequality measures - Ratio of richest 20% to poorest 20%	..
Inequality measures - Gini index	..

## 16. The structure of trade

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Imports of goods and services (% of GDP), 1990	..
Imports of goods and services (% of GDP), 2003	..
Exports of goods and services (% of GDP), 1990	..
Exports of goods and services (% of GDP), 2003	..
Primary exports (% of merchandise exports), 1990	..
Primary exports (% of merchandise exports), 2003	..
Manufactured exports (% of merchandise exports), 1990	..
Manufactured exports (% of merchandise exports), 2003	..
High-technology exports (% of merchandise exports), 1990	..
High-technology exports (% of merchandise exports), 2003	..
Terms of trade (1980=100), 2002	..

## 17. Rich country responsibilities: aid

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Net official development assistance (ODA) disbursed, Total (US\$ millions), 2003	..
Net official development assistance (ODA) disbursed, As % of GNI, 1990	..
Net official development assistance (ODA) disbursed, As % of GNI, 2003	..
ODA per capita of donor country (2002 US\$), 1990	..
ODA per capita of donor country (2002 US\$), 2003	..
ODA to least developed countries (% of total), 1990	..
ODA to least developed countries (% of total), 2003	..

ODA to basic social services (% of total), 1996-1997	..
ODA to basic social services (% of total), 2002-2003	..
Untied bilateral ODA (% of total), 1990	..
Untied bilateral ODA (% of total), 2003	..

## 18. Rich country responsibilities: debt relief and trade

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Bilateral pledges to the HIPC trust fund (US\$ millions), 2004	..
Gross bilateral debt forgiveness (US\$ millions), 1990-2003	..
Goods imports from developing countries (Total US\$ millions), 2003	..
Goods imports from developing countries (Share of total imports), 2003	..
Goods imports from least developed countries (US\$ millions), 2003	..
Goods imports from least developed countries (Share of total imports), 2003	..

## 19. Flows of aid, private capital and debt

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Official development assistance (ODA) received (net disbursements) Total (US\$ millions), 2003	106.9
Official development assistance (ODA) received (net disbursements) Per capita (US\$), 2003	31.7
Official development assistance (ODA) received (net disbursements) (as % of GDP), 1990	29.7
Official development assistance (ODA) received (net disbursements) (as % of GDP), 2003	24.2
Net foreign direct investment inflows (% of GDP), 1990	0
Net foreign direct investment inflows (% of GDP), 2003	(.)
Other private flows (% of GDP), 1990	..
Other private flows (% of GDP), 2003	..
Total debt service (As % of GDP), 1990	0.8
Total debt service (As % of GDP), 2003	(.)
Total debt service (As % exports of goods, services and net income from abroad), 1990	..
Total debt service (As % exports of goods, services and net income from abroad), 2003	0.2 6 7

## 20. Priorities in public spending

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Public expenditure on education (% of GDP), 1990	..
Public expenditure on education (% of GDP), 2000-2002	..
Public expenditure on health (% of GDP), 2002	1.4
Military expenditure (% of GDP), 1990	7.4
Military expenditure (% of GDP), 2003	..
Total debt service (% of GDP), 1990	0.8
Total debt service (% of GDP), 2003	(.)

## 21. Unemployment in OECD countries

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Unemployed people (thousands), 2003	..
Unemployment rate Total (% of labour force), 2003	..

Unemployment rate Average annual (% of labour force), 1993-2003	..
Unemployment rate Female (% of male rate), 2003	..
Youth unemployment rate Total (% of labour force ages 15-24), 2003	..
Youth unemployment rate Female (% of male rate), 2003	..
Long-term unemployment (% of total unemployment): Women, 2003	..
Long-term unemployment (% of total unemployment): Men, 2003	..

## 22. Energy and the environment

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Traditional fuel consumption (% of total energy requirements), 2002	88.7
Electricity consumption per capita (kilowatt-hours), 1980	474
Electricity consumption per capita (kilowatt-hours), 2002	164
GDP per unit of energy use (2000 PPP US\$ per kg of oil equivalent), 1980	..
GDP per unit of energy use (2000 PPP US\$ per kg of oil equivalent), 2002	..
Carbon dioxide emissions - Per capita (metric tons), 1980	1.1
Carbon dioxide emissions - Per capita (metric tons), 2002	0.1
Carbon dioxide emissions - Share of world total (%), 2000	(.)
Ratification of environmental treaties - Cartagena Protocol on Biosafety	●
Ratification of environmental treaties - Framework Convention on Climate Change	●
Ratification of environmental treaties - Kyoto Protocol to the Framework Convention on Climate Change	●
Ratification of environmental treaties - Convention on Biological Diversity	●

## 23. Refugees and armaments

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Internally displaced people (thousands), 2004	..
Refugees by country of asylum (thousands), 2004	34
Refugees by country of origin (thousands), 2004	353
Conventional arms transfers (1990 prices) - Imports (US\$ millions), 1994	0
Conventional arms transfers (1990 prices) - Imports (US\$ millions), 2004	0
Conventional arms transfers (1990 prices) - Exports (US\$ millions), 2004	..
Conventional arms transfers (1990 prices) - Exports (share %), 2000-2004	..
Total armed forces Thousands, 2003	15
Total armed forces Index (1985=100), 2003	221

## 25. Gender-related development index

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Gender-related development index (GDI) rank, 2003	..
Gender-related development index (GDI) value, 2003	..
Life expectancy at birth, female (years), 2003	43.5
Life expectancy at birth, male (years), 2003	41.4
Adult literacy rate, female (% ages 15 and above), 2003	39.3
Adult literacy rate, male (% ages 15 and above), 2003	72.3
Combined gross enrolment ratio for primary, secondary and tertiary level schools, female	51

(%), 2002/03

Combined gross enrolment ratio for primary, secondary and tertiary level schools, male (%), 2002/03	71
Estimated earned income, female (PPP US\$), 2003	..
Estimated earned income, male (PPP US\$), 2003	..
HDI rank minus GDI rank, 2003	..

## 26. Gender empowerment measure

---

Gender empowerment measure (GEM) rank	..
Gender empowerment measure (GEM) value	..
Seats in parliament held by women (% of total)	5.3
Female legislators, senior officials and managers (% of total)	..
Female professional and technical workers (% of total)	..
Ratio of estimated female to male earned income	..

## 27. Gender inequality in education

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Adult literacy rate (female rate % ages 15 and above), 2003	39.3 8
Adult literacy rate (female rate as % of male rate), 2003	54 8
Youth literacy rate (female rate % ages 15-24), 2003	55.4 8
Youth literacy rate (female rate as % of male rate), 2003	64 8
Female primary net enrolment ratio (%), 2002/03	61 9
Primary net enrolment ratio (female as % of male), 2002/03	0.78 9
Female secondary net enrolment ratio (%), 2002/03	13 9 10
Secondary net enrolment ratio (female rate as % of male rate), 2002/03	0.57 9 10
Female tertiary gross enrolment ratio (%), 2002/03	15 9
Tertiary gross enrolment ratio (female rate as % of male rate), 2002/03	0.76 9

## 28. Gender inequality in economic activity

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Female economic activity rate (% ages 15 and above), 2003	52.8
Female economic activity rate (index, 1990=100, ages 15 and above), 2003	99
Female economic activity rate (% of male rate, ages 15 and above), 2003	66
Female employment in agriculture (as % of female labour force), 1995-2002	..
Male employment in agriculture (%), 1995-2002	..
Female employment in industry (as % of female labour force), 1995-2002	..
Male employment in industry (%), 1995-2002	..
Female employment in services (as % of female labour force), 1995-2002	..
Male employment in services (%), 1995-2002	..
Women contributing family workers (% of total), 1995-2003	..
Men contributing family workers (% of total), 1995-2003	..

## 30. Women's political participation

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Year women received right to vote	..
Year women received right to stand for election	..
Year first woman elected (E) or appointed (A) to parliament	..
Women in government at ministerial level (as % of total), 2005	0.1
Seats in lower house or single house held by women (as.% of total), 1990	..
Seats in lower house or single house held by women (as % of total), 2005	5.3
Seats in upper house or senate held by women (as % of total), 2005	..

### 31. Status of major international human rights instruments

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International Convention on the Prevention and Punishment of the Crime of Genocide, 1948	●
International Convention on the Elimination of All Forms of Racial Discrimination, 1965	●
International Covenant on Civil and Political Rights, 1966	●
International Covenant on Economic, Social and Cultural Rights, 1966	●
Convention on the Elimination of All Forms of Discrimination Against Women, 1979	●
Convention Against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment, 1984	●
Convention on the Rights of the Child, 1989	●

### 32. Status of fundamental labour rights conventions

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Freedom of association and collective bargaining - Convention 87	●
Freedom of association and collective bargaining - Convention 98	●
Elimination of forced and compulsory labour - Convention 29	●
Elimination of forced and compulsory labour - Convention 105	●
Elimination of discrimination in respect of employment and occupation - Convention 100	..
Elimination of discrimination in respect of employment and occupation - Convention 111	●
Abolition of child labour - Convention 138	..
Abolition of child labour - Convention 182	●

### 33. Basic indicators for other UN member countries

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Life expectancy at birth (years), 2000-05	42.5
Adult literacy rate (% ages 15 and above), 2003	55.9
Combined gross enrolment ratio for primary, secondary and tertiary schools, 2002/03	61.2
GDP per capita (PPP US\$) (HDI), 2003	..
Total population (thousands), 2003	3
Total fertility rate (births per woman), 2000-05	6.8
Under-five mortality rate (per 1,000 live births), 2003	235
Net primary enrolment ratio (%), 2002/03	70 11
HIV prevalence (% ages 15-49), 2003	5.9 [2.7 -

	12.4]
Undernourished people (% of total population), 2000/03	46
Population with sustainable access to an improved water source (%), 2002	62

---

Notes :

- 1 -
- 2 - Data refer to 1998.
- 3 - Estimate produced by UNESCO Institute for Statistics in July 2002.
- 4 - Data refer to the 1999/2000 school year.
- 5 - Preliminary UNESCO Institute for Statistics estimate, subject to further revision.
- 6 - Country included in the Debt Initiative for Heavily Indebted Poor Countries (HIPC).
- 7 - Decision and completion points not yet reached under the HIPC Initiative.
- 8 - Estimate produced by UNESCO Institute for Statistics in July 2002.
- 9 - Data refer to the 1999/2000 school year.
- 10 - Preliminary UNESCO Institute for Statistics estimate, subject to further revision.
- 11 - Data refer to the 1999/2000 school year.

## Liberia Data Profile

Click on the indicator to view a definition	2000	2003	2004
<b>People</b>			
Population, total	3.1 million	3.4 million	3.4 million
Population growth (annual %)	2.8	2.4	2.2
Life expectancy (years)	..	47.1	..
Fertility rate (births per woman)	..	5.8	..
Infant mortality rate (per 1,000 live births)	157.0	157.0	..
Under 5 mortality rate (per 1,000 children)	235.0	235.0	..
Births attended by skilled health staff (% of total)	50.9	..	..
Child malnutrition, weight for age (% of under 5)	26.5	..	..
Child immunization, measles (% of under 12 mos)	52.0	53.0	..
Prevalence of HIV, total (% of population aged 15-49)	..	5.9	..
Literacy rate, adult male (% of males ages 15 and above)	..	..	..
Literacy rate, adult female (% of females ages 15 and above)	..	..	..
Primary completion rate, total (% age group)	..	..	..
Primary completion rate, female (% age group)	..	..	..
Net primary enrollment (% relevant age group)	..	..	..
Net secondary enrollment (% relevant age group)	..	..	..
<b>Environment</b>			
Surface area (sq. km)	111.4 thousand	111.4 thousand	..
Forests (1,000 sq. km)	34,810.0	..	..
Deforestation (average annual % 1990-2000)	2.0	..	..
Internal freshwater resources per capita (cubic meters)	..	59,284.9	..
CO2 emissions (metric tons per capita)	0.1	..	..
Access to improved water source (% of total pop.)	..	..	..
Access to improved sanitation (% of urban pop.)	..	..	..
<b>Economy</b>			
GNI, Atlas method (current US\$)	417.1 million	350.0 million	390.8 million
GNI per capita, Atlas method (current US\$)	130.0	100.0	110.0
GDP (current \$)	541.5 million	442.2 million	448.2 million
GDP growth (annual %)	20.4	-31.0	2.0
GDP implicit price deflator (annual % growth)	-0.5	9.7	-8.1
Gross capital formation (% of GDP)	..	8.7	13.5
<b>Technology and infrastructure</b>			
Fixed lines and mobile telephones (per 1,000 people)	2.6	..	..
Internet users (per 1,000 people)	0.2	..	..
Paved roads (% of total)	..	..	..
Aircraft departures	..	..	..
<b>Trade and finance</b>			
Trade in goods as a share of GDP (%)	184.1	178.7	..
Foreign direct investment, net inflows in reporting country (current US\$)	20.8 million	10,000.0	..
Present value of debt (current US\$)	2.1 billion	2.7 billion	..
Total debt service (% of exports of goods and services)	0.5	0.1	..
Short-term debt outstanding (current US\$)	699.3 million	1.1 billion	..



## Section 4

# LIBERIA'S MINERAL AND NATURAL RESOURCES

### Introduction

Liberia has an abundance of highly valuable mineral and natural resources. The most important mineral resources include gold, diamonds, and cement, as well as iron ore and, potentially, newly identified off-shore oil reserves. Natural resources include tropical hardwoods, and both the arable land and water resources to be independent in production of rice and other key crops. Rubber and cocoa have been important export crops in the past. The biodiversity of Liberia's tropical forests is an important global resource; stewardship examples from countries such as Costa Rica can help Liberia protect its ecological resources.

Despite logging activities, Liberia still contains about 43% of the Upper Guinea Forest. It has a great potential for agricultural development that includes adequate rainfall, sunshine, natural pasture, swamps, lakes, rivers and water courses and associated fertile alluvial flats and other plains. The effect of drought and desertification in Liberia is still minimal. Hydropotential is also a valuable resource for power generation, but only during the rainy season.

The gold, diamonds, and timber have also been the focus of international criminal cartels and proceeds from illicit trafficking in these have fueled much of the fighting over the past 14 years.

In a peaceful future, Liberia could (in principle) emulate Botswana, which has used income from its diamond exports to support investments in health, education, water supply, and rural enterprise.

### Mineral Resources

Liberia: Production of Mineral Commodities						
Commodity	Units	2000	2001	2002	2003	2004
Cement	Metric tons	71,000	62,897	53,622	25,000	40,000
Diamonds	Carats	170,000	170,000	80,000	40,000	10,000
Gold	Kg	25	57	42	20	20

Table includes data available through July 10, 2005.  
Source: U.S. GEOLOGICAL SURVEY MINERALS YEARBOOK—2004

**Cement:** The Liberian Cement Corp. operated a cement plant with a capacity of 220,000 metric tons (mt) per year, although production fell from 71,000 mt in 2000 to an estimated 40,000 mt in 2004. The post-conflict reconstruction efforts will substantially increase the internal demand for cement. The increasing cost of domestically produced cement led the NTGL to permit imported cement into the market to increase competition, and foreign investment was being sought to build additional cement production capacity in the country.

**Diamond:** Diamond occurs in two principal areas in Liberia—in alluvial terrace gravels in the Gbapa area, on the northern border with Guinea, and within a large (approximately 60-km-wide and 120-km-long) area roughly between the Lofa River and the Mano and Morro Rivers along the west-

ern border with Sierra Leone. The latter area encompasses the Liberian counties of Gbarpolu, Grand Cape Mount, and Lofa.

Between 1960 and 1980, official production and export statistics of Liberia ranged from 300,000 to 900,000 carats per year. During much of this period, however, Liberia was a U.S. dollar currency zone, and it is suspected that the statistical data included diamond from neighboring countries that was taken across the border in search of the harder currency available in Liberia. According to the USGS, Liberian production data for 1980-1990 of 100,000 to 430,000 carats per year is probably more reflective of Liberian domestic artisanal mining productive capacity.

## **Water Resources, Arable Land, and Agriculture in Liberia<sup>1</sup>**

Before the outbreak of civil war, agriculture accounted for about 40 percent of GDP and Liberia had been a producer and exporter of basic products - primarily raw timber and rubber. The rubber industry generated over US\$100 million export earnings annually. By the end of 1996, real GDP was as low as 10 percent of its pre-war level. However, from 1997 it increased, reflecting a post-war surge in rice, timber and rubber production, and in 2002, reached US\$442 million. Nonetheless, in 2004, a still unsettled domestic security situation was slowing the process of rebuilding the social and economic structure of the country. In 2000, agriculture and forestry contributed over 90 percent of export earnings, mainly from rubber, timber, cocoa and coffee.

Agricultural activities are still considerably reduced and food insecurity is worsening, as the areas considered to be the "food basket" of Liberia are still inaccessible. Rice production in 1995 was only 23 percent of the pre-civil war level. Cassava production has also been falling, possibly by as much as 50 percent. Low productivity of land and labor, shifting cultivation and low livestock production remain the main characteristics of traditional farming in Liberia. Rainfed agriculture is the predominant system. Use of water control technology is exceptional and consists mainly of unregulated manual irrigation, using watering cans.

Liberia is far from being food self-sufficient, with net cereal imports and food aid as a percent of total consumption being 44.1 percent for the period 1998-2000. The variation in domestic cereal production between 1992-2001 (average percent variation from mean) was 44.5 percent.

Liberia's river systems can be classified in two kinds:

- The major basins, which drain 97 percent of the territory in a general northeast-southwest direction. Of these, the six major rivers, originating in Sierra Leone, Guinea or in Côte d'Ivoire, are the Mano, Lofa, Saint Paul, Saint John, Cestos and Cavalla, and together drain 65.5 percent of the country;
- The short coastal watercourses, which drain about 3 percent of the country.

Internal renewable surface water resources are estimated to be 200 km<sup>3</sup>/year and internal groundwater is estimated to be 60 km<sup>3</sup>/year; all of the latter is believed to be drained by watercourses. Thus, the total internally produced renewable water resources become 200 km<sup>3</sup>/year, while an additional 32 km<sup>3</sup>/year comes from Guinea and Côte d'Ivoire, bringing the total renewable water resources to 232 km<sup>3</sup>/year. Liberia has one of the highest levels of renewable water resources per inhabitant in Africa: more than 71 000 m<sup>3</sup>/year.

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<sup>1</sup> Drawn from FAO (2005). *Irrigation in Africa in figures. AQUASTAT Survey – 2005.*

<http://www.fao.org/aq/aql/aqlw/aquastat/countries/liberia/index.stm>

## **Water use**

Total water withdrawal in the year 2000 was estimated at 106.8 million m<sup>3</sup>. The main water user was agriculture with 60 million m<sup>3</sup>/year (57 percent), followed by the domestic sector with 30.4 million m<sup>3</sup>/year (28 percent) and industry with 16.4 million m<sup>3</sup>/year (15 percent)

## **International water issues**

Liberia shares rivers with all its neighboring countries:

- The Mano and Mugowi Rivers with Sierra Leone;
- The Makone, Lofa, Via, Nianda and Mani Rivers with Guinea;
- The Cavalla River with Côte d'Ivoire, which forms a large part of the border between the two countries.
- 

## **Irrigation and drainage development**

The irrigation potential in Liberia is estimated at 600 000 ha, consisting mainly of freshwater swamps. No up-to-date information on irrigated areas in Liberia is available. In 1987, the total water managed area was 20 100 ha, comprising:

- About 100 ha equipped for full or partial control irrigation, consisting mainly of small development projects supported through international or bilateral cooperation;
- 2 000 ha of equipped wetlands and inland valley bottoms, mainly cropped with rice;
- 18 000 ha of non-equipped cultivated wetlands, swamps and inland valley bottoms.

FAO's Special Program for Food Security (SPFS) 2000-2002 had the following aims:

- Developing 50 ha of small swamps, complete with drainage/irrigation channels and required water control structures;
- Training of farmers and extension staff in the utilization and repair of treadle and petrol pumps;
- Training of farmers and extension staff in water control practices at field level, irrigated field maintenance and improved cultivation methods (particularly rice and vegetables);
- Demonstration of low-cost small-scale irrigation technologies on 10 ha using treadle pumps and petrol pumps, and of water management practices with the participation of farmers and extension workers.

## **Role of irrigation in agricultural production, the economy and society**

The main irrigated crop is rice. It is grown in the swamps in addition to the upland rice. Shifting cultivation in the uplands is still the main technique: the secondary forest is cleared and burned, and upland rice is cropped during one or two years combined with different food crops (cassava, common groundnuts or vegetables). Afterwards, the area returns to bush fallow for 8-10 years. This system is the preferred mode of farming in Liberia and has the advantage of maintaining the ecological system in equilibrium. However, this system cannot be applied in areas where a higher population density prevents the restoration of soil fertility due to too short a fallow period. In those areas, swamp rice is cultivated in addition to upland crops.

While in the mid-1980s about 235 000 ha of rice were cultivated, this figure dropped to 120 000 ha in 2003, leading to a decrease in total rice production from about 290 000 tonnes in the mid-1980s to 110 000 tonnes in 2003. In 1995, the yield of upland rice was estimated to be 1.3 t/ha, while yields of swamp rice were about 1.6 t/ha, and yields in equipped wetlands and swamps reached more than 2 t/ha.

Gender and land tenure with regard to water management have been well-known problems for projects in Liberia.

## **Water management, policies and legislation: water use in agriculture**

### Principal Institutions

The National Water Resources and Sanitation Board was created in 1981 in order to coordinate the activities of the different institutions or corporations involved in the management of water resources. Before the conflict, the main institutions involved were:

- The Liberia Water and Sewer Corporation (LWSC), in charge of the water supply systems in the urban areas;
- The Ministry of Agriculture, in charge, inter alia, of irrigation;
- The Ministry of Health and Social Affairs, in charge of sewerage;
- The Liberia Electricity Corporation, in charge of hydro-electric energy production;
- The Ministry of Rural Development in charge of water supply in rural areas;
- The Hydrology Service of the Ministry of Land, Mines and Energy.

## **Environment and health**

Main environmental problems in Liberia are tropical rain forest deforestation, soil erosion, loss of biodiversity, and pollution of coastal waters from oil residue and raw sewage. Water-borne diseases such as diarrhoea, dysentery, cholera and infectious hepatitis are common.

## **Perspectives for agricultural water management**

With only about 3 percent or about 20 000 ha of a potential 600 000 ha of swampland cultivated with rice before the war, water control and soil management measures remain the most suitable vehicle for future development. Water deficiency in the dry season, poor drainage, flooding of lowlands and the hazard of water erosion are all problems that need to be addressed.

The development of swamp rice cultivation will become necessary with increasing population and population density. It has been estimated that with an intensification of swamp rice cultivation, it could be possible for Liberia to become self-sufficient in rice, which is the staple food crop. The urban demand for rice is also rapidly expanding.

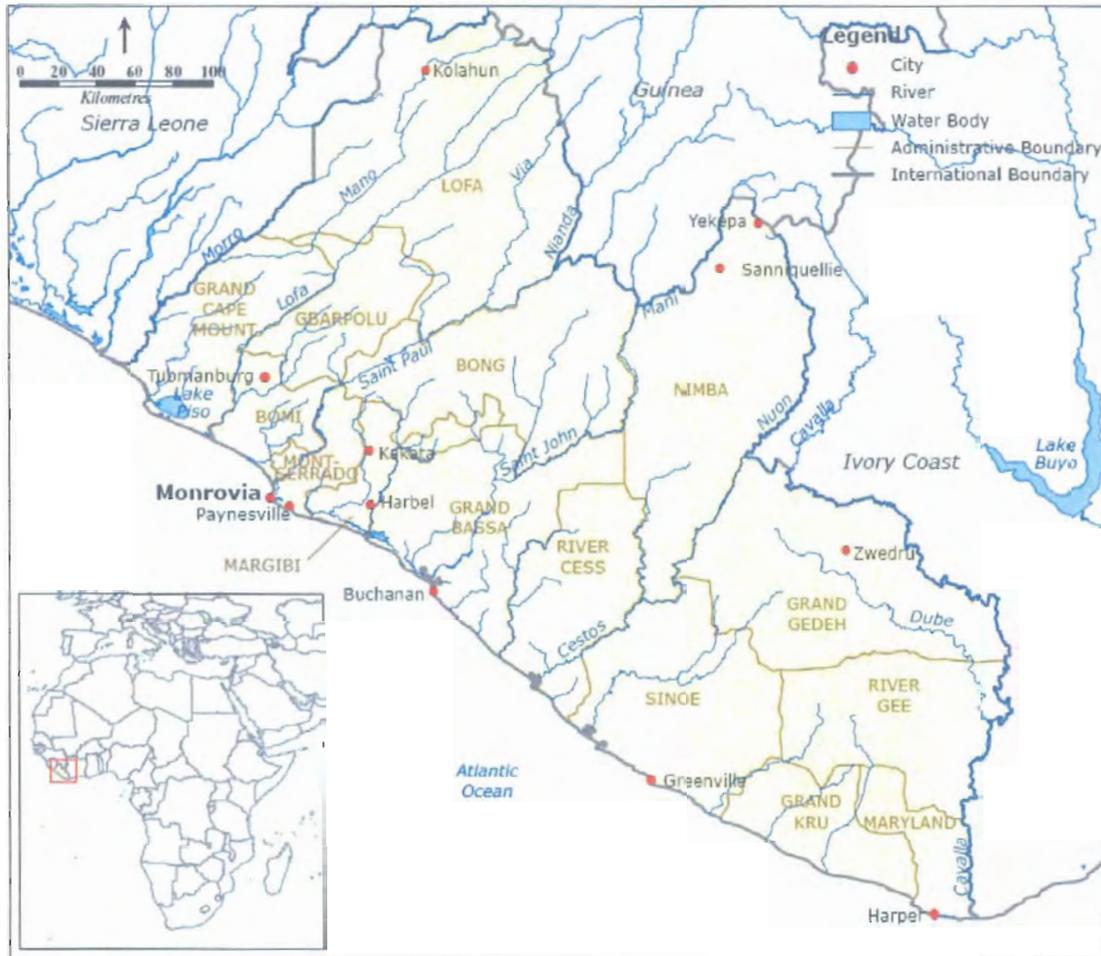
Successful swamp rice production development in Liberia requires: i) application of improved swamp rice cultivation technologies; ii) high labour inputs, which can conflict with upland farming needs; iii) availability of modern inputs (improved cultivars, good quality seed, fertilizers); and iv) a change of mentality amongst farmers, who should consider rice as a means of increasing cash income and not just as a subsistence crop.

## Main sources of information

FAO. 1986. Liberia, report of an agricultural sector review mission. Report 85/86 CP-LIR.8

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FAO. 2000b. Special Programme for Food Security, water control and intensification components. TCP/LIR/8923 (D) and TCP/LIR2802 (D). Project Documentation.



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LIBERIA

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## Section 5

# NEEDS FOR RECONSTRUCTION AND DEVELOPMENT<sup>1</sup>

### Introduction: the Development Challenge<sup>2</sup>

For fourteen years from 1989 to the signing of the Accra Comprehensive Peace Agreement (CPA) in August of 2003, Liberia was in a constant state of conflict. In a nation of only three million people, it is estimated that the war took over 250,000 lives and displaced a million people, including hundreds of thousands of refugees who fled the country. Rape and other forms of sexual violence against women and girls were pervasive. It is difficult to exaggerate the devastation this protracted civil war has had on Liberia's physical, social, political and economic infrastructure. Liberia's human development indicators reflect the alarming condition of its people. Over 80% of Liberia's population is illiterate and lives below the poverty line. The unemployment rate exceeds 70%. Thirty-five percent of Liberians are malnourished, only 28% are fully immunized, just 25% have access to safe drinking water, and only 36% have access to sanitation facilities.

### Physical and Social Infrastructure

Since 1997, most of the social infrastructure (schools, health facilities, public latrines, feeder roads, water and sanitation) that was destroyed during the civil war has not been rehabilitated. Some 954 primary, secondary and vocational schools, and two teachers training institutions; 82 health facilities, including 6 hospitals, and over 20,000 wells and latrines are in need of immediate rehabilitation and reconstruction nationwide (RFTF *et al.*, 2004).

Ten primary bridges and 750km of primary roads also require immediate rehabilitation. The country's road network has not been maintained or repaired for almost a decade. Most farm-to-market roads are impassable for many months each year. The country lacks almost every basic social service. There is no electric power and no piped water supplies in most rural areas.

Unprotected wells, streams, and rivers are the primary sources of water for drinking and other uses. Limited electric power and piped water supplies in Monrovia have been made possible through the efforts of the NTGL and the EU. Public sanitation services (garbage collection and public toilets) are absent in most parts of the country. Limited public sanitation services are provided by the Monrovia City Corporation, with assistance from aid agencies. Much more needs to be done in the rest of the country.

### Development Priorities for the Environment

The national development priorities for the environment include:

- Strengthening capacity for advocacy, data collection, analysis, monitoring and evaluation at the Environmental Protection Agency (EPA);
- Environmental management and sustainable use of renewable natural resources;

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<sup>1</sup> Drawn from the Liberia Millennium Development Goals report (date), and [other reports]

<sup>2</sup> Taken directly from USAID (2006) <http://www.usaid.gov/policy/budget/cbj2006/afr/lr.html>

- Enhancing environmental awareness and active involvement of NGOs and local communities in environmental protection and management programs, combined with poverty reducing activities;
- Rehabilitation and management of electricity and water supply facilities in urban and rural areas;
- Greater involvement of the private sector in water and energy sectors;

## Status and Trends

The Liberian economy is “private enterprise oriented”. Investment policies are intended to be private sector friendly, within the context of the country’s “Open Door Policy”, providing incentives and tax holidays to foreign investors. However, the business climate in Liberia is presently less than favorable. Business operations have declined steadily, as evidenced by reduction in annual business registration for example business registration declined from 963 in 2000 to 661 in 2001, a decline of 31% due to poor enabling environment, i.e. policies, infrastructure (electricity, water, communication), and financial system, which increases the cost of business in Liberia. The majority of existing businesses are small, engaging mainly in petty trading in the informal sector. (i.e., micro-enterprise).

With respect to international trade, the direction is towards Western Europe, USA, and Latin America. The export sector is limited to few unprocessed, primary agricultural and mineral products, with limited value added, including round logs, rubber, cocoa, coffee, gold and diamond. Imports are mainly foodstuffs and other consumables, including pharmaceuticals. Although the 1997 UNCCA put the proportion of the population with access to affordable drugs on a sustainable basis at 94%, the 2003 Needs Assessment shows that the situation has deteriorated sharply.

## Development Priorities

To enhance the global partnership for development, the Government and its partners should focus their efforts on:

- National and sub-regional peace and security to foster dialogue and reconciliation among conflicting parties;
- Supporting good governance, including respect for human rights and the rule of law;
- Institutionalization of the “one-team” approach demonstrated during the Liberia Needs Assessment and RFTF processes;
- Support the RFTF Implementation and Monitoring Committee (RIMCO), the RIMCO Support Office (RSO) and the RIMCO Working Committees (RWCs), which constitute a framework for the facilitation and scrupulous implementation of the RFTF;
- Public sector management, transparency and accountability;
- Improving fiscal policy and structural reforms, including a simplified and effective tax collection system;
- Improving commerce and trade: export promotion and imports standardization; facilitation of subregional and international trade; and financing mechanisms to enhance trade;
- Improving domestic manufacturing and industry, including small and medium sized indigenous industries to create jobs and reduce unemployment;
- Supporting and ensuring free and fair elections in 2005;
- Institutionalization of prudent anti-corruption policies;
- Strengthening institutions of transparency and accountability, private sector development policies, financing the legal system;
- Lobby for the removal of sanctions on Liberia’s timber and logs;
- Support data collection and analysis of the tenets of the global partnership for development; and
- Improving access of the poor to basic services (electricity, water and sanitation, communications, education, health, credit, and roads, etc.).

### **The Results Focused Transition Framework (RFTF)<sup>3</sup>**

The Joint Needs Assessment is an evolving assessment of the needs of Liberia during the challenging period of crisis relief, reconstruction, and development. The assessment was undertaken by the United Nations and World Bank Group under the guidance and auspices of the National Transitional Government of Liberia (NTGL) and the coordination of the UN Development Group. The United Nations Mission in Liberia (UNMIL) played a central role in the planning and fact-finding for this exercise. Technical inputs were provided by line ministries, the various programs, funds and agencies of the United Nations, as well as by UNMIL, the World Bank, the International Monetary Fund, non-governmental organizations (NGOs), and other stakeholders. It was produced during the time of the National Transitional Government of Liberia (NTGL).

The Needs Assessment (NA) exercise was designed to focus on the highest priority requirements during Liberia's transition from relief to recovery, the latter to include national and local elections that must take place no later than October 2005. The NA covered 13 priority sectors grouped into nine "clusters": Security; Disarmament, Demobilisation, Reintegration and Rehabilitation (DDRR); Reintegration of Internally Displaced Persons (IDPs), Returnees and Refugees; Governance and Rule of Law; Elections; Basic Services (which includes the sectors of Health and Nutrition, Education, and Community Water and Sanitation); Productive Capacity and Livelihoods; Infrastructure (which includes Power, Transport, Communications, and Urban Water and Sanitation); and Economic Policy and Development Strategy. Attention was also given to seven cross-cutting themes: Gender, HIV/AIDS, Environment, Human Rights, Shelter, Forestry and Media.

The substantive foundation for the Needs Assessment was systematically constructed during the December-January period as a Results-Focused Transition Framework (RFTF). This was informed by the findings of a team of UN, World Bank and IMF officials in December 2003 that developed a series of Needs Assessment working papers. The Framework was endorsed by the NTGL on January 7, 2004.

The most recent synthesis document was designed to inform the participants in the International Conference on Reconstruction in Liberia that was scheduled for February 5th and 6th in New York, of the priority requirements for the transition period (2004-05). It is designed to allow partners and investors to monitor the progress towards the priority outcomes that are anticipated during this transition period. It is based on the substantive recommendations presented in the RFTF and the contents of the sector-specific working documents produced during the Needs Assessment. The RFTF is included in the hard copy and CD-ROM Annex materials for the USAID Liberia Briefing Book.

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<sup>3</sup> United Nations / World Bank (2004 and 2005). Liberia: Joint Needs Assessment February 2004 original version and May 2005 revision

## The RFTF Goals

As the RFTF was developed, the NTGL set out a transition strategy with ten goals (Table 5-1).

<b>Table 5-1: The RFTF Goals for Liberia</b>	
<b>Goal I</b>	To maintain peace throughout the country and reduce Liberia's destabilizing impact on the West Africa region through the continuous implementation of peacekeeping actions.
<b>Goal II</b>	To disarm, demobilise, rehabilitate and reintegrate (DDRR) ex-combatants so that they become productive members of society.
<b>Goal III</b>	To enable those who have taken refuge outside of Liberia, Internally Displaced Persons, and third-country nationals to return to their places of origin.
<b>Goal IV</b>	To establish governance institutions that promote rule of law; respect for human rights; increased public sector capacity; effective judiciary, police and correction systems; and empowered local government and civil society.
<b>Goal V</b>	To set the scene for democratic elections at the end of the 2004-05 transition period, and thus launch the next phase of national development by giving Liberians an opportunity to choose a government with a clear mandate to govern.
<b>Goal VI</b>	To increase access to primary health care, education for all, and community water and sanitation according to the minimum requirements necessary for people to meet their basic needs.
<b>Goal VII</b>	To restore production capacity and livelihoods, with a particular focus on agriculture-based productive capacity, aquaculture and marine fisheries, community-based development activities and the creation of social safety nets for groups with specific vulnerabilities.
<b>Goal VIII</b>	To lay the foundations for the sustainable rebuilding of Liberia's infrastructure, both to support community-based and driven development and to create the environment necessary for private sector investment.
<b>Goal IX</b>	To increase the confidence of private investors and the donor community as to the stewardship of public finances by relevant government agencies, through ensuring adequate transparency and accountability of financial and budgetary management.
<b>Goal X</b>	To establish a mechanism through which nations and institutions can be partners in the transition process, reviewing progress against the Results-Focused Transition Framework, managing and coordinating contributions, and reporting regularly on RFTF-related achievements and their impact.

The specific sector priorities are presented below, taken directly from the first RFTF document (2004).

## Sector priorities

xiv. Not all of the goals of the transition strategy can be fulfilled throughout the country in the next two years. Priorities have been identified through a needs assessment process. Security constraints in most of the interior have prevented in-depth field research for this exercise. This Assessment is, therefore, not intended as a final statement of the status and priority development needs in Liberia today. The sector-specific needs assessments, which contain a more detailed analysis, were issued as working documents prior to the February 5th and 6th Reconstruction Conference. With these caveats in mind, the following priority outcomes have been identified.

xv. **Security.** The primary security-related outcomes in Liberia are: 1) to consolidate and extend the security perimeter beyond Monrovia to the rural parts of the country, 2) to restructure the armed forces into a unified and cohesive military institution, and 3) to equip the multitudes of ex-combatants who are ready to leave behind a life of war with the wherewithal to survive in a new and, in most cases, completely unfamiliar world of peace and order.

xvi. **Disarmament, Demobilisation, Rehabilitation and Reintegration (DDRR).** The overall DDRR programme agreed upon by the NTGL, UNMIL, UNDP and other key partners, will take place over a three-year period. For the purpose of the Needs Assessment, which covers the years 2004 and 2005, the aim is to disarm, demobilise and support the reintegration of 53,000 ex-combatants.

xvii. **Refugees, returnees and Internally Displaced Persons (IDPs).** Nearly one-third of the country's population is internally displaced. Approximately 300,000 Liberians are refugees in neighbouring countries, while 73,000 refugees from these countries have sought refuge in Liberia. The priority outcomes include ensuring that returnees, third-country refugees, and IDPs throughout Liberia are provided with essential basic services and protection. Efforts must focus not only on the individual concerned, but—equally important—on the community, for it is the interaction between the two that will ultimately determine the sustainability of any given solution. Provision of social protection and legal support will also be essential.

xviii. **Governance and rule of law.** The establishment of an institutional framework for sound relations between state authorities and civil society is the overarching outcome in governance. Capacity-building needs—covering reconstruction, re-equipping and retraining—are paramount at all levels of government, including national, country and district levels. Not only is there a need for the upgrading and revitalization of the civil service, but even more challenging will be the alignment of state practices according to the norms of transparent and law-abiding governance. Without improved capacity for planning, coordination and delivery of essential services, the recovery effort, particularly at the local level, will be slow off the ground and ultimately unsustainable. External support will be essential.

xix. **Rule of law and human rights.** A key outcome is increased transparency and credibility of the police, corrections service, and judiciary. This should go hand-in-hand with the establishment of a Truth and Reconciliation Commission.

xx. **Civil society and media.** While many international NGOs operate in the country, the fabric of Liberia's indigenous and community-based organizations is tattered and in need of significant recovery support. Without the full-scale involvement of this key constituency, the all-important ownership of the reconstruction process will remain elusive. Fostering public dialogue, encouraging freedom of expression, and promoting confidence in democratic institutions are outcomes to pursue in parallel with the establishment of an independent media.

xxi. **Elections.** The culmination of Liberia's post-conflict transition will be the holding of state and local elections, which must take place, according to the CPA, by October 2005. An extensive voter registration and constituency demarcation effort will unfold in 2004-05, as no population census was held before the elections. In parallel, a nationwide education campaign will be launched

and all preparatory activities for the holding of free, fair and transparent elections (procurement of equipment and material, training of monitors, etc.) will be carried out.

**xxii. Health and nutrition.** The available health and nutritional indicators for Liberia are among the worst in the world. It is estimated that less than 10% of Liberians have access to health care. Infrastructure damage, lack of funds, deterioration of support systems and attrition of the public sector workforce are the main causes of this decline. The most urgent priority outcome is to restore a Primary Health Care (PHC) system that can deliver health and nutrition services through clinics and community-based initiatives across the country and, in particular, in under-served rural areas. The proposed strategy consists of laying the groundwork for a comprehensive reconstruction of the sector, while addressing the most urgent health, nutritional and hygiene needs of returnees and the rural population through the re-activation of key health facilities, the training of key categories of staff, the expansion of priority health programmes targeting main determinants of disease and the implementation of community driven programmes. This will be carried out in parallel to the strengthening, in the medium term, of the Ministry of Health and Social Welfare at the central and county levels.

**xxiii. Education.** Liberia's education system has been among the weakest in Sub-Saharan Africa for the past two decades: more than half of Liberia children are out of school. The gender-based differential among enrolled children is huge. In post-conflict Liberia, priority outcomes are: to rehabilitate at least 25% of the primary and secondary schools in need; to improve access to quality basic education by implementing back-to-school type programmes; to encourage vocational training and relevant higher education; and to define and implement a new policy in education that will serve Liberia for generations to come.

Access to education is limited. An estimated 80 percent of schools, health service structures, water wells and sanitation facilities have been either destroyed or abandoned since 1998. No up-to-date water supply and sanitation coverage data are available, but those still functioning are in alarming and worrying conditions in almost all counties in Liberia. As a result, morbidity and mortality rates remain high and may possibly deteriorate further as populations returning to these areas are expected to increase and thereby overstretch the already either only partly functioning or malfunctioning health and social infrastructures.

**xxiv. Community water and sanitation.** Most, if not all, of Liberia's community-managed water and sanitation (WATSAN) facilities are in a perilous state of repair, a direct result of a long-term poor management of resources, fourteen years of conflict, abandonment of rural areas and increasing demand on urban facilities. The priority outcomes (targeting those at greatest risk) include: development of a database of known facilities, improved levels of, and access to community-based water and excreta disposal facilities in urban areas (Monrovia and six other urban areas) via the use of household water treatment together with improvements in access to water sources (community wells) and excreta disposal facilities (drop hole latrines, etc.). Progress in these areas will help minimize the pervasive water- and sanitation-related health risks that exist at this time.

**xxv. Agriculture and food security.** Agriculture, which contributed to 50% of GDP in 2002, represents the source of livelihood for approximately 80% of the population. The protracted conflict severely affected agricultural production, resulting in widespread food insecurity. The priority outcome is to improve food security and strengthen domestic production capacity in the agricultural sector. Food production will be considerably less than required in 2004, as cultivation of rice and cassava will be possible only in those areas that are made secure by March/April 2004. As a result, there will be a need for food for an estimated 10,000 returning families and 60,000 resident farming families.

**xxvi. Employment generation and livelihoods.** With an estimated under-employment or unemployment rate of 85% in the formal sector and extremely high poverty levels, the overarching

objective of this sector is to bring down the high rate of unemployment. Given the expectations for a peace dividend throughout post-war Liberia, the need quickly to create jobs and to sweep away the profound sense of hopelessness grows by the day. Quick impact programmes could facilitate the transfer of cash in a rapid and efficient manner. One opportunity for widespread employment generation is in labor-intensive reconstruction and rehabilitation. It is worth noting that, in Liberia, an estimated 50% of rural houses are in need of reconstruction. The same could be said for road-building and repair, another central need among the many that constitute the building blocks of Liberia's future.

xxvii. **Infrastructure.** The extent of the destruction of Liberia's infrastructure (electricity, water, road network, etc.) is overwhelming. Ensuring basic infrastructure services to people outside, as well as inside of Monrovia is an overarching priority. This would be achieved, to a large extent, as an integral part of the 4R process and through community-based activities. To complement those programmes, it will be essential to support the restoration of road management capacities and implementation capacities and to pave the way for the rehabilitation of the primary road network. A second priority outcome is attached to restoring the capacity to deliver services and to put utilities in a position to cover a significant portion of their operating costs. This would include a rehabilitation programme covering power generation and distribution, water supply and sanitation in Monrovia and other urban areas. A third—and equally essential—priority outcome is to meet the needs of economic actors and priority users that will manage and deliver the reconstruction efforts.

xxviii. **Economic management and development strategy.** With the resumption of hostilities in 2001, economic recovery stalled and the GDP was halved in relation to pre-war levels. The drop in productive capacity, consumer inflation and the decline in revenues widened the fiscal deficit. Public expenditure fell and, as a result, the delivery of public services came to a halt. By the end of 2002, the country's outstanding external debt, including arrears, was estimated at US\$2.8 billion. The priority outcomes are (a) rapid and sustainable economic growth and (b) structural reforms aiming at the liberalization of the economy and the establishment of a properly functioning financial system.

xxix. **Gender-Based Violence** is widespread among adults, and is rising. Widespread gender-based violence during the conflict, the predicament of the population, the increase of untreated sexually transmitted infections and low education/awareness levels are the main factors facilitating the spread of HIV/AIDS. The national AIDS programme, coordinated by senior level representatives of the Government and other key stakeholders, will be strengthened as a result of a grant awarded by the Global Fund to fight AIDS, Tuberculosis and Malaria. Reducing HIV transmission and ensuring adequate treatment requires a multi-sectoral response with the concerted effort of all institutions and groups of the society. Priority activities are reflected in the relevant sector working documents.

xxx. **Human rights, protection and gender.** After years of widespread and severe human rights abuses, the priority of enhancing protection for civilians, especially women, requires that programmes are focused on realising the human rights of the most vulnerable groups. Human rights and gender considerations must be kept to the fore as interventions within different sectors - at the institutional and community levels - are co-ordinated.

xxxi. **Environment.** Environmental concerns should be properly addressed in the transition period to support the sustainable development of the country's natural resources. Priority needs are related to environmental issues for human health, environmental "danger zones", environmental governance and an approach to the management of all natural resources that pays due attention to their conservation.

xxxii. **Forestry.** Domestic revenues of Liberia depend, to a large extent, on timber. The transition period provides a window of opportunity for undertaking reform of the sector, and implementation of the urgent measures that are required for the lifting of Security Council timber sanctions.

xxxiii. **Shelter and urban management.** It is estimated that 80% of the pre-war housing stock has been damaged during the war. Lack of security has led to the doubling of the Monrovia population. Resettlement of large numbers of returnees and IDPs is a pre-requisite for the consolidation of peace and economic recovery. This implies that ensuring access to shelter is a priority for the transition strategy. Within different sectors, attention must be paid to the reconstruction of basic shelters in rural areas, relevant urban facilities and community services, and capacity-building for effective housing delivery and for systems to manage both land and urban areas.

xxxiv. **Coordinated implementation of the transition framework:** Successful implementation of the RFTF in the defined timeframe will demand the establishment of effective donor coordination mechanisms to manage the new resources made available to the country. A two-track coordination framework has been proposed by the NTGL: a Policy-level Planning Board (PPB) and Technical-level Working Committees that reflect the structure of the RFTF. The Planning Board is intended to provide general policy orientation throughout the implementation process, while the Working Committees will be responsible for day-to-day coordination, monitoring, evaluation and reporting of progress. Links between the two mechanisms and with other government institutions will be ensured by a dedicated, full-time Secretariat.

Figure 1: Administrative Map of Liberia



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## Section 6

# RESULTS-FOCUSED TRANSITION FRAMEWORK (RFTF) FOR LIBERIA:

## Modern Energy Services to Support Sector Priority Outcomes<sup>1</sup>

Note: Text boxes have been inserted in this section to illustrate some of the specific links between modern energy services and RFTF objectives.

### Introduction

The Results-Focused Transition Framework or RFTF is the framework<sup>2</sup> within which the international community and the new Government of Liberia are working. The framework addresses specific crucial needs and goals for Liberia. These include security, support for refugees and returnees, governance, basic services (including education, health, and community water supply and sanitation), restoration of productive capacity and livelihoods), infrastructure (electric power, transport, communications, and urban water and sanitation).

Availability of modern energy services will be *essential for achieving any of the goals* in these areas. However, the need for such services is inadequately discussed (and often not even mentioned) in the various planning and reconstruction documents from bilateral donors, UN agencies, and lenders. While the need for modern energy services may seem almost obvious (to energy and engineering professionals), it is anything *but* obvious. The lack of any reference to the role of energy in the achievement of the Millennium Development Goals (MDGs) underscores the almost pervasive disconnect between energy and the needs of social, economic, and environmental development initiatives.

USAID's Office of Infrastructure and Engineering can play a vital role in identification of the energy service requirements associated with the RFT objective and outcomes, and identify the associated technical and financial requirements. USAID can also "sort" the actions and options into critical / immediate requirements, mid-term needs (2-5 years), and long term needs (e.g., development of a national power grid).

USAID's recent brochure *Empowering Development* (Office of Infrastructure and Engineering) provides a powerful case for the explicit linking of modern energy services with virtually all other development initiatives and enabling infrastructures. This brochure should be made widely available to other donors, lenders, NGOs, and to Liberian government officials, to illustrate how essential and sometimes critical are the links among energy and development initiatives.

The RFTF structure is shown below, with illustrative annotations on the role(s) of specific modern energy services in support of the specified goals and outcomes.

<sup>1</sup> The objectives shown were originally prepared for achievement by December 2005. Since few of the objectives have been realized (the free elections of late 2005 being an exception), we presume that these objectives will remain in force.

<sup>2</sup> United Nations / World Bank (April 2005). *Liberia: Results-Focused Transitional Framework*. 155 pages. PDF. [www.lr.undp.org/docs/RFTFRevision.pdf](http://www.lr.undp.org/docs/RFTFRevision.pdf)

## The Results-Focused Transition Framework (RFTF)

### 1. Security

**1.1 UNMIL Deployment:** Public and business confidence increased, and greater security ensured, through UNMIL troop deployment.

**1.2 Armed Forces Restructuring:** Establishment of armed forces' role in building peace and supporting democratic transformation; restructuring, retraining and deployment initiated in accordance with the August 2003 Comprehensive Peace Agreement.

**Energy Needs and Options:** Modern energy services of *very high reliability and quality* are required for a well-functioning military. For field activities the US and other NATO countries routinely use rugged solar systems for telecommunications applications and for charging batteries for cell and satellite phones, for laptop computers, and for high-efficiency field lighting. Electricity and LPG will be required at military installations, and solar water heating can be used to provide hot water for showers, cooking, and space heating.

### 2. Disarmament, Demobilization, Rehabilitation, and Reintegration of XCS (DDRR):

Successful reintegration of the 101,495 ex-combatants (XCs) disarmed and demobilized through the DD process; essential restorative support, counseling and referral services initiated for all ex-combatants; at least 50% of adult XCs reintegrated into Liberian society through enhanced community absorption capacity.

### 3. Refugees, Returnees, and Internally Displaced Persons (IDPs):

Essential restorative support (transport, household items, food assistance, etc.); social protection, legal assistance and basic social services (health, education, water and sanitation) for up to 350,000 refugees and returnees; 73,000 third-country refugees in Liberia and 450,000 IDPs with inputs to community-level institutions that encourage self-sufficiency of returnees and IDPs, and their effective reintegration.

**Energy Needs and Options:** Social services including health services, education, reliable clean water supply, and sanitation all require reliable good quality electricity services and would benefit in some cases from the availability of modern fuels, starting with LPG and eventually (medium term of next few years) using natural gas. The energy services required for supporting basic social services can be provided by solar PV systems, PV/diesel and PV/propane hybrid units, diesel and propane gensets, and (for water heating) by solar water heating systems. The latter are available in the region as commercial products. Public lighting and recharging of cell phones and SSB radios are essential to support security arrangements. The experience with refugee camps in Africa has been dismal, with refugees enduring severe hardships in those camps. The lack of clean cooking fuels and of electricity (e.g., for water supply and disinfection) has contributed to the suffering and the high rates of illnesses, especially among children.

### 4. Governance, Democratic Development, and the Rule of Law

Immediate priority given to the establishment of institutions necessary for security and the rule of law, particularly those required by the CPA, and to the essential functions of government during the transition period.

#### 4.1 Public Sector Capacity

Government functions implemented through streamlined, efficient national institutions, executed by a restructured, recapacitated, professional and merit-based public sector that works as a disciplined and credible entity, made possible through focused technical assistance and *rehabilitation of essential public infrastructure*.

**Energy Needs and Options:** A central component of essential public infrastructure is a well-functioning modern energy sector, with infrastructures for delivering electricity and modern fuels (e.g., LPG, diesel fuel, gasoline, kerosene, and natural gas eventually).

**4.2 Local Government:** Improved capacity for planning, coordinating, and delivering essential services at the local level.

**4.3 The Judiciary:** Jump-starting of essential criminal courts; foundations laid for a professional, independent and credible judiciary. Mechanisms (including criminal courts) re-established to facilitate the rule of law.

**4.4 Police Force and Services:** Rapid establishment of an interim Police Force, staffed by well-vetted personnel with essential equipment and training; foundations laid for the new professional Liberian Police Service.

**4.5 Corrections System:** Reform of the corrections system so that it functions more in line with international best practices.

**4.6 Development of Civil Society:** Foundations laid for a strong, vibrant and involved civil society with CSOs able to exercise their rights (freedom of opinion, expression and assembly, and no discrimination), develop community-driven accountability mechanisms and access legal aid, including for women and vulnerable populations.

**4.7 Human Rights:** National reconciliation fostered through the establishment of the Truth and Reconciliation Commission (TRC); realization of human rights facilitated through Independent National Human Rights Commission (INHRC) and programs addressing gender, protection and human rights concerns.

**4.8 Media:** Fostering public dialogue, encouraging freedom of expression and promoting confidence in democratic institutions through functioning and independent public-service media.

**Energy Needs and Options:** Modern energy services are essential for a functioning police force. Electricity for offices, secure telecommunications, computers, dispatching centers, etc. is needed. Thermal energy services for hot water (e.g., showers) are also of high priority. Modern energy services are also required to support local government and for a functioning judiciary (e.g., electricity for lights, communications, computers, etc. for the courts and their offices), for a corrections system (clean water, heat, lighting, sanitation), and for the functioning of the news and communications media.

**5 Elections:** Prepare for, and ensure the holding of free, fair, and transparent elections, with full participation of the electorate in accordance with the Comprehensive Peace Agreement (CPA). **ACHIEVED !!**

## **6. Basic Services**

**6.1 Health and Nutrition:** Nationwide action to increase the Liberian people's access to effective Primary Health Care (PHC) and referral services, targeting priority health conditions (HIV/AIDS, malaria, TB, diarrhea, mental illness, childhood and maternal illness, malnutrition and violence-related conditions), and promoting health (particularly women's health) through community-based health interventions implemented through local-level organizations, civil society, functionally rehabilitated key health facilities, strengthened capacity in the Ministry of Health at central and local levels, and through the re-training and reequipping of health personnel.

**Energy Needs and Options:** The lack of electricity and often of LPG in most of SSA's rural health centers has made it impossible to deliver modern health services to rural communities. Health workers, nurses, and doctors will rarely stay in health posts that lack these services. Under the current extreme conditions in urban Liberia, virtually no clinics have reliable modern energy services. The energy needs of a functioning small health clinic able to deliver effective health and medical services are described in *Renewable Energy for Rural Health Clinics* (NREL, 1998 – 40 pages). Such needs include electricity for water pumping and pressurization, area lighting, outside / security lighting, autoclaving, telecommunications, and specialized lighting for medical procedures and surgeries, and thermal energy for hot water and cooking.

These energy needs can be provided by renewable energy and renewable / fossil hybrid energy systems, as well as from grid power where it is reliably available. For the near term, the renewable and hybrid options should be used as quickly as possible to support vital health clinic functions.

**6.2 Education:** Support universal access to quality education by:

- a) rehabilitating, supplying and revitalizing at least 25% of primary and secondary schools, and a substantial part of the vocational training and the higher education systems,
- b) implementing back-to-school programs, and
- c) Addressing gender-based inequality in education.

Meet immediate needs for capacity and institution building (including supporting the MOE in defining and implementing a new education policy, strengthening teachers and education officers' training reviewing curricula for all levels of the education system, and procuring and developing teaching and learning materials). Promote community-based involvement and action (parent teacher associations). Strengthen non-formal education programs.

**Energy Needs and Options:** Effective schools will require lights, power for office machines, computers, distance learning, and more. Thermal energy (LPG, solar hot water) is needed for both the schools directly – for cooking and cleaning – and for teachers' housing. Similarly, that housing will need basic electricity services. Also, where applicable, electricity for water pumping and purification will be very important. In these ways the schools can be important in improving the health and nutrition of students and teachers.

The energy needs of a functioning school able to support teachers in delivering good education are described in *Renewable Energy for Rural Schools* (NREL, November 2000 – 56 pages).

**6.3 Community Water and Sanitation:** Improve the functioning of community-based water and sanitation systems in Monrovia and other urban areas with an emphasis on better access to water with the use of household water treatment systems, and better access to latrines; improve functioning of community-based water and sanitation systems in rural areas (with an initial focus on larger villages) with an emphasis on better access to potable water from improved sources and low-cost excreta disposal systems.

**Energy Needs and Options:** Electricity for running water, water treatment, and illumination.

## 7. Restoration of Productive Capacity and Livelihoods

**Energy Needs and Options:** Reliable high-quality electricity and thermal energy are needed to underpin productive agriculture, from irrigation to harvesting to post-harvest processing and safe refrigerated storage. Grain grinding and milling require electric motors; hand processing of grains is arduous and inefficient. Aquaculture requires continuous ultra-reliable electricity for aeration of fish and shrimp ponds. Small business, both informal micro enterprise and more formal small enterprise, benefit from electricity for lighting, refrigeration, etc. and from LPG for cooking (small restaurants and street vendors). Many microenterprises can function effectively with renewable energy systems providing electricity and hot water. Examples are provided in the booklet *Renewable Energy for Microenterprise*, published by NREL in November 2000 and the USAID brochure series *Empowering Development* (2005).

**7.1 Agriculture:** Availability of and access to food in rural and urban areas improved, and food security achieved through the following actions: improving vulnerable groups' access to food (via food input and cash-based safety nets); restoring agriculture-based productive capacity (including post-harvest preservation facilities), livelihoods and incomes; promoting the revival of the rural economy (via reconstruction initiatives); community-based development sustained through local capacity-building, inputs to increase food and cash crop production, skills training, rehabilitation of rural infrastructure and sustainable use of forest resources. First stages underway for the establishment of an environment conducive to domestic and foreign private investment in national resource development and both raw and processed agricultural products.

**7.2. Fisheries:** Inland aquaculture revived through rehabilitation of hatcheries and fish ponds, equipment and materials and microfinance. Artisanal coastal fish production restored through provision of equipment and microfinance (grants and credit) to cooperatives and fisher groups.

**7.3 Community Development:** Program to jump-start recovery of Liberia's communities—with particular attention to the needs of women and returnees—underway in selected communities, incorporating the approach to community-based planning envisaged for DDRR and 4R, and resulting in the economic revival of communities and increased earning and employment opportunities.

**7.4 Social Safety Nets - Groups with Specific Needs:** Options for safety nets are examined and acted on to support disabled and elderly people, pregnant women and new mothers, street and working children, and others who are vulnerable.

**8. Infrastructure:** *All infrastructure services require electricity and sometimes modern fuels for their operation.*

**8.2 Electric Power:** Rebuilt capacities of Liberia Electricity Corporation, electricity services in Monrovia restored, electricity services in rural areas developed, and options for private sector participation explored.

**8.2 Transport:** Restored road system and stable road management environment established, with maintenance of key paved roads, upgrading of primary network, and rehabilitation of secondary and feeder roads; improved safety of public and freight transport; improved availability and efficiency of air travel (through restoring normal operations of Roberts International Airport and domestic airports); improved operation of ports so that they serve national (and neighboring countries) needs for sea transport and have the potential to generate revenue.

**8.3 Communications:** Fixed telephone services restored; mobile phone network expanded; and regulatory framework established.

**8.4 Urban Water and Sanitation:** As a priority, improve all levels of the management of systems; improve managed water, sewerage and solid waste disposal systems in Monrovia; resulting in three times the current volume of managed water and an end to sewage contamination of populated areas in Monrovia; establish managed water and solid waste disposal systems in the equivalent of six other urban areas.

## **9. Economic Policy and Development Strategy**

### **10. Coordinated Implementation of the Transitional Framework**

Note: There are no obvious modern energy services requirements associated with these final two areas of the RTTF.



## Section 7

### NON-U.S. DONOR ACTIVITIES

**Donor coordination** is an area in which the World Bank, UNDP, UNEP, FAO, bilaterals, and others have been actively involved since the First Reconstruction Conference on Liberia. The RFTF Implementation and Monitoring Committee (RIMCO) issues policy directions for all assistance to Liberia and ensures allocation of resources based on priority needs, is headed by the Chairman of the NTGL and sub-chaired by the UN and the World Bank. The Bank also supports RIMCO's Secretariat – the RSO Office, which coordinates all RIMCO activities and monitors progress under the various clusters of the RFTF. Within the RFTF, the Bank is one of the two co-chairs of Clusters eight (infrastructure) and nine (economic management).

**Other Donors:** The United States is the largest single bilateral donor in Liberia, followed by the EU, the World Bank, the United Kingdom, Germany and Japan. Denmark, Sweden, Norway, the Netherlands, Ireland Spain, France, Italy, and the People's Republic of China, provide less funding, but are significant players in the relief sector. All the donors support the relief and reconstruction activities outlined in Liberia's *Results Focused Transitional Framework*. The Catholic Church and other religious organizations are also important private-sector donors in Liberia. The UN mission in Liberia (UN-MIL) provides much-needed security throughout the country, and it is funded primarily by U.S. contributions to the United Nations.

#### **The Results-Focused Transition Framework (RFTF) for Liberia**

Since the military coup of 1980, Liberia has experienced intense, sustained, and devastating political, economic, and social violence. The armed conflicts involved widespread extreme violation of human rights and international humanitarian law by all parties. Following a three-year period of fragile calm, hostilities resumed in 2001, culminating in country-wide violence in June - August 2003.

Through intense pressure from the international community, the warring sides agreed to a Comprehensive Peace Agreement (CPA) signed on August 18, 2003 in Accra. Since then, the CPA has provided the political and substantive roadmap for international planning efforts for Liberia's post-conflict recovery. The challenge remains for rebuilding from 'ground zero' in Liberia two and a half years after the signing of the Comprehensive Peace Agreement (CPA) in Accra on August 18, 2003.

To implement critical aspects of the CPA, the United Nations and the World Bank agreed to undertake an assessment of Liberia's recovery and reconstruction needs for 2004-05 to shape the Results-Focused Transitional Framework (RFTF)<sup>1</sup>. Liberia's humanitarian needs and priorities for 2004 were presented<sup>2</sup> in the Humanitarian Appeal (CAP).

The CAP, brokered with the support of the international community, and guided by UN security Council Resolution SCR 1509, paved the way for the largest UN peacekeeping mission to immediately restore order and create the political space for rebuilding state apparatuses and social fabrics, ruptured by years of crisis and impunity.

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<sup>1</sup> United Nations and World Bank (April 2005). *Results Focused Transitional Framework for Liberia*. 156 pp. PDF format, available on line.

<sup>2</sup> United Nations (November 2005). *Liberia 2006 Consolidated Appeals Process*. 62 pp. Separate section on Projects 89 pp. Both available in PDF format. [www.reliefweb.int/fts](http://www.reliefweb.int/fts)

The Results Focused Transitional Framework (RFTF), adopted Feb. 2004 in New York at the Liberia Reconstruction Conference (LRC) by Liberia's partners, has served as the centerpiece of dialogue and assistance to Liberia's humanitarian and reconstruction agenda. Its comprehensiveness, focus on verifiable results, and inclusive institutional mechanisms elicited unprecedented response from the donor community.

This facilitated considerations of humanitarian and reconstruction dimensions of the challenge, beginning with the landmark Liberia Reconstruction Conference (LRC) held in New York in February 2004, under the joint auspices of the NTGL, United Nations, United States, and the World Bank, and strongly supported by the European Commission and other donors.

**Box 1: The Ten Priority Areas under the RFTF**

1. Security (including UNMIL peacekeepers, armed forces restructuring)
2. Disarmament, Demobilization, Rehabilitation, and Reintegration of ex-combatants
3. Refugees, Returnees, and Internally Displaced Persons (IDPs)
4. Governance, Democratic Development and Rule of Law (including public sector capacity, local government, the judiciary, police service, corrections system, development of civil society, human rights, media)
5. Elections
6. Basic Services (including health and nutrition, education, community water and sanitation, agriculture, fisheries, community development, social safety nets –groups with specific needs)
7. Restoration of Productive Capacity and Livelihoods
8. Infrastructure (power, transport, communications, water and sanitation)
9. Economic Policy and Development Strategy (financial management and audit, development strategy, budget and statistical systems, public sector procurement, financial sector, public enterprises, forestry, extractive industries and natural resources management)
10. Coordinated Implementation of the Transition Framework

Cross cutting themes are: gender, HIV /AIDS, environment, human rights, shelter, forestry, and media.

Total pledges at the conference amounted to US\$ 522 million, close to 80% of the combined humanitarian and reconstruction needs.

Until the recent elections, the National Transitional Government of Liberia (NTGL) drove the agenda through an RFTF coordination architecture. *It is likely that the goals underlying the RFTF and the specific focal areas will remain in the Sirleaf administration and continue to be a framework for donor assistance.*

The debilitating factors are not only technical and financial but also organizational. Inadequate skills available in key administrative and management areas, insufficient and delayed releases of pledged funds, and widespread problems of coordination and accountability have been particularly pronounced. The prevalent and openly held view of government's inability to institute prudent and transparent mechanisms for managing public resources, and keeping to terms of good economic and political governance agreed with donors and partners represent real threats to the viability of the

RFTF. Unless given deserved attention, this alone portends an ever-present risk of political reversal.. This section underscores several crucial issues.

Subdued by technical, financial, operational and coordination constraints, achievements over the first year of RFTF have been generally very modest and uneven in certain result areas and clusters. Capacity building support is essential in all sectors. Interventions required are technical and institutional, as well as short, medium and longer term. Reform of key public sector establishments, the public service and the main economic governance institutions are essential for economic growth and sustainability.

In the very short term, five of the main priorities that confront Liberia's transition process are the following:

- Transparency, integrity, accountability and capable fiscal management,
- community infrastructure such as roads,
- Return of IDPs, refugees, and returnees, and availability of basic services upcountry to sustain those returns,
- Reintegration of former combatants (XCs) and international displaced persons (IDPs) and returnees in preferred areas of return, and
- Demobilization and restructuring of the Armed Forces of Liberia (AFL).

The strategic need to mobilize additional resources and or reallocation of existing contributions for these priorities is compelling. Accordingly, making this strategic shift would require re-prioritization and alignment of activities in other sectors. As an example, immediate emphasis on improving access to facilitate elections is a critical priority for the infrastructure cluster.

Strengthening accountability and transparency is a most immediate challenge. Prevalent cases of corruption and profligacy have tended to roll back the progress and confidence achieved in the early days of the RFTF. The NTGL needs to give immediate and clear practical significance to its avowed zero tolerance for corruption. Facilitation of the ongoing assessments and audits of major public sector responsibility centers (including the EC audits and ECOWAS-led investigations), and the committed implementation of their findings, present the best opportunity to avert relapse into isolation and economic decline.

Partners need to remain vigilant, but proactive and engaged. Against the background of weak institutional apparatus and the vagaries of factional transitional government, continuous engagement of partners represents the strongest political lever to hold the transition process to the acceptable standards of performance, transparency, accountability and rectitude.

The \$1.25 billion annual investment in support of Liberia's peace process (through the UN peace-keeping mission's budget and tracked RFTF resources) is a compelling incentive for tenacity of commitment by all. Liberia is in the most crucial phase of the transition. Key transitional milestones expected over the last semester include the acceleration of the RR process, voter registration, elections and emergence of the democratically elected leader. At the same time, the challenges of rehabilitating community services and infrastructure and restoring productive livelihoods are foremost. However, as the NTGL mandate (and the tenure of its dramatis personae) winds down, meeting these priority challenges is complicated by competing partisan interests and venal pressure.

## THE WORLD BANK

### The World Bank's Engagement (April 2003 – December 2005)

In early 2003, the Bank's Board of Executive Directors endorsed the Liberia Country Re-engagement Note (CRN), which outlined a plan for Bank reengagement within the Results Focused Transitional Framework (RFTF). As envisioned by the CRN, Bank financing is provided by a \$4 million Low Income Country Under Stress (LICUS) Implementation Trust Fund, and a US\$25 million grant from surplus established and administered by the International Development Association (IDA) - Trust Fund for Liberia (TFLIB).

The funds are used to finance technical assistance (TA), emergency works, and longer-term development plans in areas in which the Bank is playing a leading role: economic management, community empowerment, infrastructure, and institutional capacity-building through support of agencies participating in the RFTF.

### Post-election World Bank Initiatives and Programs

The World Bank has announced its intention to support the re-development of Liberia. To explore what this entails, on February 10, 2006 we had a meeting at the Bank with Ms. Pilar MAISTERRA, the Country Program Coordinator for Ghana, Liberia, and Sierra Leone.

The World Bank is active in Liberia and is working closely with the donor and lending communities in supporting the development of infrastructure and services. Some key points:

- The key donors and lenders have a presence in Monrovia, and the local managers are the ones with the on-the-ground experience and knowledge
- The European Community (EC) is the leading donor in the power sector. Jeffery Rudd is leading the EC mission to Liberia. *We were not able to contact him.*
- The World Bank is leading the following areas:
  - Transportation / ports / roads, airports
  - Community-driven development
  - Economic reform
  - Water and sanitation
- The WB is forging a new alliance with the UN military, to take advantage of the UN's presence (15,000 strong) together with engineers and equipment for road construction and reconstruction.
- Five major feasibility studies have just been completed. The WB study manager for these studies is Mr. Wiebe Moes. Pilar requested copies of the studies for us, but these are presently under internal review. However, a Bank Policy Note on the Liberian Power Sector was provided, and is included in the Annex on World Bank activities. The studies are in the following areas, and will be made available directly to USAID:
  - Electricity / power sector
  - Water and sanitation
  - Ports
  - Roads
  - Airports

The following concise sections draw on the Annex *The World Bank Program in Liberia (December 2005)*.

**Community empowerment** emerged as a priority in the Bank-supported *Rapid Social Assessment (RSA)* prepared in early 2005 in collaboration with the UN. Since then, the Bank's Board of Executive Directors approved a \$6 million TFLIB sub-fund for community empowerment projects to be managed by the Liberia Agency for Community Empowerment (LACE) established as a national agency. LACE is entrusted with the government approved mandate to promote the CE approach to development at the national level through proactive coordination and awareness-building activities in partnership with government and civil society.

The TFLIB grant will support a minimum of 100 community-based sub-projects to rehabilitate primary schools, clinics, water and sanitation facilities, cassava and other agricultural products. The projects will be prioritized by the respective communities. The size of each individual sub-project ranges from \$5,000 to \$75,000. → *Here there is a pervasive need for reliable, high-quality, and affordable decentralized modern energy services.*

As of December 2005, 25 projects were identified and 13 projects in three counties were launched. Actual infrastructure and rehabilitation work in the first 13 projects is expected to commence before the end of the year. All 100 (or more) sub-projects are expected to be finalized by mid-2007. Most or all of the 15 counties of Liberia are expected to benefit from the project.

**Infrastructure** needs in which the Bank is engaged include transport (ports, roads, and airport), water and sanitation, electricity, and telecommunications. Recent technical assessments were completed for (i) the port of Monrovia; (ii) two of the country's main road corridors (Monrovia-Buchanan and Monrovia-Gbarnga); (iii) Roberts International Airport; iv) the urban water supply system in and outside of Monrovia; (v) the power sector in Monrovia; and (vi) the telecom sector.

These assessments are near completion and will allow the identification of emergency rehabilitation works as well as short and medium-term development plans.

The Bank, in collaboration with the EU, has committed \$2.5 million for renovation of the Monrovia urban water supply. An additional \$6.5 million from TFLIB have been committed for emergency works in infrastructure and will finance urgent needs as identified by the technical evaluations. Presently, the tentative allocation of funds includes selective works at the Port of Monrovia, Roberts International Airport, the water production system and possibly the solid waste sector of Monrovia. The Bank reserves every right to re-program available funds as suitable and in response to key developments in the political and economic arena (e.g. compliance with the GEMAP).

## **The European Union**

The EU has taken on the lead responsibility for coordinating and implementing the development of a new electric power system, first for Monrovia, and then to other parts of the country. Their approach is presented in *Electricity Supply to Monrovia: Presentation to Donors. 2 February 2006*. This presentation is included in Annex 3.

## **Bilateral development assistance agencies**

(to be added)

## UNITED NATIONS DEVELOPMENT PROGRAMME IN LIBERIA

<http://www.lr.undp.org/team.htm>

United Nations Development Program - Liberia  
Simposon Building  
Sekou Toure Avenue, Mamba Point  
1000 Monrovia, Liberia  
P. O. Box 0274  
Tel: +231 226-195/226-211  
Fax: +231 226-210/226-193  
VSAT: 0031 225-407

Jordan Ryan, Resident Representative  
[ryan@un.org](mailto:ryan@un.org)

<http://www.lr.undp.org/cprofile.htm>

### Background<sup>3</sup>

The Liberian conflict, which started in 1989, had immense social, political, and humanitarian implications. In August 2003 ECOWAS led peace talks in Accra, Ghana. The peace talks culminated in the signing of the Comprehensive Peace Agreement (CPA) by Liberia's three warring factions: the Government of Liberia Forces (GOL), Liberians United for Reconciliation and Democracy (LURD), and the Movement for Democracy (MODEL).

As a result, the National Transitional Government of Liberia (NTGL), headed by Chairman Gyude Bryant and composed of a conglomerate of technocrats and actors from different warring factions, was instated.

This marked the launch of a two-year transitional period within which the UN integrated mission, comprised of the United Nations Mission in Liberia (UNMIL) and the various humanitarian agencies, was mandated to stabilize and improve the security and humanitarian situation in Liberia in readiness for the 2005 elections.

The task of the international community was daunting as 14-years of war annihilated the social and economic infrastructure, and decimated the social fabric. An estimated 250,000 lives were lost, 464,000 Liberians became internally displaced (IDPs), over 350,000 sought refuge in neighboring Guinea, Côte d'Ivoire and Sierra Leone, and thousands more fled to other African countries or to the United States. Schools, hospitals, water and electricity supply systems were looted or destroyed. The economy suffered major blows, which were reinforced by an introduction of the international embargos on the purchase of Liberian timber and diamonds in December 2003 (UN Resolution 1521). The security situation was volatile and the country was awash with arms.

By the end of 2004, owing to dedicated efforts by the international community, the security situation was stabilized. This created the basis for the continuing efforts of the international community to rebuild and rehabilitate the country. Refugees and IDPs have begun returning home. Hospitals, schools and roads are undergoing reconstruction, and the government has been making headway in reinstating the rule of law and eradicating corruption.

Nevertheless, great challenges lie ahead before life resumes to anything resembling "normalcy" in Monrovia, Montserrado County, and the remaining 14 counties. However, international actors and

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<sup>3</sup> Drawn from UNDP web sites, especially [www.lr.undp.org](http://www.lr.undp.org)

the Liberian government jointly helped to pave the way for Liberia's first democratic elections since the conflict, held in October 2005 and (final runoff election) November 2005..

### **UNDP Liberia Country Program**

The UNDP Country Program is a comprehensive response to many of the challenges identified in the Results-Focused Transition Framework (RFTF) and is aligned with the attainment of UNDP corporate strategic goals and the Millennium Development Goals.

UNDP's activities in Liberia fall within seven principal areas:

- [Disarmament, Demobilization, Rehabilitation and Reintegration;](#)
- [Community-Based Recovery;](#)
- [Small Arms and Light Weapons,](#)
- [Democratic Governance;](#)
- [Human Rights and Protection;](#)
- [Responding to HIV/AIDS and other diseases;](#) and
- [Environment](#)

(Note: the above 7 bullet lines are clickable links.)

The programs are being implemented in support of national recovery and development efforts and are implemented under the [Direct Execution \(DEX\) Service Center](#) modality. The promotion of human rights, the empowerment of women, HIV/AIDS and environmental sustainability are cross-cutting issues that are mainstreamed into all sectors of the UNDP Country Program.

While energy issues are rarely mentioned in the discussion of goals, objectives, and initiatives in these areas, modern energy services will be required to support the associated activities.

### **UNDP LIBERIA PROGRAMS**

**Community-Based Recovery (CBR):** UNDP's Community-Based Recovery (CBR) Programme for Liberia assists the National Transitional Government of Liberia (NTGL) by facilitating the resettling and reintegration process of ex-combatants in the five most war-affected counties of the country, including peace-building and grass-roots governance efforts at the community level. The operating principles of the Program are field presence and community participation.

*The availability of modern energy services will be essential for the CBR program to be effective.*

The Program's interventions include the following:

- Support local governance structures and ensuring community participation by establishing and strengthening District Development Committees (DCCs) in Liberia;
- Capacity-building for target communities in the planning and management of recovery activities;
- Support for the [creation of sustainable livelihoods](#) through training, farming and micro-enterprise development;
- Assistance with the provision of basic services through [rehabilitation of infrastructure at the community level, including water and sanitation services, education, and health facilities.](#)

**District Development Communities (DCC):** The CBR Program will restore existing community-level governance structures by strengthening the District Development Committees (DDCs). The DDCs serve as the hub for mobilizing community members to undertake various constructive activities themselves, in close collaboration with local authorities, UN Agencies, and civil society organizations.

As the nationwide DDDR Program moves forward, the network of DDCs will play an important role in the process of reintegrating ex-combatants in communities. Thus, the CBR Program served as a critical complement to the post-conflict demobilization, focusing on the special needs of vulnerable groups including returning refugees, families of ex-combatants and host communities. Without a program, at the grassroots level, economic and social reintegration can be neither productive nor sustainable.

The DDC project is being implemented largely through specialized civil society organizations, including community-based organizations and non-governmental organizations, following a collaborative and integrated resource-mobilization strategy at both the local and national levels. This is to ensure the full involvement of local communities in the resettlement and reintegration program, reinforcing the effectiveness and durability of peace-building efforts.

**Micro-project Initiative:** As part of UNDP's CBR Program, the Micro-project Initiative provides assistance to small-scale community development projects with identifiable, low-cost, and short implementation periods. The initiative calls for a participatory approach, which allows those who benefited from it - returning and receiving populations in the target communities - to formulate, select, and implement projects.

The initiatives objectives, the restoration of basic social services including education, health, water and sanitation, serve as an impetus for the return of the displaced to their communities of origin so that they could resume normal life. *In many cases, those services were unavailable or of poor quality before the war. The infrastructure for those social services needs to be constructed anew.*

Under the project, requests for assistance in the form of project proposals are submitted to UNDP by the targeted populations or through national or international non-governmental organizations. DDC develops and identifies the community projects; and assistance is delivered through a network of national and international non-governmental and community-based organizations involved with the resettlement process.

See map of microprojects in Liberia

**Microcredit:** A Micro-credit Scheme is being developed to promote the creation of livelihoods and to restore the productive capacity in rural communities. The scheme aims to provide skills training and credit opportunities for communities to develop their own micro-enterprises.

At present, four community credit unions (CCUs) comprising of 435 members have been set up in three communities in Bong County.

**Strengthening Civil Society:** UNDP has launched a global initiative to strengthen partnerships with civil society organizations, to define a framework and establish practical mechanisms for developing sustainable partnerships between UNDP and CSOs. UNDP is also launching small grants mechanism aimed at developing community-based organizations (CBO). The desired outputs include a mapping of relevant organizations, including national and international NGOs, CBOs, grass-roots organizations.

Under this initiative, Liberian CSOs have been mapped and a CBO database created. The database is being continually updated as the sector develops. Together with civil society, UNDP has also launched a Peace and Confidence-building Initiative based on traditional forms of reconciliation in Konobo, Grand Gedeh.

### **Rapid Social Assessment**

In collaboration with the World Bank, UNDP published a Post-War Rapid Social Assessment for Liberia. This study provides an insight to community structures in Liberia today and makes recommendations of how best to develop effective interventions, which will help these communities to rebuild themselves.

**Peace and Reconciliation:** Promoting peace and reconciliation is one of the main objectives of the Community-based Recovery Program. On the International Day of Peace, 21st September, a peace initiative was launched in Grand Gedeh. Upon the request of two communities in Konobo District, UNDP intervened to reconcile the peoples of Putu and Konobo after 14 years of civil war.

The reconciliation initiative, implemented in conjunction with RECEIVE, UNMIL and UNHCR, took place in September 2005. More than 100 community members from both sides participated in a round table conference. Representatives of all sectors of society, such as the youth, women, and elders, from each sub-district had the opportunity to air their grievances and present their version of the history of the local conflict. A representative of the Putu Development Association spoke about the way their people had suffered during the conflict, subsequently a Konobo elder made an official apology.

To formalize the reconciliation of the Konobo and Putu, a “Peace Treaty” was signed: “We the people of Konobo and Putu sub-districts, realizing that over the past 14 years, relationships amongst our people have been characterized by hatred, suspicion, bitterness and conflict; with the desire to foster genuine reconciliation and peace for commitment to the resolution of the long standing conflict among our people, this peace treaty shall hereafter serve as a seal to this resolved conflict.”

Following on from this crucial initial step towards reconciliation, a peace and reconciliation festival, including a football tournament, a cultural dance and an exchange of traditional meals was held to solidify the peace. The communities also benefited from receiving training in trauma counseling for greater reconciliatory awareness.



## Section 8

# USAID SUPPORTING ACTIVITIES IN LIBERIA

<http://www.usaid.gov/policy/budget/cbj2006/afr/lr.html>

**The Development Challenge:** For fourteen years from 1989 to the signing of the Accra Comprehensive Peace Agreement (CPA) in August of 2003, Liberia was in a constant state of conflict. In a nation of only three million people, it is estimated that the war took over 250,000 lives and displaced a million people, including hundreds of thousands of refugees who fled the country. Rape and other forms of sexual violence against women and girls were pervasive. It is difficult to exaggerate the devastation this protracted civil war has had on Liberia's physical, social, political and economic infrastructure. Liberia's human development indicators reflect the alarming condition of its people. Over 80% of Liberia's population is illiterate and lives below the poverty line. The unemployment rate exceeds 70%. Thirty-five percent of Liberians are malnourished, only 28% are fully immunized, just 25% have access to safe drinking water, and only 36% have access to sanitation facilities.

During Charles Taylor's final years in power, USAID directed its resources solely to non-governmental, civil society organizations, particularly those engaged in primary health care, agriculture, and peace-building. As the fighting entered Monrovia in the late spring and early summer of 2003, tens of thousands of Liberians sought refuge in central Monrovia, where living conditions were virtually unbearable. Substantial U.S. Government (USG) and European Union (EU) relief activities kept many alive.

Since the signing of the CPA, the United Nations Mission in Liberia (UNMIL) has helped establish the peace by deploying the world's largest UN peacekeeping force of 15,000 troops and over 1,000 civilian police. By the end of 2004, UNMIL had completed a relatively successful disarmament and demobilization program that removed most small arms from the hands of the ex-combatants. The CPA established the National Transitional Government of Liberia (NTGL) which is comprised of representatives from all the former warring factions. The NTGL must now oversee the first phase of the recovery process and to fulfill the NTGL's mandate to prepare the nation for "free and fair" elections in October 2005 and to inaugurate a new legitimate, elected government in January 2006.

**The USAID Program:** After the signing of the CPA, the international community looked to the United States to lead the reconstruction effort in Liberia. The \$200 million in International Disaster and Famine Assistance (IDFA) funding provided by the Congress in early FY 2004 enabled the USG to take a leadership role at this historic moment. In February 2004, the United States, the United Nations and the World Bank co-chaired the International Reconstruction Conference, which garnered \$522 million in pledges from the international donor community.

Through a consultative, inter-agency process, USAID programmed \$107.9 million of the \$200 million of IDFA funds. The remaining \$92.1 million was programmed through other agencies and included \$38.6 million for the Department of State, \$35 million for the Department of Defense, and \$18.5 million for the Department of the Treasury. Of the amount programmed by USAID, the Bureau for Africa received \$71.4 million for the activities described in detail below, and the Office of Foreign Disaster Assistance and the Office of Transition Initiatives received \$24.5 million and \$12 million respectively for humanitarian relief and transition assistance programs.

In FY 2004 the Bureau for Africa consolidated its existing programs in Liberia under a single, two-year community revitalization and reintegration strategic objective. All of the Bureau's \$71.4 million in IDFA resources are programmed under this objective, the primary goals of which are to enhance good governance and the peace process; create economic and social conditions within communities

that will facilitate both reintegration and the rehabilitation of infrastructure; increase formal and non-formal learning and counseling opportunities; and improve community health practices.

The holding of free and fair elections in October 2005 was one of the USG's top priorities in Liberia, and is essential to the completion of the transition to a legitimate government. In support of the elections process, USAID trained civil society organizations to educate voters and observe the upcoming 2005 elections; building the capacity of Liberia's National Elections Commission to administer the national elections; strengthening political parties; and supporting initiatives to "get out the vote" and provide nation-wide coverage of the election process.

In FY 2004 USAID designed and began to implement a nation-wide public works program that established community-based, labor-intensive construction brigades of skilled and semi-skilled tradesmen and unskilled laborers to rehabilitate urban and rural roads and water systems, community buildings, hospitals, clinics, schools and community offices. This program will employ up to 20,000 ex-combatants and at least another 15,000 women and children associated with the fighting forces and other war-affected Liberians. The program also offers on-the-job training in skills such as surveying, masonry, carpentry, equipment operation and maintenance.

Decades of poor governance and 14 years of civil war have devastated Liberia's formal public education system and created a tremendous need for informal, accelerated learning opportunities for ex-combatant and non-combatant youth and young adults. USAID has championed the resumption of the United Nations Children's Fund's Advanced Learning Program (ALP) which condenses the normal primary school curriculum from six years into three.

USAID also funds the rehabilitation of schools and teacher training facilities; provides educational equipment, textbooks, materials and supplies; and supports curriculum development. In addition, USAID offers psychological counseling and specialized training for women and children formerly associated with fighting forces. Several multi-year programs provide counseling opportunities and other services to displaced Liberians, refugees, ex-combatants and other war-affected Liberians to help them re-establish their communities and resume normal lives.

USAID's existing multi-year health intervention program continues to deliver primary and reproductive health care services through community clinics; build the institutional capacity of Liberian NGOs to deliver primary health care services; and address primary health care policy issues with the NTGL. An increased focus on combating the spread of HIV/AIDS is planned for FY 2005.

**Other Program Elements:** USAID's transitional program in Liberia is a model of internal and inter-agency integration and collaboration. USAID's Office of Foreign Disaster Assistance and Office of Food for Peace (FFP) provide extensive humanitarian relief and assistance, particularly to Liberia's large population of internally displaced persons. The Office of FFP also implements vital food for work and supplementary feeding programs.

USAID's Office of Transition Initiatives provides more than 100 small grants to assist various Liberian organizations recover from the ravages of war and resume normal operations. USAID's Bureau for Africa's Conflict Fund supports conflict mitigation and reconciliation activities in Liberia's most war-affected counties.

The Displaced Children and Orphans Fund provides psycho-social support and protection programs to war-affected youth. In addition, the Department of State's Bureau of Population, Refugees and Migration provides several international NGOs with critical support for Liberian internally displaced persons and refugees. The USG also has contributed to the United Nations' Disarmament, Demobilization, Reconstruction and Rehabilitation Trust Fund, and USAID participates in the programming of the Fund's sub-grants to NGOs. The U.S. Department of Treasury has fielded four resident advisors to work in Liberia's Central Bank, Ministry of Finance and Bureau of the Budget. The State Department's Bureau for International Narcotics and Law Enforcement provided funding

to the UN Trust Fund to upgrade the Liberian Police, and it is in the process of programming an additional \$12.5 million for further assistance to the justice sector.

The West African Regional Program (WARP)'s conflict transition program supports an information and communication technology program to strengthen 14 key peace-building and anti-corruption civil society organizations (CSOs) in Guinea, Liberia, and Sierra Leone. In order to help prevent the spread of HIV/AIDS, the WARP supports the administration of HIV/AIDS testing for potential recruits for Liberia's newly reformed military.



## Section 9

# ENERGY AND POWER SECTOR OVERVIEW

### Historical Perspective

The Liberia Electricity Corporation (LEC) is the designated entity responsible for the supply of electricity throughout Liberia. It is wholly owned by the Government of Liberia (GOL). LEC was first created by legislation in July, 1973 as a subsidiary of the Public Utilities Authority. LEC became autonomous in February, 1976, when the Public Utilities Authority was dissolved. Most of LEC's staff and other resources were dedicated to serving the capital Monrovia which consumed 98% of all power supplied. This Monrovia grid operated at 69 kV and included 3 radial lines extending into the country. In addition, there were ten or eleven small isolated power systems—and perhaps three additional ones under construction at the onset of war—operated for the Government of Liberia by a department of LEC to supply electricity to cities and towns located along the coast and in rural areas. There were no interties with neighboring countries. Map 1 shows the 69 kV radial transmission lines extending out of Monrovia.



**MAP 9-1**

(Source: World Bank, Map Design Unit)

Perhaps because of the loss of official records during the war or for other reasons, there seems to be a relative lack of data in recent years. The last credible data seems to be from the mid-1980s. A joint UNDP and World Bank Energy Sector Management Assistance Program (ESMAP) study from 1987 examined the electric utility LEC and its system and managerial practices. A fair understanding of the formerly existing system as it had been installed can be learned from that study and supplemented with information gleaned from more recent, but less comprehensive, reports.

As of 1987, the total nameplate installed capacity was somewhere between 177 MW<sup>1</sup> to 189 MW, depending on the reporting source, which supported a peak demand of 63 MW. Of this, 64 MW was the maximum wet season hydro capacity which fell to about 5 MW in the seven-month dry season. The hydro capacity came from the Mt. Coffee hydro station which was constructed during the 1960's with the first 2 units having been commissioned in 1966 and the second 2 units in 1974. The ESMAP study, though done in 1987, used 1984 operating data and showed that a total of 386.4 GWh was generated with 282 GWh (73%) coming from hydro and the remaining 104.4 GWh (27%) coming from the thermal units. The study noted that the low contribution of the thermal units was due to a failure of some of the thermal units, and that such failures resulted in substantial load shedding during the dry season.

The small isolated rural systems were powered by plants ranging from 300 kW to 1,300 kW. It is uncertain, but there were approximately 10 of these that were generating power before the war and 3 more were under construction. It is believed that the installed capacity on these systems was somewhere between 7.8<sup>2</sup> MW and 20<sup>3</sup> MW.

There is also some uncertainty about what the actual installed capacity was for the generating plant at Bushrod Island. The ESMAP study identified units as follows:

POWER PLANT	TYPE OF UNIT	UNIT RATING	DATE INSTALLED
Bushrod	Diesel (med sp.)	2 x 2.5 MW	1963
Bushrod	Gas Turbine	2 x 15 MW	1967
Bushrod	Gas Turbine	2 x 19.1 MW	1973

The gas turbines were commissioned in 1967 and 1973 and were operated as oil burning turbines.

Apparently, the Bushrod Diesel units were changed out in the late 1980s and replaced with Mitsubishi units with 10 MW name plate capacity rather than the 5 MW shown in the ESMAP study. In any event, the DECON study referenced elsewhere in this study determined that there had been an inherent design problem which resulted in frequent piston seizures and which rendered the units uneconomical to repair.

The transmission system consisted of lattice steel tower, wood pole and steel pole lines. It supplied Monrovia and extends to Robertsport, Mount Coffee and the Bong Mines, Totota, and Buchanan. (See MAP 1, supra). At its peak the transmission system consisted of 290 miles of overhead 69 kV line, and a relatively short section of 2.7 miles of underground line.

There were 10 manned and 6 unmanned 69 kV substations in the Liberian system. This included the switch yards at Bushrod and Mt. Coffee.

The distribution system of LEC was comprised of 12.5 kV distribution feeder lines and distribution transformers. In the late 1980's there were some 500 miles of overhead 12.5 kV lines and 30 miles of underground 12.5 kV lines. The system supplied service connections stepped down from the 12.5

<sup>1</sup> See, Activity Completion Report No. 081/87 (December 1987), for the country of Liberia, Activity: Power System Efficiency Study, Joint UNDP / World Bank Energy Sector Management Assistance Program (ESMAP).

<sup>2</sup> See, ESMAP, *ibid*, n. 2, at p. 9.

<sup>3</sup> See, Needs Assessment of the Electricity Sector of Liberia, (undated, but recent), prepared by UNDP / World Bank.

kV to 120 / 208 / 380<sup>4</sup> volts depending on the requirements of the customer, and was thus the only utility in West Africa to supply power based upon American standards rather than the European standard of 240/480 used in all other nations of West Africa. The step-downs were handled by approximately 3570 pole-mounted distribution transformers. Also, the AC power delivered by LEC was originally 60 Hz rather than 50 Hz which is standard in other West African countries<sup>5</sup>.

Estimates of the number of customers served range from 34,200 to 39,000. Indeed, the Needs Assessment study asserts that, at one time, approximately 40% of the total population had access to power from the Monrovia power grid, while another 18% were supplied from the rural grids. While those statistics seem suspect, if those numbers are correct Liberia would have had one of the highest electrification rates in West Africa. Today, for instance, only Ghana and Nigeria approach having 50% of their populations electrified while other countries in the neighborhood of Liberia average well under 10%.

### **Current State of Liberia's Power System**

While the system today is almost completely destroyed and operating only sporadically at a bare minimum service level, LEC continues to have a small staff and management organization. The Needs Assessment<sup>6</sup> study, probably citing a 2003 figure, stated that there were 463 staff employed by LEC, although it noted that none had been paid in over 12 months. It further said that there were 9 qualified engineers on staff and that overall the competency base was “reasonably solid.”

Although this staff continues to remain loyal, its working conditions have drastically deteriorated since 1989. Most records and office equipment has been looted or destroyed, and the buildings are often substantially damaged. The rural offices have been completely destroyed. The main office of LEC in Monrovia lacks a simple telephone and when the authors of this Briefing Paper spoke with the newly designated Managing Director, he explained that he had trouble keeping his own cell phone charged because of the frequent power outages.

The only functional generation equipment today is a 7 MW Skoda diesel plant consisting of five 1.5 MW units was installed and commissioned by mid 2000<sup>7</sup>. While this facility remains functional today, its availability is limited by a combination of lack of spares and fuel. The lack of spare parts for this plant should be further understood in the context that it was supposed to have been a new plant but turned out to be second hand and was supplied by a firm which has long since gone into receivership.

As for the other generation units, LEC officials<sup>8</sup> have confirmed that none is operational and that they have suffered looting, direct war destruction, or have such prolonged periods without mainte-

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<sup>4</sup> See, ESMAP, *supra* n. 1, at p. 13.

<sup>5</sup> The authors of this Briefing Paper have also been informed by a former official with Senelec, the Senegalese power utility that the LEC system—when it operates today—is supplying 50 Hz power rather than the 60 Hz which it formerly supplied. This information is confirmed in the Needs Assessment, *supra* n. 3, which says that the only generation units which remain operable—the Skoda units—were originally purchased as 50 Hz units.

<sup>6</sup> See Needs Assessment *supra* n. 2, at p 13(?).

<sup>7</sup> See, Needs Assessment of the Electricity Sector of Liberia, (undated, but recent), prepared by UNDP / World Bank.

<sup>8</sup> Direct phone conversation with Mr. Harry T. Yuan, Sr., Managing Director Designate of Liberia Electricity Corporation (LEC).

nance that it would not be economic to rehabilitate any of the units.<sup>9</sup> The specific condition of each generation facility follows.

The Mt. Coffee Hydro Plant with an installed capacity of 64 MW was damaged during the war. In 1990 the intake dam was breached and a significant part of the intake dam was washed away. The gas turbine units (2 x 15 MW, and 2 x 19 MW Brown Boveri units) were vandalized and looted during the war and subsequently decommissioned and scrapped.

The Luke Power Plant comprised of three Burnmeister & Wain Slow-speed two stroke diesel engines with a total installed capacity of about 40 MW suffered from a lack of spare parts and other technical faults, and the facility has been decommissioned. They were last used to generate power in 1992.

The Bushrod Power Plant comprised of two 5 MW medium speed four stroke Mitsubishi diesel engine with Taiyo alternator had inherent design flaws and have been decommissioned.

Although not owned or operated by LEC, there is some private, dedicated generation capacity within the country, notably:

LAMCO J.V. Operating Company .....	60 MW
Bong Mining Company .....	100 MW
Firestone Plantation	
Mini-hydro plant.....	4 MW
Diesel plant.....	3 MW
Others .....	25 MW

A summary of the once installed name plate capacity for the LEC system compared to today's operability is shown on the chart below.

POWER PLANT	NAME PLATE	TODAY	STATUS
Luke diesel station	40 MW	0	Non Rehabable
Bushrod Island diesel station	10 MW	0	Non Rehabable
Skoda diesel station	7.2 MW	4.5 MW	Cannibalized but Reduced Operability
Gas Turbines	68 MW	0	Looted / Destroyed
Mt. Coffee Hydro Power Station	64 MW	0	Destroyed
Rural diesel stations	20 MW	0	Looted / Destroyed
Total	≈209 MW	4.5 MW	

The transmission grid has, for all intents and purposes, been rendered inoperable. Almost all conductors have been looted and many insulators damaged or destroyed. Some of the lattice steel towers have been cut down and many of the large tubular steel double circuit structures have been damaged by gunfire. That said, apparently a limited section of the transmission grid has been cobbled together enabling power to be transmitted from the Skoda diesel power station on Bushrod Island to the present limited number of consumers. All of the 10 manned and the 6 unmanned 69 kV substations in the transmission grid have been destroyed and require complete replacement.

<sup>9</sup> Also see, Needs Assessment referenced in note 2, *supra*, which noted an independent assessment of the Luke power plant by the German consulting firm DECON in 2001.

Likewise, some 97% of the distribution conductor and distribution transformers have been looted or damaged and few remain to service customers. A certain number of wooden poles have also been looted or destroyed.

The entire rural electrification system was destroyed during the war and nothing remains.

In summation, the once viable but weak system is now capable of supplying only 1% of the demand supplied prior to 1989—and that on an unreliable, intermittent basis. Accordingly, the demand has dropped to a scant 1 MW. Today, LEC’s customer base is approximately 150 of which 69 are residential and the remainder are commercial. The largest power consumers today include:

Monrovia Breweries.....	1000 kW
Coca Cola Factory.....	700 kW
Cemenco.....	1000 kW
St. Joseph Catholic Hospital.....	900 kW
J.F.K. Medical Center.....	1000 kW
American Embassy.....	1000 kW
West African Fishing Enterprise.....	600 kW
Katopas Fishing Company.....	400 kW
Manco Industry Corporation.....	300 kW
Ecobank.....	500 kW
I.B. Bank.....	400 kW
Central Bank of Liberia.....	800 kW
Ministry of Finance.....	1000 kW
Abijaoudi Supermarket.....	600 kW
Executive Mansion.....	1000 kW
Greenland Supermarket.....	500 kW
UN Drive Supermarket.....	500 kW
LBDI Bank.....	500 kW
LTC.....	600 kW
White Plains Water Treatment Plant.....	1500 kW
Cellcom.....	1200 kW
Lonestar.....	1200 kW

All other electrical demand is satisfied, if at all, by privately owned, small capacity generators. No Independent Power Producers (IPP’s) have operations in Liberia today. However, one IPP<sup>10</sup>, Azito Energie, currently has operations in neighboring Côte d’Ivoire and may be able to provide information concerning operating conditions in the region.

### **Current Institutional Framework**

The LEC is a wholly owned government corporation. The organization was managed by a Task Force under the recent government and until a new board of directors is appointed the Managing Director reports to the Chairman of the National Transitional Government of Liberia.

The structure appears to be adequate for the immediate future. However a study of the organizational requirement should be carried out to determine the most cost effective, sustainable structure to

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<sup>10</sup> Contact information is included in the list of contacts at the end of this Briefing Paper.

meet the future needs of the electricity sector. It is believed that the European Union has already or will soon conduct a Management study.

There appears to be limited legislation pertaining to the electricity sector of Liberia. The Act to create the LEC was passed in 1973. This Act gave a mandate to the LEC to “generate, transmit and distribute electricity to the consumers at reasonable economic tariff”. It does not confer the right of monopoly so the possibility already exists for private sector participation in the industry.

The enactment of further legislation should be considered in the future, In particular there is no act to protect the organization as far as unpaid accounts is concerned and this requires attention.

### **Relationship of Liberia to other countries in West Africa—WAPP**

While Liberia has not heretofore had any power interties with any of its neighbors, there is a very real possibility that such interties may become a reality at some point in the future. Accordingly, any reconstruction of a Liberian grid would need to account for this possibility and proceed in conformity with the standards being developed within the West African community. Efforts are now underway in West Africa to closely link the national power grids of the following fourteen countries:

- |                 |                 |
|-----------------|-----------------|
| • Nigeria       | • Liberia       |
| • Niger         | • Sierra Leone  |
| • Benin         | • Guinée        |
| • Togo          | • Guinea-Bissau |
| • Ghana         | • Mali          |
| • Côte d’Ivoire | • The Gambia    |
| • Burkina Faso  | • Senegal       |

The countries in the left column have been categorized as Zone A countries where the interconnections and links will likely occur on an earlier basis than those countries in the right column which have been categorized as Zone B countries. Work to link these national grids began as early as 1982 when the ECOWAS member states agreed that a regional energy policy was needed. Action on realizing such a policy languished for years. It was only in the mid-1990s when serious electricity shortages began to occur in most of the countries that the need for action became apparent. Indeed, “apparent” may be understating the extreme urgency of the existing situation. In 1996, with financial assistance provided by UNDP and the Economic Commission for Africa (ECA), ECOWAS commissioned a study of the development of hydroelectric power and interconnection of electricity grids within the ECOWAS member states. Among other findings the study found that power generation and usage in West Africa were virtually the lowest in the World. Among many disturbing facts these studies have shown are the following:

- In spite of the abundant potential available in the region, the energy sector is the least developed in the world. Out of an estimated hydroelectric power generation potential of 23900 MW, the installed production capacity is only 3897 MW.
- Electricity consumption in West Africa was 26000GWh in 1994. Since 1980, the average growth rate has been 4.2%. Consumption is concentrated in Nigeria (54%), Ghana (23%), Côte d’Ivoire (8%), and Sénégal (3.2%).
- The average per capita consumption rate was 127 kWh, which was clearly below the average for Sub-Sahara Africa (418kwh) and thirty times below that of developed countries. It was

346 for Ghana, 139kWh for Côte d'Ivoire, and ranged on down to a mere 24 kWh for Niger, and 22kWh for Burkina Faso. Current Liberia figures are unknown but they are likely the lowest of all.

This 1996 study was reviewed at a meeting of the ECOWAS Transport, Communications and Energy Commission that was held in Lagos, Nigeria in October 1997. The participants requested that the information contained in the study be up-dated to reflect expectations to harmonize voltage levels, cost of equipment, proposed tariffs and the estimated benefits of an interconnected grid for both the consumers and producers of electricity. They also called for an acceleration of the institutional reforms needed within their own countries to allow for private sector involvement in the development and operation of electricity transmission networks through BOO (Build-Own-Operate) and BOT (Build-Operate-Transfer) arrangements. Delegates to the meeting formed a working group to maintain momentum towards the formation of a power pool. The meeting ended with a call to codify—using the updated 1996 study as the beginning basis—a master plan for supplying the modern energy needs of the West African region. Delegates to the meeting also called upon the ECOWAS energy ministers to mobilize the political will required to implement such project as might be envisioned by such a master plan.

Thus was born the West Africa Power Pool (WAPP). Significantly, representatives from franco-phone West Africa's Union Economique Monétaire de l'Ouest Afrique (UEMOA), as well as the Organization of African Unity (OAU), African Development Bank (ADB), the Economic Commission for Africa (ECA), and, of course, ECOWAS agreed to align their own energy programs and policies with the ECOWAS master plan for a power pool.

The UEMOA energy ministers met in September 1998 in Lomé and adopted the key elements of the master plan as concerned the interconnection of electrical grids and the general framework for implementation of the WAPP. They also agreed on the need for a supplementary study to determine the composition, mandates and operational procedures of the administrative body or bodies that would be required to manage the WAPP.

Private industry, and specifically the Chevron Oil Company, and USAID came on board in support of the WAPP development in November 1999. These new supporters as well as representatives from the region's electrical utilities, energy ministries and regional organizations, reviewed the master plan and recommended that the ECOWAS energy ministers adopt the plan—which they did that same month. Furthermore, these ministers recommended that the ECOWAS countries should take steps to increase the likelihood of private sector involvement in the development of energy production facilities and the interconnection of the electricity grids.

Immediately following the energy ministers meeting, the ECOWAS Council of Ministers met and gave the first level of official ECOWAS approval to the Master Plan for the Development of Energy Production Facilities and the Interconnection of the Electricity Grids of ECOWAS Member States. As can be surmised from the title given to the Plan, there were two main components: (1) Development of power production plants, and (2) Interconnection of electricity grids. Certain sites were selected for emphasis within the first component for hydropower development, including several in the immediate neighborhood of Liberia:

- Fomi, Fello Song, Sambangalou (Guinea, Sénégal, and The Gambia)
- Salthino (Guinea-Bissau)
- Bumbuna (Sierra Leone)

As regards the second component, certain high-tension lines were selected for emphasis, including the following line in Sierra Leone:

- Freetown/Bumbuna, a 50 km line of 90 kV.

In December 1999, the ECOWAS Heads of State held their annual meeting in Lomé, Togo. At that time, by Decision A/DEC.5/12/99, they gave the highest level of ECOWAS approval to the establishment of the WAPP and the related implementation recommendations of the Council of Ministers. In February 2000, president Konare of Mali, who was the presiding head of ECOWAS, called a meeting in Bamako of the heads of state to identify and reach agreement upon which of those regional development projects constituted the highest priority. One of the projects so designated was the WAPP.

Progress continued in 2000 when the ECOWAS energy ministers met at a workshop in Lomé in September, 2000, and approved and signed a protocol entitled the Memorandum of Understanding for the West African Power Pool Project (MOU). By then, the war had begun to affect the ability of Liberian ministers or his representative to appear at meetings. Similarly, when in March, 2001, an Inaugural Meeting of the Directors General of Electricity Companies of the ECOWAS Member States occurred in Dakar, Sénégal, it was without the Liberian LEC representative. Nonetheless, in September in Cotonou the Energy Ministers recommended to ECOWAS that it should draft and adopt a Protocol, for the benefit of all West African countries, including Liberia, based upon the principles of the European Energy Charter Treaty.

These Energy Ministers have since held several meetings and, working together, have developed a full set of objectives for WAPP. Those objectives include:

- 1) To institutionalize more formal and extensive regional co-operation in the development of cost-effective electricity infrastructure and energy trading networks in order to increase energy supply and enhance energy security within the region;
- 2) To improve system reliability and power quality throughout the region;
- 3) To lower system costs by
  - a. increasing economic trading of both power and energy within the region;
  - b. optimizing the utilization of energy resources in the region; and,
  - c. managing more effectively and efficiently the region's seasonal and weather-related imbalances;
- 4) To reduce the overall amount of capital needed for system expansion in the region by promoting implementation of "bankable" projects on a least-cost basis;
- 5) To create an investment environment for the region's power sector that will facilitate the financing of priority generation and transmission projects;
- 6) To create an ongoing forum in which regional power issues can be discussed and worked out within an agreed-upon policy framework and set of operating principles;
- 7) To create a transparent and reliable mechanism for the prompt settlement of commercial electricity transactions;
- 8) To increase the overall level of electricity service within the region through the implementation of priority generation and transmission projects as the basis for economic development and the extension of paid-for electrical service to more consumers.

In January 2003, the heads of state and government signed the ECOWAS Energy Protocol, setting up the legal basis for facilitating trade and investment in the entire energy sector. Providing a secure legal framework for investment in energy, the Energy Protocol is a new annex to the 1993 Revised ECOWAS Treaty. In a region often characterized as unattractive to investors due to the non-transparency of investment conditions, the Energy Protocol opens the door to the local and foreign investment needed to make the WAPP and other West African energy projects a success.

Based on the European Energy Charter originally designed to promote investment and trade in energy between Europe and the former Soviet Union, but adapted to West African circumstances, the ECOWAS Energy Protocol covers a wide range of legal and commercial aspects promoting security for investors. For example, the Energy Protocol provides for the free repatriation of capital, protections against nationalization, free selection of key staff without nationality requirements, and legal recourse in the event of unfair meddling by government officials or industry regulators. Perhaps most importantly, the Energy Protocol enshrines the principles of “open access” to national transmission grids and “free trade” across West Africa in all kinds of energy and energy materials.

The ECOWAS Energy Protocol was expected to be ratified by the national parliaments over the course of 2003, but action at the national level has been slow, if not glacial. Nevertheless, the terms of the Energy Protocol are accepted by all and already have some legal standing within the region. As the WAPP bodies continue their efforts to present a focused, coherent and comprehensive menu of priority projects in energy generation and transmission to local, foreign and multilateral investors, the ECOWAS Energy Protocol provides a familiar, recognizable and welcoming legal context.

### **Establishment of the ECOWAS Energy Information Observatory**

The operation of a region-wide electricity market, open to free trade and unfettered investment, requires the creation of an information center to monitor developments and, eventually, to provide dispatching services. To serve these purposes, the ECOWAS Energy Information Observatory was launched in Cotonou, Bénin in February 2003, with plans for it to become operational in late 2003, funding permitting. Based at the headquarters of the Communauté Electrique du Bénin (CEB), itself a multi-country organization distributing energy within Benin and Togo, the WAPP Energy Observatory is set to benefit from substantial local contributions by CEB, Togo Electricité, and the National Electric Power Authority (NEPA) of Nigeria. USAID and the French Cooperation are discussing ways to support the Energy Observatory, which ultimately will be self-supporting by means of a small fee assessed on all cross-border electricity trading within the region.

Initially, the main tasks of the WAPP Energy Observatory will be to collect monthly energy supply and demand balances, provide forecasts of potential energy surpluses available for trading, coordinate maintenance schedules, and engage in long-term generation and transmission capacity expansion planning. With plans in place for direct links to focal points in each member state, the Observatory should have access to the electricity companies' data and information, even in real time eventually. The long-term planning task of the Observatory will benefit from the work undertaken to date on the WAPP supply and demand optimization model, developed by Purdue University and AIRD through USAID financing. The Observatory staff is to include three West African modeling specialists trained in updating, running and interpreting the results of the WAPP model.

## **Progress towards a Regional Regulatory Agency**

Rules regarding the regulation of cross-border exchanges of electricity are being developed at a time when the WAPP member states are in fact in the process of developing their own national regulatory bodies, covering all public services, not just electricity. At the WAPP meetings in Conakry, Guinea in October 2002, the WAPP Steering Committee comprised of the ministers of energy of the ECOWAS member states took on provisional responsibility for regional regulation of the WAPP.

The WAPP's present two-phase plans are to establish a small regional regulatory agency (RRA) to regulate cross-border trade in electricity. Of course, the importance of the RRA will grow as trading in electricity increases with the building of the WAPP priority projects for interconnecting the national grids. Building on a USAID-financed study presented in April 2002, and a 2003 diagnostic study of the regulatory systems in place in the WAPP countries financed by the Agence Française de Développement (Afd), the initiative will define the role and responsibility of the WAPP RRA vis-à-vis national regulatory bodies.

The first phase, lasting 36 months, will see the definition of the RRA's statutes, procedures and financing mechanisms as well as training in pilot projects covering audits, benchmarking, mediation and capacity building. The second phase of 24 months will see the actual establishment of the RRA, when responsibility for regulating regional trade in electricity will be transferred to the RRA.

## **Integrating into the WAPP and the Regional Electric Power Structure**

It is obvious that Liberia will benefit from international interconnection lines linking its neighbors. To that end, any energy system reconstruction which is undertaken in Liberia must incorporate the regional standards being developed by WAPP. The reconstructed Liberian voltage system and frequency must be brought into line with the distribution standards of 240/480 and 50 Hz. Transmission voltages must be designed within the WAPP standards. Construction methods for lines and SCADA monitoring must be built into the system. Management practices for the Twenty-First century must be installed to prepare Liberia for the day when its interconnection project will reach the top of the WAPP list. Its capacity to understand and work within the modern rules and expectations of a transparent regional regulatory framework must be strengthened.

## **Current Donor Programs in the Energy Sector**

The Donor community has become very active in Liberia since the departure of Charles Taylor and the 2003 settlement ending hostilities. In the authors' meeting with World Bank personnel, it was disclosed that the European Community (EC) is taking the lead in organizing donor activities and funding in the power sector. Jeffery Rudd is the EC point man in residence in Monrovia. Other key donors include the World Bank, The Government of Ghana, and, at least in effort if not in funding, the Economic Community of West African States (ECOWAS).

### **The European Community**

The EC is reported to be undertaking a study entitled "Liberia Power Sector Liberalization Study." The authors of this Briefing Paper have not been able to reach Mr. Rudd to secure a copy of the paper or to learn of its status.

To ease the dire situation on a short term basis, the EU has indicated to LEC that it would, with the capital of Monrovia, install diesel generators sets with sizes of 200- 300 kw capacity at five existing

substations. In addition, a distribution network with a low voltage rating of 400 volts will be built to connect about 25 customers at each station.

On a more long-term basis, the EU has indicated they will consider one or more of the following as possible projects:

- Support the rehabilitation and restructuring of the electricity sector through long-term technical assistance
- Support the rehabilitation of the high voltage grid with substations
- Support the restoration of street lighting in Monrovia

Of course, no firm agreement between the EC and the GOL for the provision of the above assistance has been put in place.

On the other hand, the parties did sign an MOU for the conduct of certain studies, as follows:

- Management and Institutional Study
- Generation, Transmission and Distribution Study
- Legal Framework Study
- Regulatory Study

The authors of this Briefing Paper have not been able to contact the EU Mission Director in Monrovia to get copies of these studies.

In addition to the foregoing studies, the EU has apparently agreed to undertake two more pieces of study or document drafting, as follows:

- New Electricity Act of Liberia
- Unbundling of the Liberia Electricity Corporation (LEC)

Those studies or legislative drafting have not yet begun.

### **The Government of Ghana—VRA**

Also, as emergency relief, The Government of Ghana, acting by and through its Volta River Authority (VRA), the national electric utility of Ghana, is proposing to provide certain equipment as follows:

- 1 brand new diesel generator rated for 1250 kVA, 50Hz, 415V, 3-phase;
- 2 brand new generator sets rated 500kva, 50Hz, 415V, 3-phase;
- 1 brand new diesel generator set rated 400 kVa , 50hz, 3-phase
- Synchronizing switchgear for parallel operation of the above units in a single Plant;

There exists a possibility to repair a 1000kVA diesel generator set, 50Hz, 415V, 3-phase and could be supplied as used.

The Liberians have requested that the Ghanaian Government also consider providing installation, testing and commissioning under the supervision of Ghanaian engineers and technicians and to provide the Liberian team of engineers and staff from LEC with training as they work along with their Ghanaian counterparts.

Finally, the Ghanaians have also offered some 10km of 33kV lines. The materials to be supplied include, perhaps among other things: wooden poles, insulators (pin and suspension), pole top pins, line hardware, conductors and galvanized steel cross arms.

The line will be constructed under the supervision of Ghanaian Supervisors and their Liberian counterpart.

### **The World Bank Group**

Although vitally interested in energy sector development, the World Bank is focusing its leadership efforts in the following areas:

- Transportation / ports/ roads / airports
- Community-driven development
- Economic reform
- Water & Sanitation

The World Bank has indicated that it is forging a new alliance with the UN military to take advantage of the UN's equipment for road grading, road construction, and other infrastructure works.

Five major feasibility studies and one quick study for short term activity have just been completed or are in the final stages of completion by the World Bank. These studies are for the following sectors:

- Electricity / power sector
- Water and sanitation
- Ports
- Roads
- Airports
- Short term study entitled Liberia Emergency Power Supply Feasibility Study

### **The Bureau National d'Etudes Techniques et de Développement (BNETD)**

Although not properly categorized as a Donor, the Bureau National d'Etudes Techniques et de Développement (BNETD) of the Côte d'Ivoire has recently undertaken to assist Liberia with a tender offering for a Build-Operate-Transfer arrangement for the construction of a diesel power generation plant subdivided in two units of a nominal capacity of 10 MW each along with the associated transmission and distribution network in the city of Monrovia. In addition, the authors of this Briefing Paper have been informed that BNETD has undertaken a study entitled "Monrovia Emergency Power Supply Study." The authors have not been able to contact BNETD to obtain a copy of the study or to learn of its status.

### **The Economic Community of West African States (ECOWAS)**

ECOWAS, acting through its Energy Ministers and the fledgling WAPP organization has directed its Energy Section, and principally Mr. Amadou Diallo thereof, to assemble a team of power experts from the national utilities of the region, and to undertake a mission to Liberia to assess the state of LEC and the power infrastructure in the country. The authors of this Briefing Paper have discussed this mission with Mr. Diallo, but he has indicated that the team has not yet undertaken the mission. It is expected to undertake the mission late in the first quarter of 2006.

## CONTACTS

Liberian Electric Corporation (LEC)  
Mr. Harry T. Yuan, Sr.  
Managing Director Designate  
Liberia Electricity Corporation  
Monrovia, LIBERIA  
Tel: (231) (0) 646-7234 (or) (231) 777-10177

Hon. E.C.B. Jones, Jr.  
Minister of Rural Development and  
Chairman of the Special Executive Committee on Electricity (SECE)  
Ministry of Rural Development  
17<sup>th</sup> Street, Sinkor, P.O. Box 9030-10  
Monrovia, Liberia

European Community  
Mr. Jeffery Rudd  
Monrovia, LIBERIA

World Bank Group  
Mr. Mats Karlsson, Country Director  
Tel: (233-21) 22-96-81  
Location: Accra, GHANA (IBRD)  
E-mail: [mkarlsson@worldbank.org](mailto:mkarlsson@worldbank.org)

World Bank Group  
Ms. Pilar Maisterra  
Country Program Coordinator for Ghana, Liberia, and Sierra Leone  
Washington, DC  
Tel: 202-473-9629  
E-mail: [pmaisterra@worldbank.org](mailto:pmaisterra@worldbank.org)

Government of Ghana  
Volta River Authority  
Mr. F. E. Kweku Arkerst, Head of VRA Delegation  
Akuse, GHANA

Bureau National d'Etudes Techniques et de Développement (BNETD)  
Mr. AEVOUELIE KOUASSI Guillaume  
Boulevard Hassan II, Cocody Abidjan –  
04 BP 940 Abidjan 04, CÔTE D'IVOIRE  
Tel: (225) 22 48 34 54 - Fax: (225) 22 44 56 66  
E-mail: [aevokyg@yahoo.fr](mailto:aevokyg@yahoo.fr)

ECOWAS  
Mr. Amadou Diallo  
Energy Program Director  
ECOWAS Secretariat Bldg--Room 410  
60, Yakubu Gowon Crescent  
Abuja, FCT  
NIGERIA  
Tel: 234-9-314-7639  
Cell (in Abuja—ECOWAS): 234-802-328-3956  
Cell (in Cotonou—Energy Observatory): 229-21-374.195  
E-mail: [daddiallo@yahoo.com](mailto:daddiallo@yahoo.com)

Azito Energie (IPP operating in neighboring Côte d'Ivoire)  
Mr. Férid Nandjee  
Directeur Général  
Cocody 2 Plateaux, rue K57, lot 33  
BP 1296 Abidjan Cidex 1  
République de Côte d'Ivoire  
Tel : (225) 22.40.02.40 / 22.41.72.86  
E-mail : [ferid.nandjee@azitoenergie.com](mailto:ferid.nandjee@azitoenergie.com)

## ABBREVIATIONS

ADB	African Development Bank
AfD	Agence Française de Développement
AIRD	Associates for International Resources and Development
BNETD	Bureau National d'Etudes Techniques et de Développement
BOO	Build-Own-Operate
BOT	Build-Operate-Transfer
CEB	Communauté Electrique du Bénin
ECA	Economic Commission for Africa
ECOWAS	Economic Community of West African States
ESMAP	Energy Sector Management Assistance Program
GOL	Government of Liberia
GWh	Gigawatt hours
Hz	Hertz
IBRD	International Bank for Reconstruction and Development
IPP	Independent Power Producer
kV	kilovolts
LEC	Liberia Electricity Corporation
MOU	Memorandum of Understanding
MW	megawatts
NEPA	National Electric Power Authority of Nigeria
OAU	Organization of African Unity
RRA	regional regulatory agency
SCADA	System Control and Data Acquisition
SECE	Special Executive Committee on Electricity
UEMOA	Union Economique Monétaire de l'Ouest Afrique
UNDP	United Nations Development Programme
VRA	Volta River Authority
WAGP	West Africa Gas Pipeline
WAPP	West Africa Power Pool



## Section 10

# RURAL ENERGY, ENERGY ACCESS, AND RENEWABLE ENERGY OPTIONS IN LIBERIA

**Rural Energy Needs and Options:** The population of Liberia is estimated to be 3.5 million people, with slightly over half of the inhabitants living in rural areas. Prior to the war, even Monrovia had limited electricity services, with about 40,000 customers. The power system was completely destroyed in 1990, shortly after the start of the conflict. Rural electrification was and remains almost non-existent in most of the country. The one exception is private micro-scale generation of electricity by tiny gasoline gensets of a few hundred watts capacity. Private IPPs are selling electricity informally at prices in excess of \$0.75/kWh. As discussed in Section 9 on grid power, there are private diesel gensets for some larger enterprises, and there are active initiatives through the European Union and the World Bank to bring some 10 – 20 MWe of diesel power to Monrovia as soon as possible. Recent World Bank and EC presentations are included in the Annexes.

The utter devastation of the rural areas during 14 years of war has resulted in increased rural to urban migration, often motivated by the hope of finding some kind of employment in Monrovia and the larger towns. Development of modern energy services for rural areas, coupled with investment in small and medium-scale enterprises (SME), including agriculture, aquaculture, and fisheries, may help to stabilize rural population and would certainly contribute to greatly improved quality of life.

We recognize the extreme priority of re-establishing grid power for Monrovia, for government functions, to support the private sector as it regroups, and for the operation of crucial social services. Under these conditions, it is unlikely that the LEC can focus much time or resources on rural electricity services. However, a central concern of the new Government is the provision of basic services (clean water, all-weather roads, basic electricity services, health posts, schools, public lighting, etc.) for the rural population, including the displaced persons who are returning to Liberia. This is essential if the people of Liberia are to see hopeful initiatives and new directions.

The villages and small towns of Liberia have populations that are typically in the range of a few hundred to a few thousand. Serving them with an integrated power network will be a long-range effort, and the costs of providing grid power to customers who can use less than 1 kWh/day can be \$1,000 – \$3,000 per kWe of connected supply (service drop). Experience in Ghana and elsewhere has shown that a large proportion of basic needs for household lighting and small power requirements for home appliances can be met by solar home systems at a much lower capital cost than grid extension and with no fuel costs for power generation.

The key to delivery of a reliable high-quality service from PV systems is their ownership by a rural energy services company (RESCO), which takes responsibility for maintenance and repair, and which charges on a monthly fee basis for access to the system. There are some important success stories around the world with the use of PV-based RESCOs, from the tiny Pacific Island nation of Kiribatu to Ghana.

**A Possible Model for Liberia – the Ghana Renewable Energy Services Project:** Over the past decade Ghana has been using solar electric (photovoltaic) units to provide basic power for priority community functions (health clinics, schools, public lighting, community centers, mosques and churches, and small enterprise). The Renewable Energy Services Project (RESPRO)<sup>1</sup> provides an important local model (and local expertise) for a similar initiative in rural Liberia.

The Government of Ghana has now made solar PV electrification an integral rural electrification programme. As such, rural communities that are more than 20 kilometres from the nearest grid node are being considered for solar PV. *Community services such as public lighting and electricity services for schools and health clinics are considered first*

The Renewable Energy Services Project (RESPRO) was established as a special project unit of the Ghana Ministry of Energy (MoEn). The project was designed and implemented with the support of the UNDP Regional Bureau for Africa / GEF. The project set out to address the need to find sustainable energy paths for social and economic development that can use renewable energy based electricity and fuel supply technologies in place of fossil fuel-based electrification. It also facilitated the widespread use of low GHG emissions renewable energy-based electricity supply technologies such as photovoltaic electricity systems.

Customers pay a user fee for the electricity services, with the capitalization (equipment, installation, service infrastructure) supported by the Government. The project was implemented on the basis of fee-for-service. As such, the customers are not expected to make up front payment for the solar systems. The systems for homes, commercial or public such as water pumping and health clinics are installed and owned by RESPRO.

This program has provided access to basic electricity services in dozens of communities. As of mid-2004 some 25,000 people had access to the PV-based energy services and the following installations had been made:

System Type	Number Installed
Solar home system	2,200
School system	46
Health clinics	5
Water pumping	1
Street lighting	24

Households have benefited from installation of solar home appliances alongside the provision of solar streetlight, solar powered water pumps, refrigeration for clinics, and school lighting systems. Today, RESPRO is a profitable rural energy services company run by the Ministry of Energy.

A greater number of households might have been connected with solar home systems by mid-2004 if at the start of the project solar-PV was being implemented as the main component part of the rural electrification program on a least cost basis. A large proportion of rural needs for household lighting and small power requirements for home appliances can be met by solar home systems at a much lower cost than grid extension. This needs to be considered in the electrification plans for Liberia.

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<sup>1</sup> Jerome Weingart was the UNDP principal international consultant for the design and development of the RESPRO. IRG can provide extensive information on the project.

The RESPRO is under the very capable direction of Mr. Clement Abavana, former Director of VRA/NED (the Volta River Authority's Northern Electricity District). Mr. Abavana, while at NED, was central in the design and launching of the RESPRO, and in its evolution and growth, and was selected by the Government of Ghana to head the RESPRO. The RESPRO has been brought into the Ghana Ministry of Mines and Energy, and offers a lower life-cycle cost alternative to grid extension to rural areas, with their low density of customers and low levels of electricity consumption (typically 0.2 – 0.5 kWh/day residential)..

**Clement G. Abavana**

Director

Renewable Energy & RESPRO

Ministry of Energy, Ghana

P. O. Box SD 310, Stadium

Accra, Ghana

Tel: +233 21 66715

Fax: +233 21 667156

[Abavana@ghana.com](mailto:Abavana@ghana.com)

**Distribution of LPG for Cooking and Heating**

At the World Summit on Sustainable Development (Johannesburg, 2002), public-private partnerships and other joint actions were recommended to promote “efforts to work together at all levels to improve access to reliable and affordable energy services”. Ghana is one of six countries selected for piloting the World LP Gas Association (WLPGA)-UNDP partnership, together with China, South Africa, Honduras, Morocco, and Vietnam.

The Government of Ghana has since the early 1990s been promoting the use of LP Gas, primarily through the National LPG Promotion Campaign. The main objective of this campaign was to introduce the Ghanaian public to an alternative cooking fuel, other than wood fuels and electricity. While this drive has yielded significant results in the urban areas, the rural market remains highly underserved.

## Potential Role of USAID

USAID, through its programs and its network of contractors, has extensive experience with the use of renewable energy options for delivery of modern energy services in rural areas. The World Bank and UNDP similarly have extensive experience in this arena going back several decades. A concerted rural energy services initiative, perhaps spearheaded by USAID, would be appropriate, and help bring crucial and critical energy services to the unserved rural population.

**Recommendation:** We recommend that USAID support a working meeting with Liberian officials and RESPRO to explore the potential for adaptive replication of the RESPRO model in rural Liberia, to define the specific requirements and timetable to establish the basic rural energy services, and to create the opportunity for training of Liberian technicians and engineers in Ghana, as part of establishing a RESPRO or similar initiative in Liberia.

An associated quick assessment would be a comparison of the cost of connecting rural communities to grid power (including local AC minigrids) vs. using PV systems for targeted end uses. VRA/NED conducted a detailed technical and financial assessment of those options in the mid-1990s and found that the least-cost life-cycle option was PV. They also found that on the basis of *first costs*, it was cheaper to provide a 100 peak watt PV system than to provide a service drop from grid extension to most rural areas.

There is a very attractive prospect here. The RESPRO model has been successful, both Ghana and Liberia are Anglophone countries, it is directly relevant to establishing basic electricity services in Liberia, and these services can be provided while larger formal grid systems are being established and extended into rural areas (as was the case in Ghana).

*Installation of solar streetlights as widely as possible in rural communities will break through the inky darkness of those communities at night, provide increased opportunities for evening micro-enterprise, and help ensure greater personal safety, especially for women and children. They could become the symbols of a new commitment to energy services for rural communities.*

A rural energy services company would also be suitable for distribution of LPG and appliances (e.g., stoves) for LPG use; this should be explored as part of the RESPRO assessment for Liberia.

## The Greenstar Model<sup>2</sup>

Greenstar (through Greenstar Foundation and the Greenstar Corporation) delivers solar power, health, education and environmental programs to small villages in the developing world -- and connects people in those villages, and their traditional culture, to the global community. This approach can be developed in Liberia provided the resources and local capable individuals are available.

*As background for this briefing book, J. Weingart talked with Charlie Gay – the innovator and driving force behind Greenstar, and former NREL Director – and discussed the potential for bringing Greenstar to Liberia. He is very interested in this potential*

Greenstar works with people in traditional cultures to express the voice of the community to the world through original music, artwork, photography and video and other arts. That voice is connected with respect and dignity to the land, to families, to language, tradition, to the past and to a clear vision of the future. Income from this priceless "digital culture" is used to fund an ongoing,

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<sup>2</sup> Copies of a CD-ROM describing the Greenstar experience is provided as an Annex to this briefing book. Photos and (edited) narrative are courtesy of Greenstar Foundation (2006).

community-driven process of literacy, local business, education and training, public health, and environmental programs.



People in the Indian village of Parvatapur hold a Greenstar festival; [click here](#) for a selection of digital videos.

To deliver these services efficiently and quickly, Greenstar has designed a portable community center. Using solar power generated by large photovoltaic panels, the center can drive a water purifier, a small clinic, a vaccine cooler, a classroom, a digital studio, and a satellite or wireless link to the Internet. We work with the people of each village to develop an ecommerce website, employing local musicians, teachers and art professionals to record the voice of the community. Greenstar packages the materials for various markets, both direct to the consumer, and through licensing to businesses.



This formula provides new jobs and skills, strengthens local culture and language, and affirms people's independence. Villagers own the Greenstar Village Center themselves, and become shareholders in Greenstar.

To date (mid-2004), Greenstar has completed pilot installations in a remote Bedouin settlement on the West Bank in the Middle East; in a small community in the Blue Mountains of Jamaica; in the central India village of Parvatapur; and in a traditional Ashanti community in Ghana. Centers have been started in New Mexico, Brazil and Tibet as well with a South Africa program in planning. In over 60 other communities on all continents of the world, Greenstar has developed connections with people who are interested in building an "Edge Network" of people, skills, ideas, tools and cultural voices that will be of incalculable value to the whole world -- and to the women, men, children and families of those villages.

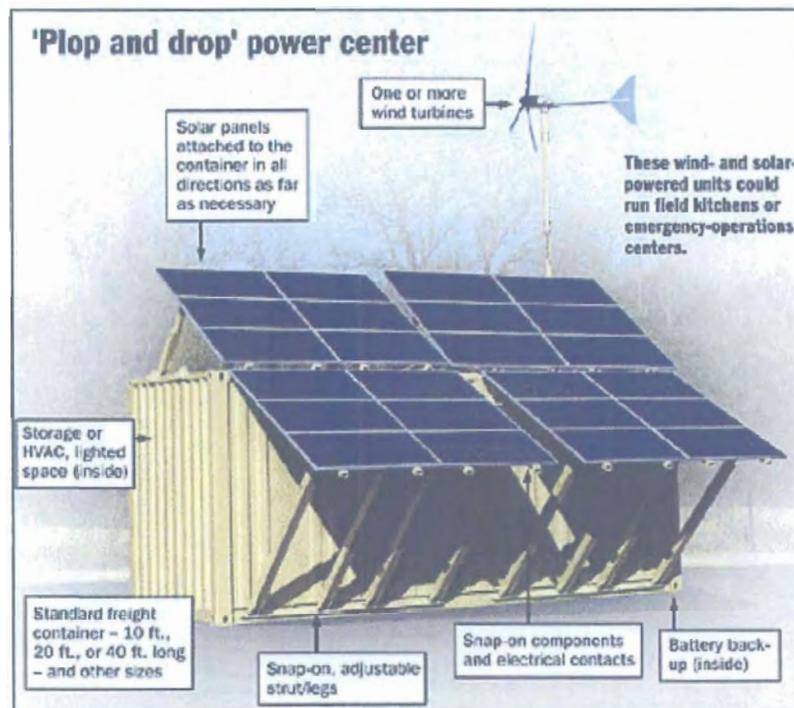
Greenstar is a profit-making business. Their first priority is to profit our partners in developing countries, then investors (who come from all over the world), and then to profit Greenstar itself, in order to fund ultimate expansion to 300 centers worldwide. Their "future building" process helps bring people up the literacy curve in practical, measurable ways, based on their inherent cultural assets and not on mining of the resources of their land, or on exploitation of their cheap labor.

Digital products available direct to the Internet consumer from the Greenstar World Gallery include music, paintings and drawings, photographs, video, poetry and stories, and new art forms such as animated panoramas. These products are also licensed by businesses, as "digital premiums" to communicate with customers and motivate their participation in a wide range of "green" programs, including alternative energy, textiles and clothing, and interactive entertainment.

**Recommendation:** USAID and the GOL should explore the Greenstar Model and consider supporting some initial pilots (two or three), as a forerunner of a much larger initiative. This would be complementary to a RESPRO initiative. Clement Abavana and Charlie Gay know each other and would like to work together in a joint initiative, where RESPRO provides some of the key technical and logistic support, and Greenstar provides community training and helps to develop and market the products development by the Greenstar communities.

## Meeting Immediate Needs for Electricity Services in Off-Grid Areas

Since the entire country is “off-grid”, the options for providing local electricity include diesel and propane gensets, PV units, PV/fossil hybrid units, and possibly the use of small wind electric units with propane or diesel backup.



Several companies produce fully commercial, highly-reliable PV/propane and PV/diesel hybrid power systems in a “box” – typically a sea-borne shipping container, with options for a small office, lights, air conditioning, telecommunications, etc. Where there are good wind resources for at least a month or two annually, small wind electric turbines can be incorporated in many of these products. Two US companies that produce such systems are SunWize (upstate New York) and SkyBuilt. The US military uses such units for field power applications, including for field hospitals and offices. A photo of a SkyBuilt commercial prototype in Arlington VA is shown above.

The World Bank and the UN Military are creating an unprecedented working relationship<sup>3</sup> to accelerate the pace of road building, civil works, etc., there is an opportunity for the experience of the US Military to be transferred to the UN in the arena of quickly mobilized renewable and hybrid power systems.

These three examples indicate the kinds of possibilities that are available for using renewable energy directly and in hybrid configurations to provide high-value electricity services for social and economic productivity.

<sup>3</sup> World Bank (13 February 2006). *Private communication*



## Section 11

# RECOMMENDED AREAS FOR USAID ENERGY-RELATED SUPPORT AND ACTION

The following is a set of recommendations and specific concepts for USAID support to the challenges of delivering modern energy services in Liberia. These emphasize “jump starting” the provision of modern energy services, linking these services to enterprise development, health services, schools, water and sanitation services, etc. and with local community empowerment. There is a major opportunity for USAID and its partners in development to help Liberia “overleap” the technology of the past, and take advantage of new technologies for modern energy supply, education (including ICTs for telemedicine and distance education), health, and for micro-enterprise and small- and medium-scale enterprise. The cost figures shown below are very rough indicative values and should not be considered definitive.

**Urgent and Critical:** Clean water and access to basic lighting and communication capabilities are very high priority, both in Monrovia and in the rest of the country. The newly appointed CEO of the Liberia Electricity Company (LEC) has to use cell phones recharged by small informal gensets because there is no main supply of power. USAID could provide the following items to help the jump-starting of government and small enterprise.

- PV units to recharge batteries for cell phones and SAT phones (satellite phones), notebook computers, LED flashlights, etc.
- Personal and family-scale passive water purification (e.g., 0.2 micron ceramic water purification units, widely used by hikers, campers, and others in North America, Europe, and elsewhere. These require no electricity.
- PV public lighting using commercial solar street lights, to be owned by communities but serviced by trained (and paid) local technicians. Hundreds and then a few thousand solar street lights (if the first 100 are maintained and valued by local communities, and not vandalized) in communities that are dark except for the occasional small genset running a few hours at night.

**Electricity and Natural Gas Access:** USAID can contribute to both large-scale power generation development and widespread decentralized electricity supply and access. For the latter, USAID could consider supporting the UNDP / World Bank / LPG Association partnership. USAID can also facilitate the extension of the West Africa natural gas pipeline to Liberia.

- Lease generation capacity: Lease generation capability of 20 MW size or Lease Effasu Thermal Power Barge from VRA in Ghana. Help Coordinate assistance and capacity building by VRA to LEC.
- Independent Power Producers: Assist in developing cooperation with IPP’s operating in the region.
- Widespread uses of Decentralized Energy Systems: Consider provision of *decentralized* energy systems and services for high social and economic development value applications, using diesel gensets, solar power units (e.g., for battery charging), and packaged hybrid power units (PV/propane and PV/diesel units). *Use these to jump-start provision of modern energy services in a visible and effective manner. Do this in a manner that fully engages the relevant sectors (e.g., health, education, water and sanitation, agriculture, telecommunications, etc.)*

- Explore the potential for a Liberia / Ghana partnership to bring a rural energy services capability to Liberia, using a mix of PV and fossil energy (LPG, diesel), to support social and economic development. The Ghanaian partner would be the Rural Energy Services Program (RESPRO).
- Information and Communications Technology: Bring USAID's experience with distance education in Mexico, Mali, and elsewhere to the task of primary and secondary education, and (eventually) to telemedicine. Such approaches can overleap historical approaches to education and can empower teachers and health workers. The necessary systems can be powered by e.g., PV/propane hybrid power units, with battery-powered distance radios and television sets recharged from PV arrays.
- Internet over the power lines: As power lines are laid and energized, first in Monrovia and then elsewhere in the country, consider using the new technologies for accessing the Internet over power lines.
- Provide guidance and support training programs for technicians and others for applying RE, hybrid, and small fossil gensets to schools, clinics, water supplies, etc. There is an opportunity to develop quickly a new set of vocational training programs in areas vital to Liberians being able to contribute to the rebuilding and operation / maintenance of new infrastructure systems and services.
- Natural Gas: Investigate, support the planning effort and coordinate the legal and regulatory development in Côte d'Ivoire and Liberia to enable extension of West Africa Gas Pipeline.

## Specific Recommendations for Near-Term Grid Electrification

### 1. Short term Leasing of Ghana's Effasu Power Barge

For the provision of major immediate power supply to Monrovia and perhaps some outlying districts, USAID should consider leasing for a period of twelve to fifteen months a relatively new power barge (125 MW) which is currently, and has been for some time, sitting idle at Effasu in the Western part of Ghana not far from the open sea. From where it sits it is no more than a three day sail from Monrovia. There may also have to be some minor dredging to open access of sufficient draft for the barge to move to the open sea. This power barge was originally a joint project by the Japanese government and VRA, but facilities to fuel the twin generators sitting astride the barge have not yet been undertaken. It is expected that a feeder pipeline from Takoradi may be built after completion of the West Africa Gas Pipeline (WAGP) is commissioned and begins delivering gas. The expected commission date of WAGP is December 2006, and gas could begin flowing by January 2007. It is not expected that any pipeline would be built to the barge's location in Effasu for at least another year. Accordingly, this barge continues, and will for some time continue, to sit idle.

The Government of Ghana and VRA may entertain the idea of some revenue coming in from the barge in the form of a lease payment. The Japanese government would also need to sign onto the concept as the barge was essentially a foreign aid project from Japan specifically intended for Ghana. However, the Japanese have interests in Liberia in the form of one of Liberia's most successful commercial ventures—the Firestone rubber plantation, currently owned by Bridgestone Corporation of Japan—and they therefore have reason to support this humanitarian overture toward Liberia. Indeed, they may be willing to participate in this emergency assistance by paying for the cost of moving the barge and/or paying for the quick dredging of the barge's exit channel to the sea from Effasu. In any event, this should

be thought of as a lend/lease project with the ultimate intent to repatriate the barge to Effasu.

If the concept of moving the power barge is approved, to make it useful there would need to be transmission power lines erected, with substation facilities and distribution system put in place. The project should be viewed as a substantial stopgap measure which would provide the time for permanent generation facilities to be put in place.

**Benefits:** This could provide an almost instantaneous source of massive generation for a period of time 12—18 months while other generation is being constructed. This would require major and swift action on transmission as well as a distribution system in order to utilize the full generation potential available of even half of the 125 MW, but one of the two units could be used to back up the other to provide almost instant reliability of the entire system.

**Estimated Costs:** \$400K to \$700K lease fee to VRA.

## 2. Short term Leasing of Other Generation Capacity

Because of the long lead times that may be encountered in purchasing generation units, and because lease units are readily available almost immediately, it may be advisable to consider leasing units rather than buying them—especially the initial 20 MW of production to get Monrovia up and running by July. Leasing terms should be investigated and compared with the CAPEX requirements of purchasing. Leasing generation capacity would also allow LEC to better tailor the quantity of generation capacity it procures rather than the large quantity that would at once be available by borrowing the Effasu barge.

**Benefits:** This could provide a more staged solution to the provision of generation than leasing the Effasu barge from VRA. Lease units are available with extremely short lead time but would cost more per MW capacity than the Effasu barge and there would be little savings over the Effasu barge. Nonetheless, smaller units would be easier to handle, could provide more flexibility in placement, allowing smaller transmission and distribution systems that would ultimately be linked together but could function independently of one another for an initial start-up period.

**Estimated Costs:** \$400K to \$700K lease fees.

## 3. Develop a Pre-paid Metering System

In order to help reduce power thefts and to help consumers regulate their use of power, a pre-paid metering system can be developed for LEC. Users can purchase specific units of power at a vending machine or some other center and that quantity of power can be transferred to some point of consumption. These types of systems are widely used around the world including in developing nations such as South Africa.

**Benefits:** Using the pre-paid metering program, customers receive a special meter, a display unit that tracks electric consumption and two smart cards. The pre-paid smart cards store value and are inserted into the home unit to purchase electricity. Certain display units also show the rate of electric consumption and the amount of time until the prepayment runs out, allowing customers to monitor and adjust usage. The smart cards are similar to the pre-paid mobile phone service cards that are sold in Liberia.

**Estimated Costs:** \$250K to \$500K, depending on the number of meters acquired and consumers served.

#### 4. Institutional Strengthening of LEC

In the short, medium, and even the near long term it makes sense to utilize the knowledge base and skilled individuals working for LEC, as well as the vertically organized structure of LEC itself. But, while their skills and knowledge base is substantial, they would surely benefit from capacity building in a variety of areas. In the very short term, with respect to the anticipated installation of some 20 MW of generation capacity, capacity should be developed within the LEC staff to efficiently run such equipment and to balance the loads demanded. There are, however, many tasks which will have to be performed in order to get the national utility in shape to run a 21<sup>st</sup> Century facility—from the complexities of running a hydroelectric facility to interfacing with a rate-setting regulatory agency, from billing and collecting without commercial losses to system maintenance and monitoring to avoid technical losses. A comprehensive capacity building program should be developed in consultation with LEC and other national utilities in the region wherein LEC personnel could tap into not only training regionally available but other training in Europe and the United States. The responsibility for such a comprehensive capacity building program could and should be shared by the donor community as a whole.

**Benefits:** While there is a loyal cadre of engineers and staff still trying to raise LEC from ashes, it must be recognized that any new power sector created will incorporate new technologies and more efficient, but more sensitive components that must have knowledgeable staff in attendance. In addition, this time LEC must succeed in managing its commercial as well as technical losses so as to create an economically viable enterprise. The staff must be fully retrained to meet the needs of a modern electric utility company.

**Estimated Costs:** \$400K to \$500K.

#### 5. Work with a Regionally Active IPP or with Ghana's VRA

While there are no IPPs operating within Ghana today, there is at least one well qualified IPP with operations in the neighboring country next door—Azito Energie in the Côte d'Ivoire. Azito should be approached to see if it would consider operating the power barge discussed in Recommendation 1, above, and to provide training to the Liberians in the operation of a large diesel generation facility. As an alternative, training could be provided by the Ghanaians and USAID could contract with VRA to provide this technical assistance as a sweetener to lease the barge.

**Benefits:** There is abundant knowledge available regionally that could assist in redeveloping the Liberian power sector. Drawing on this knowledge will further the development of interregional ties among West African nations.

**Estimated Costs:** \$300K to \$1,500K, depending on whether such program would provide mere technical assistance or actual operation of a generation facility.

#### 6. Tariff Study and Procurement Assistance

The World Bank Needs Assessment study has suggested that a Tariff Study and Procurement Assistance be undertaken for Liberia as soon as possible. These are excellent recommendations and need to be implemented for LEC to achieve a commercially viable footing.

**Benefits:** The Tariff Study is an essential analysis which must be made before operations could begin by LEC, while the Procurement Assistance should be an on-going technical as-

sistance project to develop the regulations for a fiscally sound procurement office within LEC and the capacity to procure within the guidelines so prescribed.

**Estimated Costs:** \$200K.

## 7. Master Plan

In the long term, a Master Plan (the power engineering consultants from the US called this a Long-Range Plan) should be developed to guide the development of a power system for the entire country, including regional integration into the WAPP. While all existing plans and studies should be taken into account, nonetheless, given that the entire system will need to be rebuilt, nothing should be taken off of the table. Development of this Master Plan should also consider the legal and regulatory needs of the power sector and a comprehensive legislative and regulatory package should be developed as needs are shown by the Plan.

**Benefits:** To structure its redevelopment and growth into a rational logical progression, LEC will need to develop an overall Master Plan or roadmap leading from its current state to a modern electric utility.

**Estimated Costs:** \$300K - \$500K.

## Specific Recommendations for Natural Gas Access

### 8. Investigate Possibility of Extension of West Africa Gas Pipeline

The West Africa Gas Pipeline is currently under construction and more than 50 miles of pipeline have been laid some 15 miles offshore in the Gulf of Guinea leading from Nigeria toward Takoradi, Ghana, the terminus as presently envisioned. There is some possibility that the West Africa Pipeline Company (WAPCo) could ship more gas through the pipeline than the present three consuming countries—Bénin, Togo, and Ghana—could use in the foreseeable future. It should be possible to entice WAPCo to investigate the feasibility of extending the pipeline to Liberia to supply a whole new generation industry with cheap and clean natural gas rather than diesel.

**Benefits:** The development of the West Africa Gas Pipeline is the culmination of several years of planning, legal and regulatory development, and now construction. An extension of the pipeline could rely upon the foregoing work which has been done with replications and modifications as necessary to include Côte d'Ivoire and Liberia as extension points along the pipeline. USAID could provide technical assistance and planning coordination to further this effort.

**Estimated Costs:** \$500K-\$750K.

## Specific Recommendations for Off-Grid Energy Services

- 9. PV-based Systems for High-Value Battery Charging:** This would entail the immediate distribution of PV battery charging units for laptop computers, mobile phones, satellite phones, and other high-value low-power devices.

**Benefits:** The lack of electricity supply throughout the country is seriously hampering mobile phone communications (although the mobile phone services providers appear to have reliable services), and government offices are having difficulty functioning when their computers don't operate. Having reliable solar-based batter charging for these devices should contribute to improved mobile phone communications and notebook computer operations. These should be made available to government, university faculty and students, and others.

**Estimated Costs:** \$250K for 2,000 – 3,000 units

- 10. Individual Passive Water Purification Units**

**Benefits:** Reliable access to clean water for drinking and cooking is a universal problem in Liberia. The passive ceramic water filtration units used elsewhere in West Africa (e.g., Mali) are quit effective, with 0.2 micron filtration. Widespread distribution of these could be a relatively quick and cost-effective approach to reducing water-borne disease. WHO should be a partner in this activity.

**Estimated Costs:** 10,000 units for ca. \$1-2 million

- 11. Solar-powered Community Street Lights:** Solar-powered streetlights have been commercial products for well over a decade. They are used by the RESPRO in Ghana.

**Benefits:** Installation of solar streetlights as widely as possible in rural communities will break through the inky darkness of those communities at night, provide increased opportunities for evening micro-enterprise, and help ensure greater personal safety, especially for women and children. The lights could also become the symbols of a new commitment to energy services for rural communities.

**Estimated Costs:** Initial pilot of 100 installations in 50 communities, at ca. \$2,000 per streetlight. \$250K for capital costs and \$100K for training, O&M, and spare parts. [Technician training and spare parts would be an essential component of this effort.]

- 12. Investigate Possibility of Transferring / Adapting the Ghana RESPRO Model for Off-Grid Energy Services in Liberia:** We recommend that USAID support a feasibility study to assess the potential for adaptive replication of the RESPRO model in rural Liberia, to define the specific requirements and timetable to establish the basic rural energy services, and to create the opportunity for training of Liberian technicians and engineers in Ghana, as part of establishing a RESPRO or similar initiative in Liberia. This could begin with a working meeting with Liberian officials and RESPRO to explore this option. The goal would be to facilitate the establishment and widespread functioning of a rural energy services operation in rural Ghana.

An associated quick assessment would be a comparison of the cost of connecting rural communities to grid power (including local AC minigrids) vs. using PV systems for targeted end uses. VRA/NED conducted a detailed technical and financial assessment of those options in the mid-1990s and found that the least-cost life-cycle option was PV. They also

found that on the basis of *first costs*, it was cheaper to provide a 100 peak watt PV system than to provide a service drop from grid extension to most rural areas.

There is a very attractive prospect here. The RESPRO model has been successful, both Ghana and Liberia are Anglophone countries, it is directly relevant to establishing basic electricity services in Liberia, and these services can be provided while larger formal grid systems are being established and extended into rural areas (as was the case in Ghana).

A rural energy services company would also be suitable for distribution of LPG and appliances (e.g., efficient stoves) for LPG use; this should be explored as part of the RESPRO assessment for Liberia.

#### **Estimated Costs**

- RESPRO feasibility assessment: \$50K - 100K
- RESPRO training of Liberian technicians and engineers: \$ 200 - 300K
- RESPRO pilot implementation in Liberia: \$ 2 million
- RESPRO larger-scale implementation: \$10 – 20 million

13. **Support for Greenstar Pilot Projects in Liberia:** USAID and the GOL should explore the Greenstar Model (see Section 10) and consider supporting some initial pilots (two or three), as a forerunner of a much larger initiative. This would be complementary to a RESPRO initiative. Clement Abavana (RESPRO Director) and Charlie Gay (Director of Greenstar) know each other and would like to work together in a joint initiative, where RESPRO provides some of the key technical and logistic support, and Greenstar provides community training and helps to develop and market the products development by the Greenstar communities.

#### **Estimated Costs**

- Greenstar feasibility assessment: \$30 - 50K
- Greenstar – two to three pilots in Liberia: \$ 200K





Annex

**INAUGURAL ADDRESS BY  
PRESIDENT ELLEN JOHNSON SIRLEAF**

**PRESIDENT ELLEN JOHNSON SIRLEAF**

**AGE:** 67. Born October 29, 1938 in Monrovia, Liberia.

**EDUCATION:** M.P.A., Harvard University, 1971. She also earned an economics diploma from the University of Colorado in 1970, and a B.B.A. in accounting from Madison Business College in 1964.

**CAREER:** A long-standing member of Liberia's political elite, Sirleaf served as finance minister under ex-President William Tolbert before he was toppled and killed in 1980 coup. She fled the country shortly afterward, taking up top jobs at Citibank, the United Nations, and the World Bank.

**RETURN TO POLITICS:** In 1997, she made a failed bid for the presidency, losing to ex-president-turned-warlord Charles Taylor in a vote he won amid a climate of fear. After Taylor was forced into exile as part of a deal to end Liberia's civil war in 2003, Sirleaf returned to make a successful run for the presidency in late 2005.

**FAMILY:** Sirleaf is a widowed mother of four, and has eight grandchildren.

*SOURCE: The Associated Press*

<http://www.cnn.com/2006/WORLD/africa/01/16/liberia/index.html>

## **Text of Inaugural Address by President Ellen Johnson Sirleaf of Liberia**

**allAfrica.com**

**DOCUMENT**

January 17, 2006

Posted to the web January 17, 2006

Monrovia

*Following is the text of the Inaugural Address, as delivered on Monday, January 16, on the Capitol grounds in Monrovia, by President Ellen Johnson Sirleaf of Liberia.*

Let us first praise Almighty God, the Arbiter of all affairs of humankind whose omnipotent Hand guides and steers our nation.

Before I begin this address, which signifies the high-noon of this historic occasion, I ask that we bow our heads for a moment of silent prayer in memory of the thousands of our compatriots who have died as a result the many conflicts.

Thank you!

I also ask your indulgence as I reflect on the memory of my two rural illiterate grandmothers and my mother and father who taught me to be what I am today, and the families who took them in and gave them the opportunity of a better life.

Let us also remember in prayers during his affliction, His Grace Archbishop Michael K. Francis, the conscience of our nation.

Vice President Boakai and I have just participated in the time-honored constitutional ritual of oath-taking as we embark upon our responsibilities to lead this Republic. This ritual is symbolically and politically significant and substantive. It reflects the enduring character of the democratic tradition of the peaceful and orderly transfer of political power and authority. It also confirms the culmination of a commitment to our nation's collective search for a purposeful and responsive national leadership.

We applaud the resilience of our people who, weighed down and dehumanized by poverty and rendered immobile by the shackles of fourteen years of civil war, went courageously to the polls, to vote - not once but twice, to elect Vice President Joseph Boakai and me to serve them. We express to you, our people, our deep sense of appreciation and gratitude for the opportunity to serve you and our common Republic. We pledge to live up to your expectations of creating a government that is attentive and responsive to your needs, concerns, and the development and progress of our country.

We know that your vote was a vote for change; a vote for peace, security and stability; a vote for individual and national prosperity; a vote for healing and leadership. We have heard you loudly, and we humbly accept your vote of confidence and your mandate.

This occasion, held under the cloudy skies, marks a celebration of change and a dedication to an agenda for a socio-economic and political reordering; indeed, a national renewal.

Today, we wholeheartedly embrace this change. We recognize that this change is not change for change sake, but a fundamental break with the past, thereby requiring that we take bold and decisive steps to address the problems that for decades have stunted our progress, undermined national unity, and kept old and new cleavages in ferment.

As we embrace this new commitment to change, it is befitting that, for the first time, the inauguration is being held on the Capitol Grounds, one of the three seats of Government. We pledge anew our commitment to transparency, open government, and participatory democracy for all of our citizens.

Fellow Liberians: As I speak to you today, I am most gratified by the caliber of the delegations of our own African Governments, Foreign Governments, partners and local partners as well, who have come to join us to celebrate this triumph of democracy in our country. I am particularly touched by those you see - our dear brothers, the delegation from the United States, headed by the wife of President Bush and my friend, our mediator, who has been with us so long and brought us to this day. We pay homage to all of you. We respect you. We welcome you. Bien vene a tous.

My dear Brothers and Sisters of West Africa: You have died for us; you have given refuge to thousands of our citizens; you have denied yourselves by utilizing your scarce resources to assist us; you have agonized for us, and you have prayed for us. We thank you, and may God bless you for your support to Liberia as well as for your continuing commitment to promote peace, security, stability, and bilateral cooperation within our sub-region - and beyond.

I wish to acknowledge the stewardship of the National Transitional Government under the leadership of its former Chairman, Mr. Gyude Bryant, for their contribution to peace and to the successful electoral process. I also recognize and thank the former National Transitional Legislative Assembly for their service to the nation. And I welcome the members of the 52nd Legislature who were sworn in a few moments ago. Distinguished Ladies and Gentlemen, I congratulate you as you assume your individual responsibilities of representing our people. I look forward to working with each of you as we strive to build a better nation.

I thank and applaud our gallant men and women of the Armed Forces of Liberia who have rendered sacrificial service to our nation and are now being willingly retired to facilitate the training and restructuring of the new Armed Forces of Liberia.

I also thank the leadership and gallant men and women of the United Nations Military Mission in Liberia who daily labor with us to keep the peace that we enjoy.

Fellow Liberians, Ladies and Gentlemen: No one who has lived in or visited this country in the past fifteen years will deny the physical destruction and the moral decadence that the civil war has left in its wake here in Monrovia and in other cities, towns, and villages across the nation. We have all suffered. The individual sense of deprivation is immense. It is therefore understandable that our people will have high expectations and will demand aggressive solutions to the socio-economic and societal difficulties that we face.

Our record shows that we are a strong and resilient people, able to survive; able to rise from the ashes of civil strife and to start anew; able to forge a new beginning, forgiving if not forgetting the past. We are a good and friendly people, braced for hope even as we wipe away the tears of past suffering and despair. Our challenge, therefore, is to transform adversity into opportunity, to renew the promises upon which our nation was founded: freedom, equality, unity and individual progress.

In the history of our nation, in the history of every nation, each generation, each Administration is summoned to define its nation's purpose and character. Now, it is our time to state clearly and unequivocally who we are, as Liberians, as your leaders - and where we plan to take this country in the next six years.

#### Political Renewal

First, let me declare in our pursuit of political renewal, that the political campaign is over. It is time for us, regardless of our political affiliations and persuasions, to come together to heal and rebuild our nation. For my part, as President of the Republic of Liberia, my Government extends a hand of friendship and solidarity to the leadership and members of all political parties, many of them sitting right in front of me, which participated in our recent presidential and legislative elections. I call upon those who have been long in the struggle - and those who recently earned their stripes - to play important roles in the rebuilding of our nation.

Committed to advance the spirit of inclusion, I assure all Liberians and our international partners and friends that our Government will recognize and support a strong democratic and loyal opposition in Liberia. This is important because we believe that our democratic culture and our nation are best served when the opposition is strong and actively engaged in the process of nation building.

Moreover, we call upon our colleagues of all political persuasions now in the Diaspora to return home and join us in meeting this exciting challenge of national renewal.

We make a similar appeal to the thousands of our citizens who continue to live in refugee camps throughout the sub-region and beyond. We recognize and sympathize with your plight and will explore with our development partners ways and means to facilitate your early return home as a national imperative for our renewal and development.

To those who are still internally displaced, we pledge to work with our partners to get you back to your communities to enable you to start the process of rebuilding your lives.

We must have a new understanding. Your job, as citizens, is to work for your family and your country. Your country's only job is to work for you. That is the compact that I offer you today.

## A New Era of Democracy

My Fellow Liberians, Ladies and Gentlemen:

Ours has certainly not been an easy journey to where we are today. Indeed, the road has been tortuous and checkered. The tendencies of intolerance of each other's opinion rooted in parochial and selfish considerations - and greed - have driven us into our descent into recent tragedies and paralysis as a nation and as a people. These negative national tendencies have, in the past, bred ethnic suspicion and hatred, led to injustice, social and political exclusion. They have also weakened our capacity to peacefully co-exist as a people with diverse socio-cultural, economic, and political backgrounds. Consequently, we have witnessed needless generalized conflicts that have profoundly affected the Liberian family, the foundation of our society.

I know of this struggle because I have been a part of it. Without bitterness, or anger, or vindictiveness, I recall the inhumanity of confinement, the terror of attempted rape, the ostracism of exile. But I also recall the goodness and the kindness of the many who defied orders and instruction and saved my life, and gave food to the hungry and to give water to the thirsty. I recall their humanity - and thank them.

And so, my Fellow Liberians let us acknowledge and honor the sacrifices and the contributions of all as we put the past behind us. Let us rejoice that our recent democratic exercise has been a redemptive act of faith and an expression of renewed confidence in ourselves. Let us be proud that we were able to ultimately rise above our intense political and other differences in a renewed determination as a people to foster dialogue instead of violence, promote unity rather than disharmony, and engender hope rather than disillusionment and despair.

My Administration therefore commits itself to the creation of a democracy in which the constitutional and civil liberties and rights of all of our people will be respected.

## Economic Renewal

In a similar quest for economic renewal, we start on the premise that we are a wealthy people. Our nation is blessed with an endowment, rich in natural and human resources. Yet, our economy has collapsed due to several civil conflicts and economic mismanagement by successive governments. The task of reconstructing our devastated economy is awesome, for which there will be no quick fix.

Yet, we have the potential to promote a healthy economy in which Liberians and international investors can prosper. We can create an investment climate that gives confidence to Liberian and foreign investors. We can promote those activities that add

value in the exploitation of our natural resources. We can recognize and give support to our small farmers and marketers who, through their own efforts over the years, have provided buoyancy and self-sufficiency in economic activity. We can revisit our land tenure system to promote more ownership and free holding for communities.

This will call for a transformation of our economic vision into economic goals that are consistent with our national endowment and regional and global dynamics. We will ensure that allocation of our own resources reflect those priorities formulated on the basis of sequential measures of structural change that need to provide this transformation. And we will call upon our development partners to likewise recognize that although they have made significant investment to bring peace to our country, this peace can only be consolidated and sustained if we bring development to our people.

With this in mind, we are working with our partners to identify key objectives and deliverables in the first one hundred and fifty days of our Administration, which coincides with the remaining budgetary period of the former government. We must meet our commitment to restore some measure of electricity to our capital city. We must put Liberians back to work again. We must put our economic and financial house in order. Most of all, we must revive our mindset of courage, hard work, honesty, and a can do spirit.

Our strategy is to achieve quick and visible progress that reaches significant number of our people; to gain momentum, consolidate support, and establish the foundation for sustained economic development.

For the long term, more will be required from us and our partners. We will formulate a multi-year economic reconstruction plan tied to a Poverty Reduction Strategy Program that relieves our country from a staggering US\$3.5 billion debt and paves the way for acceleration in our national effort to make progress in the achievement of the Millennium Development Goals. We will also tackle the HIV/Aids problem, thereby enduring that this threat to our human capital and growth and prosperity is addressed.

### Governance

We know that our desire for an environment for private sector-driven sustainable growth and development cannot be achieved without the political will and a civil service that is efficient, effective and honest. The workforce in our ministries and agencies is seriously bloated. Our Administration will therefore embark on a process of rationalizing our agencies of government to make them lean, efficient, and responsive to public service delivery. This will require the creation of a meritocracy that places premium on qualification, professionalism, and performance.

### Bonding

Fellow Liberians, Ladies and Gentlemen: Across this country, from Cape Mount in the West to Cape Palmas in the East, from Mount Nimba in the North to Cape Monsterrado

in the South, from Mount Wologizi in Northcentral to Mount Gedeh in the Southeast, our citizens at this very moment are listening by radio - some are watching by television. I want to talk to you!

As you know, in our various communities and towns, our children have a way of greeting their fathers when they come home after a long, tiring day of trying to find the means to feed the family that night and send the children to school in the morning. They say, "Papa na come."

For too many times, for too many families, Papa comes home with nothing, having failed to find a job or to get the help to feed the hungry children. Imagine the disappointment and the hurt in the mother and the children; the frustration and the loss of self-confidence in the father.

Through the message of this story, I want you to know that I understand what you ordinary citizens go through each day to make ends meet for yourselves and for your families.

Times were hard before. Times are even harder today. But I make this pledge to you: Under my Administration, we will work to change that situation. We will work to ensure that when our children say "papa na come", papa will come home joyfully with something, no matter how meager, to sustain his family. In other words, we will create the jobs for our mothers and fathers to be gainfully employed. We will create the social and economic opportunities that will restore our people's dignity and self-worth.

We will make the children smile again. The thousands of children who could not present their voting cards, but repeatedly told me whenever I met and shook their hands that they voted for me. Indeed, they voted with their hearts. To those children and other Liberian children across this nation, I say to you: I love you very, very much. I shall work to give you hope and a better future.

Now, I would like to speak in particular to our youth. You are out there. You can believe my word that our Administration will do its utmost to respond to your needs. We will build your capacity and empower you to enable you meaningfully participate in the reconstruction of your country. We will give you the education that you asked for, and the skills training that we know you desire. We shall actively pursue the Kakata Declaration resulting from the National Youth Conference held in 2005 and the implementation of a National Youth Policy and Program.

### Corruption

Fellow Liberians, we know that if we are to achieve our economic and income distribution goals, we must take on forcibly and effectively the debilitating cancer of corruption. Throughout the campaign, I assured our people that, if elected, we would wage war against corruption regardless of where it exists, or by whom it is practiced.

Today, I renew this pledge. Corruption, under my Administration, will be the major public enemy. We will confront it. We will fight it. Any member of my Administration who sees this affirmation as mere posturing or yet another attempt by another Liberian leader to play to the gallery on this grave issue should think twice.

In this respect, I will lead by example. I will expect and demand that everyone serving in my Administration leads by example. The first testament of how my Administration will tackle public service corruption will be that everyone appointed to high positions of public trust, such as in the Cabinet and heads of public corporations, will be required to declare their assets. I will be the first to comply, and I will call upon the Honorable Speaker and President Pro-Temps to say that they comply.

My Administration will also accord high priority to the formulation and passage into law of a National Code of Conduct, to which all public servants will be subjected.

My Fellow Liberians: If we are to achieve our development and anti-corruption goals, we must welcome and embrace the Governance and Economic Management Program, which the National Transitional Government of Liberia, working with our international partners, has formulated to deal with the serious economic and financial management deficiencies in our country.

We accept and enforce the terms of GEMAP, recognizing the important assistance which it is expected to provide during the early years of our Government. More importantly, we will ensure competence and integrity in the management of our own resources and insist on an integrated capacity building dimension initiative so as to render GEMAP non-applicable in a reasonable period of time.

#### Foreign Policy

My Fellow Liberians: Our nation's foreign policy has historically been rooted in our core values as a nation and people in the practices of good neighborliness, non-interference in the affairs of other nations and peoples, peaceful co-existence, regional cooperation and integration. These values will continue to guide the conduct of our foreign policy under my Administration. Our foreign policy will take due cognizance of the sacrifices and contributions that have been made by our brothers and sisters to restore peace, security, and stability to our country. We will therefore work to be a responsible member of sub-regional, regional, and international organizations, including the Mano River Union, Economic Community of West African States, African Union, and the United Nations. We will do all that we can to honor our obligations, past and current, and enforce all international treaties to which our country has subscribed.

To our sister Republics West, East, and North of our borders, we make this pledge: under my Administration, no inch of Liberian soil will be used to conspire to perpetrate aggression against your countries. In making this commitment, we will work for a new regional security that is based upon economic partnership aimed at enhancing the prospects for regional cooperation and integration.

My Fellow Citizens: Let me assure you that my Presidency shall remain committed to serve all Liberians without fear or favor. I am President for all of the people of the country. I therefore want to assure all of our people that neither I, nor any person serving my Administration will pursue any vendetta. There will be no vindictiveness. There will be no policies of political, social, and economic exclusion. We will be inclusive and tolerant, ever sensitive to the anxieties, fears, hopes, and aspirations of all of our people irrespective of ethnic, political, religious affiliation, and social status.

By their votes, the Liberian people have sent a clear message! They want peace; they want to move on with their lives. My charge as President is to work to assure the wishes of our people. We will therefore encourage our citizens to utilize our system of due process for settling differences. We will make sure that we work together as a people, knowing, however, that we will forcefully and decisively respond to any acts of lawlessness, threats to our hard earned peace, or destabilizing actions that could return us to conflict.

As we savor the new dawn of hope and expectation, I pledge to bring the Government closer to the people. The days of the imperial Presidency, of a domineering and threatening Chief Executive are over. This was my campaign promise, which I intend to keep.

And now, before I close, I would like to talk to the women - the women of Liberia, the women of Africa, and the women of the world. Until a few decades ago, Liberian women endured the injustice of being treated as second-class citizens. During the years of our civil war, they bore the brunt of inhumanity and terror. They were conscripted into war, gang raped at will, forced into domestic slavery. Yet, it is the women who labored and advocated for peace throughout our region.

It is therefore not surprising that during the period of our elections, Liberian women were galvanized - and demonstrated unmatched passion, enthusiasm, and support for my candidacy. They stood with me; they defended me; they worked with me; they prayed for me. The same can be said for the women throughout Africa. I want to here and now, gratefully acknowledge the powerful voice of women of all walks of life.

My Administration shall thus endeavor to give Liberian women prominence in all affairs of our country. My Administration shall empower Liberian women in all areas of our national life. We will support and increase the writ of laws that restore their dignity and deal drastically with crimes that dehumanize them. We will enforce without fear or favor the law against rape recently passed by the National Transitional Legislature. We shall encourage families to educate all children, particularly the girl child. We will also try to provide economic programs that enable Liberian women - particularly our market women - to assume their proper place in our economic process.

My Fellow Liberians: We are moving forward. The best days are coming. The future belongs to us because we have taken charge of it. We have the resources, and we have the resourcefulness. We now have the right Government. And we have good friends, good

brothers and sisters who will work with us. Our people are already building our roads, cleaning up our environment, creating jobs, rebuilding schools, bringing back water and electricity.

We are a good people; we are a kind people. We are a forgiving people - and we are a God-fearing people.

So, let us begin anew, moving forward into a future that is filled with promise, filled with hope!

"In Union Strong, Success is Sure! We cannot - fail. We must not - fail. We will not - fail."

God bless you all - and save the Republic.

I thank you.

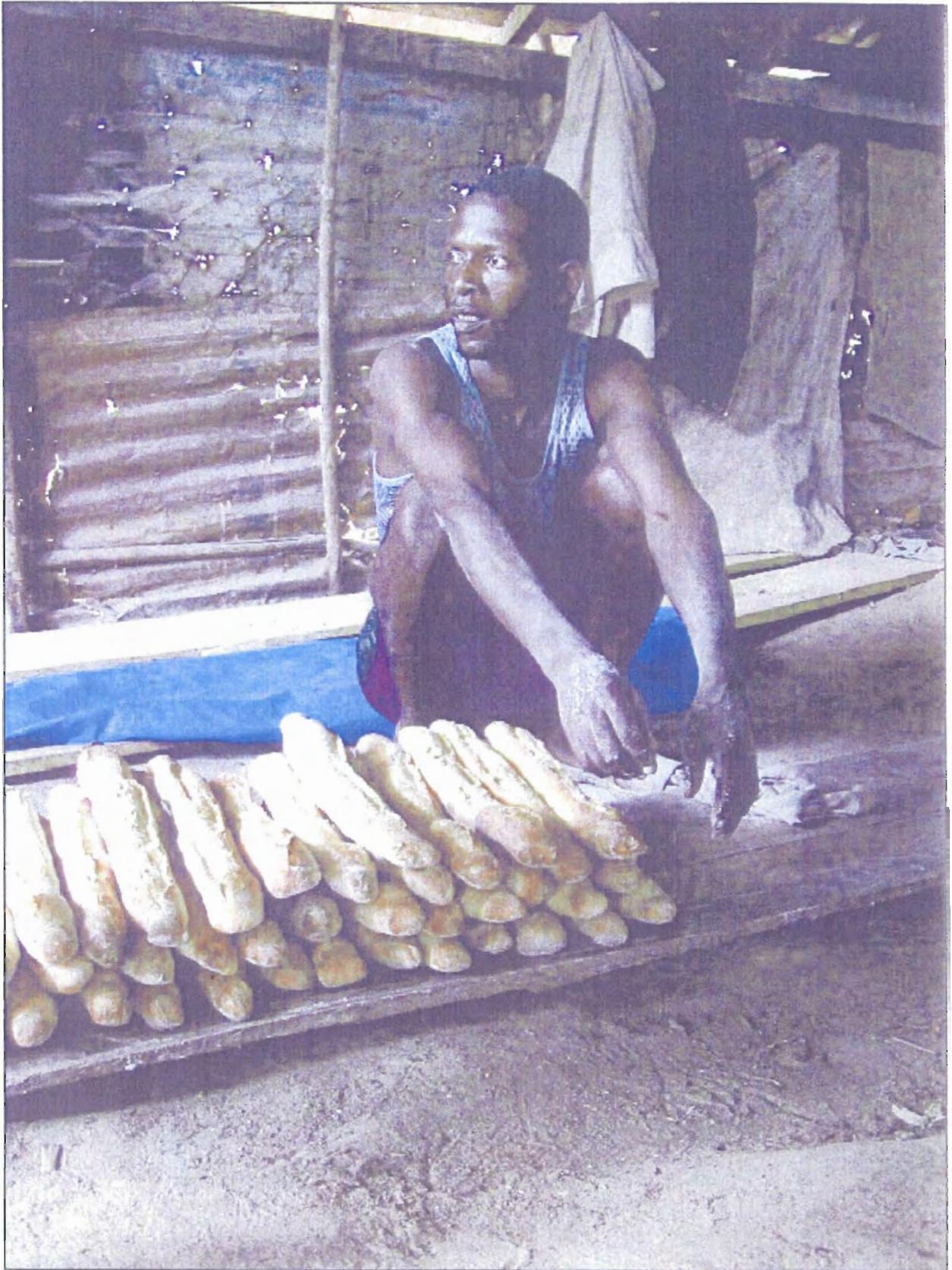
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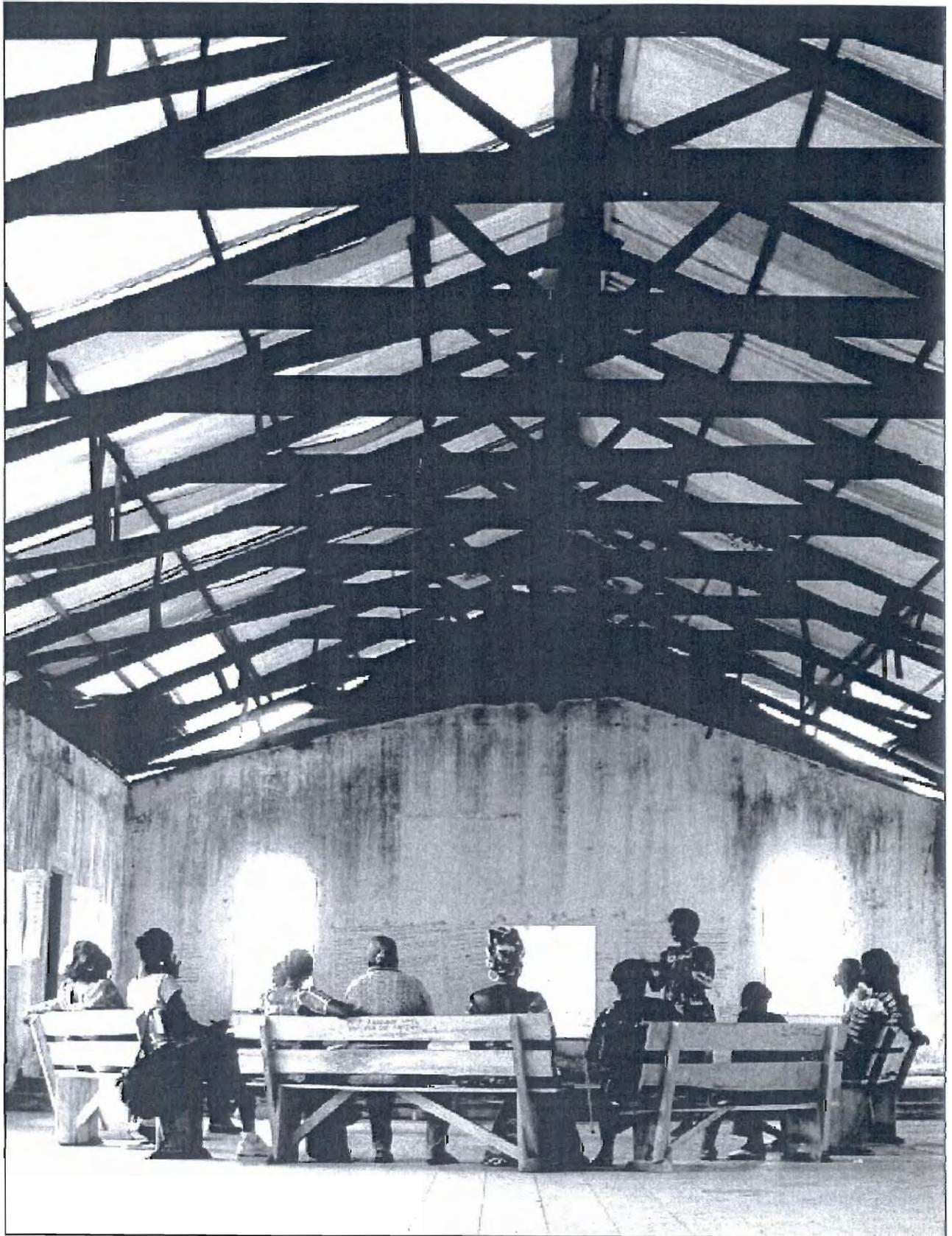
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Annex *2*

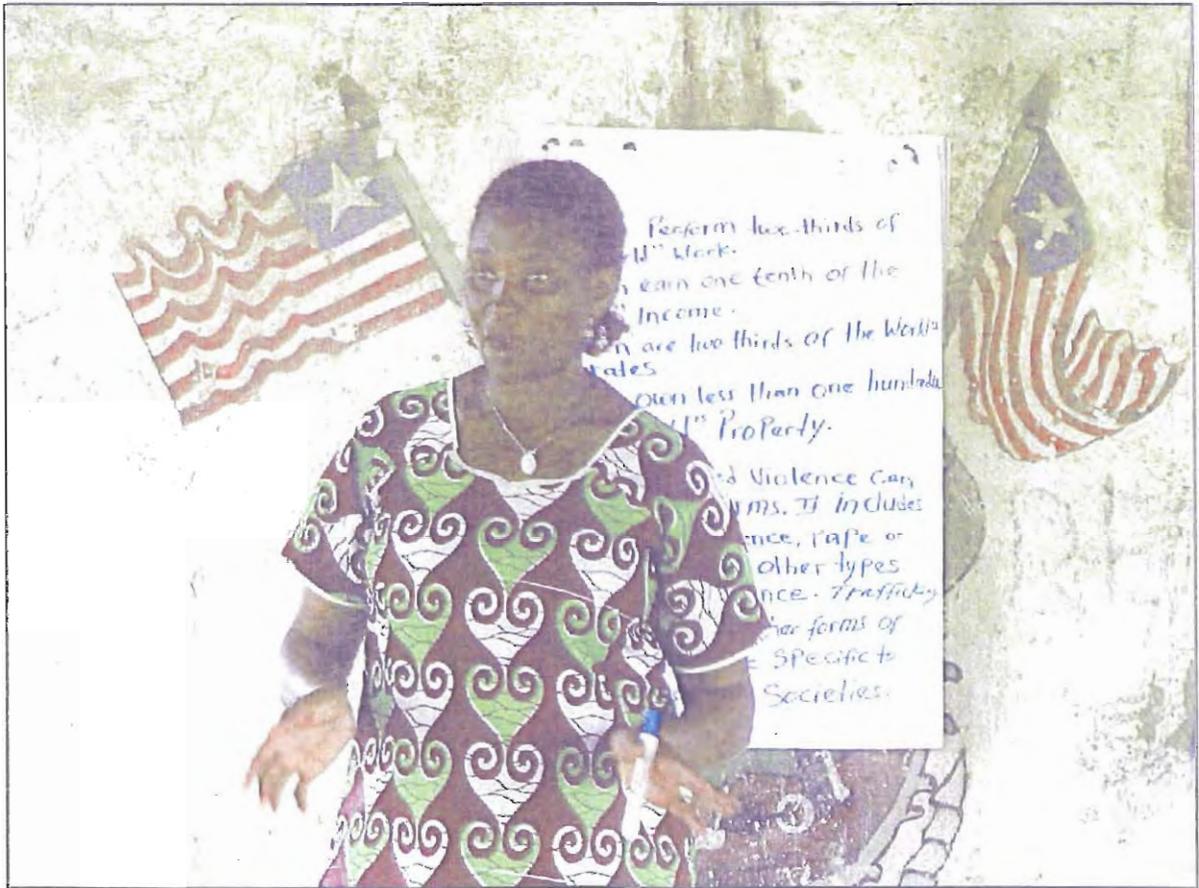
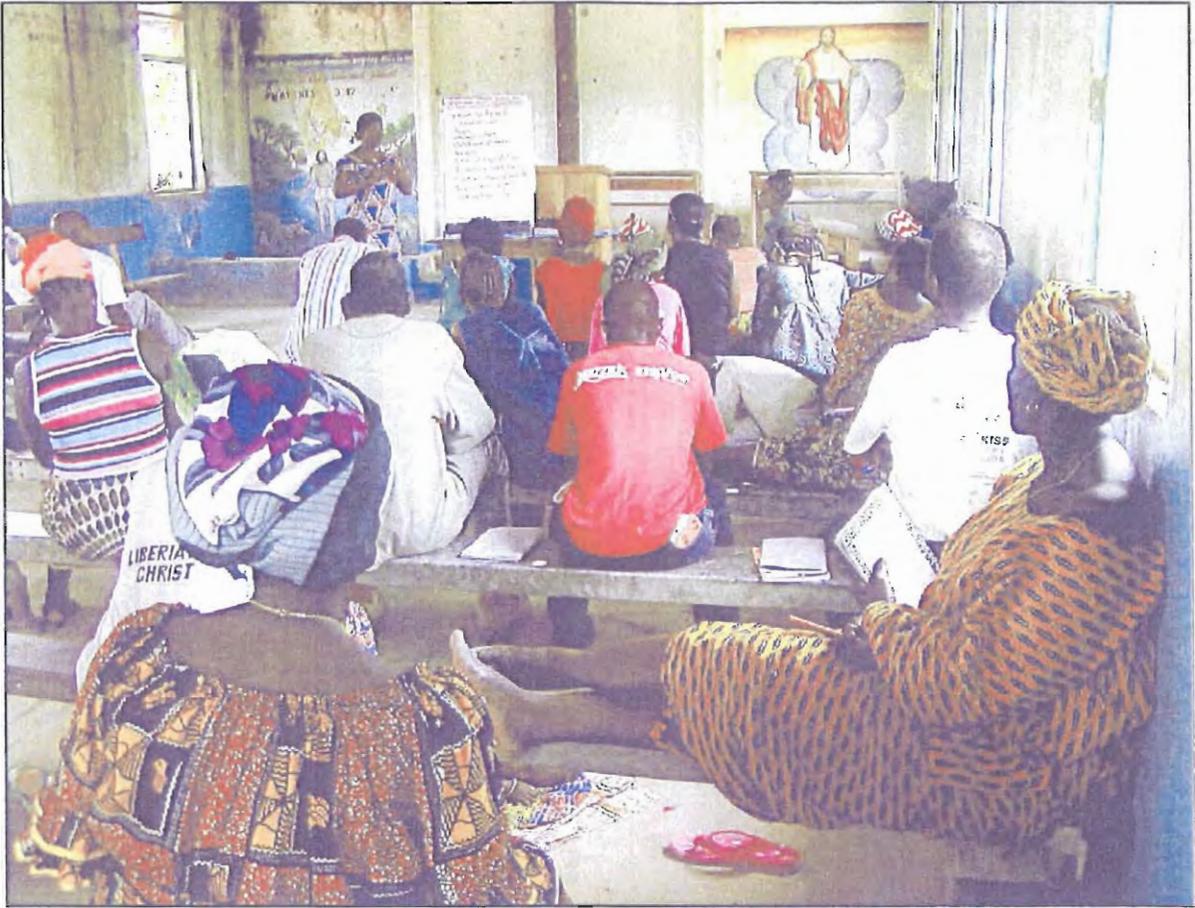
GLIMPSES OF LIBERIA TODAY













Annex 3

LIBERIA POWER SYSTEM DEVELOPMENT

WORLD BANK  
EUROPEAN COMMUNITY  
LIBERIAN ELECTRICITY CORPORATION

# The World Bank Program in Liberia

## Liberia's Context

Currently in a time of transition, Liberia still has outstanding humanitarian needs while it begins the long path of reconstruction. Nonetheless, Liberia is at the beginning of a new phase in its history. The Comprehensive Peace Agreement signed in Accra, Ghana in 2003 still holds with the support a 15,000 strong UN peacekeeping mission. The conclusion of recent elections gives the new government a strong mandate for change. The World Bank stands ready to support Liberia in this crucial time of transition.

## The World Bank's Engagement (April 2003 – December 2005)

Liberia has been in non-accrual status with the Bank since 1987. It currently has a Watching Brief Status, allowing the Bank to carry out "additional activities" at the government's request and subject to Board approval. In early 2003, the Bank's Board of Executive Directors endorsed the Liberia Country Re-engagement Note (CRN), which outlined a plan for Bank reengagement within the Results Focused Transitional Framework (RFTF). As envisioned by the CRN, Bank financing is provided by a \$4 million Low Income Country Under Stress (LICUS) Implementation Trust Fund, and a US\$25 million grant from surplus established and administered by the International Development Association (IDA) - Trust Fund for Liberia (TFLIB).

The funds are used to finance technical assistance (TA), emergency works and longer-term development plans in areas in which the Bank is playing a leading role: economic management, community empowerment, infrastructure, and institutional capacity-building through support of agencies participating in the RFTF.

**Economic management** includes work in financial management, procurement and forestry.

*Financial Management.* The objective of the TA is to strengthen public financial management through improvements in budget execution. Accounting and auditing activities include assisting the Ministry of Finance (MOF) and the NTGL as a whole to prepare monthly accounts, realistic cash flow projections, annual accounts, a new audit law, and a de-concentrated and decentralized financial management system. One international consultant and his national counterpart have been posted in the MOF since April 2005. Their activities, combined with those of other donors, have allowed the Bank to rapidly identify risks associated with the deterioration of economic governance. An ambitious and robust Governance and Economic Management Assistance Program (GEMAP) was drafted in coordination with the UN, EU, ECOWAS, AU, US, IMF, and the WB and was signed by the National Transitional Government of Liberia and these agencies in September 2005. It received the recognition and support of the Security Council in its September 2005 meeting.

*Procurement.* The objective of this technical assistance is to strengthen public procurement as one part of the fiduciary framework essential for re-establishing public confidence in the Government of Liberia. Activities included the development of the Interim Public Procurement Policy and Procedures (IPPPP), which regulate the public

## The World Bank Program in Liberia

procurement process in the interim period prior to the enactment of the Public Procurement Law. The second phase of the technical assistance included the drafting of the Public Procurement and Concessions Act, which was submitted to the NTLA for ratification in August 2005 and was passed into law. Multiple training sessions initiated over past months are expected to continue. All public contracts and concessions are subject to the rules and regulations of the IPPPP, as stipulated in Executive Order #3. The Public Procurement and Concessions Act is expected to come into force in January 2006, and will replace the IPPPP.

*Forestry.* Work includes the development of a medium-term forestry sector reform program that would allow the lifting of the UN-imposed timber sanctions. Within that framework, assistance to the NTGL, the Forestry Development Authority (FDA), and local NGOs aims to ensure that: (i) forest legislation is adequate, with loopholes closed and key regulations in place for reform; (ii) basic forest institutions and governance systems are functioning; (iii) old concessions are withdrawn, and new transparent competitive procedures for award of new concessions are established; (iv) the forestry sector contributes to the national and local economies; and (v) productive forests and protected areas are managed.

This TA also assisted the completion of the Forest Concession Review. The review recommended that all existing concessions are withdrawn and new concessions are awarded following due process as stipulated by law. Findings were presented and validated at a sector-wide workshop in June 2005.

**Community empowerment** emerged as a priority in the Bank-supported Rapid Social Assessment (RSA) prepared in early 2005 in collaboration with the UN. Since then, the Bank's Board of Executive Directors approved a \$6 million TFLIB sub-fund for community empowerment projects to be managed by the Liberia Agency for Community Empowerment (LACE) established as a national agency. LACE is entrusted with the government approved mandate to promote the CE approach to development at the national level through proactive coordination and awareness-building activities in partnership with government and civil society. The TFLIB grant will support a minimum of 100 community-based sub-projects to rehabilitate primary schools, clinics, water and sanitation facilities, cassava and other agricultural products projects, as prioritized by the respective communities. The size of each individual sub-project ranges from \$5,000 to \$75,000. As of December 2005, 25 projects were identified and 13 projects in three counties were launched. Actual infrastructure and rehabilitation work in the first 13 projects is expected to commence before the end of the year. All 100 (or more) sub-projects are expected to be finalized by mid-2007. Most or all of the 15 counties of Liberia are expected to benefit from the project.

**Infrastructure** needs in which the Bank is engaged include transport (ports, roads, and airport), water and sanitation, electricity, and telecommunications. Recent technical assessments were completed for (i) the port of Monrovia; (ii) two of the country's main road corridors (Monrovia-Buchanan and Monrovia-Gbarnga); (iii) Roberts International Airport; (iv) the urban water supply system in and outside of Monrovia; (v) the power sector in Monrovia; and (vi) the telecom sector. These assessments are near completion

## The World Bank Program in Liberia

and will allow the identification of emergency rehabilitation works as well as short and medium-term development plans.

The Bank, in collaboration with the EU, has committed \$2.5 million for renovation of the Monrovia urban water supply. An additional \$6.5 million from TFLIB have been committed for emergency works in infrastructure and will finance urgent needs as identified by the technical evaluations. Presently, the tentative allocation of funds includes selective works at the Port of Monrovia, Roberts International Airport, the water production system and possibly the solid waste sector of Monrovia. The Bank reserves every right to re-program available funds as suitable and in response to key developments in the political and economic arena (e.g. compliance with the GEMAP).

**Donor coordination** is an area in which the Bank has been actively involved since the First Reconstruction Conference on Liberia. The RFTF Implementation and Monitoring Committee (RIMCO) issues policy directions for all assistance to Liberia and ensures allocation of resources based on priority needs, is headed by the Chairman of the NTGL and sub-chaired by the UN and the World Bank. The Bank also supports RIMCO's Secretariat – the RSO Office, which coordinates all RIMCO activities and monitors progress under the various clusters of the RFTF. Within the RFTF, the Bank is one of the two co-chairs of Clusters eight (infrastructure) and nine (economic management).

### The Road Ahead

The Bank continues to work with other development partners and the NTGL towards the development of a strong program of reform, which IDA can support as part of the arrears clearance process. Given that elections have resulted in the introduction of representative government and that the GEMAP directly targets weaknesses in economic governance it is the Bank's hope that Liberia will graduate from its current non-accrual status. Arrears clearance would restore normal relations between Liberia and the international financial institutions and would renew access to regular IDA resources and subsequent HIPC debt relief. The timeframe for arrears clearance will depend on coordination with other creditors and continued political stabilization. The Bank is encouraged by the recent elections and remains an engaged partners in Liberia's reconstruction.

Current World Bank Financing of Liberia Program (rounded to nearest \$100,000)

Activity	LICUS	TFLIB	Total
Economic Management	USD 2.1 million	USD 4.5 million	USD 6.6 million
Infrastructure TA	-----	USD 5.0 million	USD 5.0 million
Infrastructure Investment	-----	USD 8.0 million	USD 8.0 million
CEP	USD 1.2 million	USD 6.0 million	USD 7.2 million
Donor Coordination	USD 0.8 million	-----	USD 0.8 million
GDLN	-----	USD 1.5 million	USD 1.5 million
Legal System Reconstruction	USD 0.7 million	-----	USD 0.7 million
<b>Total</b>	<b>USD 4.8 million</b>	<b>USD 25.0 million</b>	<b>USD 29.8 million</b>

An approximate USD 5.2 million in additional funding is expected from LICUS to support GEMAP, Donor Coordination, and a forthcoming Leadership Program, bringing the total to USD 34.0 million.

For information about World Bank assistance in Liberia, please refer to [All Projects](#).

# THE WORLD BANK

## PROPOSAL FOR RE-ESTABLISHING POWER SUPPLY IN MONROVIA, LIBERIA<sup>1</sup>

### Sector Background

Prior to the start of the war the power system supplied 39,000 customers, producing some 70MW of peak load and 430 million kWh of electricity. The electricity was supplied by the Government owned Liberia Electricity Corporation (LEC) which owned and operated an interconnected system of diesel and hydro generation, a high voltage transmission grid and a medium voltage distribution system in Monrovia, outlying suburbs and nearby communities. The LEC also owned and operated a number of isolated small electricity systems in rural communities throughout Liberia. During the war years the electricity system was almost completely destroyed.

In the late 1990s and up to early 2004 the LEC operated a small portion of the remaining system to supply a few hundred customers in the Monrovia area. These attempts at rehabilitation of the electricity system were unsuccessful and were plagued by theft of fuel, electricity and allegations of corruption within the LEC. Customer service and reliability were poor and tariffs were high. The operation was very inefficient.

The LEC is still legally in existence but has no generation, no functioning delivery system, no customers and no revenue. The expertise of its workforce has been lost due to aging of the staff and the fact that many people have left the employ of the company during the conflict. Re-establishment of an electricity system in Liberia will require construction of a new electricity system and removal of the remnants of the old system as well as efficient and professional operations management.

### Development Strategy.

There is consensus among the stakeholders on a gradual approach in building up generation capacity and electricity services in Monrovia. For the short term the system could consist of 10-15 MW of diesel generation installed at the existing Bushrod Island generation site, and a newly constructed medium voltage distribution system to deliver the generated electricity to customers within parts of Monrovia. In order to facilitate the supply to the load growth in and around Monrovia, the medium term evolution of the system would require a larger generation plant at Bushrod Island (about 50 MW) which would utilize lower cost heavy fuel. Also required in the medium term is a high voltage transmission grid for the Monrovia area.

For the longer term, it is envisioned that the old Mt. Coffee hydro plant (40-50 MW) would be rebuilt to provide lower cost hydro electric energy and that the transmission grid would be extended to the Mt Coffee as well as outlying larger communities throughout Liberia. Before Mt Coffee plant can be rehabilitated, which can generate electricity during

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<sup>1</sup> Internal World Bank Policy Note, provided for use by USAID in preparation for the February 2006 mission to Liberia.

the rainy season only, enough thermal capacity has to be added to the power system to provide the necessary firm power supply capacity. Subsequently, extension of the Liberian transmission system to tie into the developing West African transmission grid will further enhance the supply capacity and reliability of the Liberian electricity system and provide access to lower cost generation from Cote d'Ivoire, Ghana, or even Nigeria.

The National Transitional Government of Liberia (NTGL) appointed a Special Executive Committee on Electricity (SECE), in 2004, to review the options for rehabilitation and development of the electricity system.

### **Short-term Options**

There is consensus that the power systems can only be developed through private sector participation. The main contribution of the private sector would be, in the beginning, establishment of good managerial practices and efficiency. There are differing views, however, as to how fast to move with the private sector participation. One option is to maintain the vertically integrated electric utility structure, given its very small size in its initial phase of development, while being managed by a competent private operator under a management contract.

Another option consists of the unbundling of the sector in separate generation, transmission and distribution entities. The generation company could be privately owned and operated and sell power to the system via power purchase agreements. The transmission grid could be owned by a partnership of government and private power entity. The distribution system could be owned and operated by a private entity or divided into a number of distribution areas each individually owned and operated by a private enterprise company.

### **Present Approach**

The SECE worked very closely with the European Union (EU) and, upon their advice, it recommended unbundling of the electricity system. The intention is for the power generation to be supplied by one or more privately owned and operated plants. The medium voltage distribution system in and around Monrovia would be divided into six to ten concession areas, each of which would be privately owned and operated. Within each distribution concession area there would be a further division into a larger number of distribution sub-concession areas which would in turn be privately owned and operated by numerous individuals or companies. The high voltage transmission grid and related substations would be owned and operated jointly by a partnership of the government and all the distribution system concessionaires. The end use customers would prepay the sub-concession owners for the electricity. They would in turn prepay the concession area owners who would then prepay the generating company. The above approach for development of the electricity system was approved in 2005 by the NTGL.

### **PSP in Post-Conflict Countries**

Bank experience with a large number of post-conflict countries indicates that the private sector is reluctant to undertake financing of this type of capital-intensive infrastructure so shortly after the hostilities have ceased due the very high costs and relatively high risks. It has proven more practical for Governments to pursue transitional arrangements such as

leases and management contracts until such time, normally 5-7 years, that the private sector feels more comfortable with the situation and relevant legal and regulatory frameworks have been put in place. Government, through donors, will provide the funds needed for capital expansion.

### **Alternative Approach**

The approach currently pursued by SECE is not consistent with the above Bank experience. It is considered doubtful that genuine power operators would engage in financing the required investments in the sector at this stage, even with guarantees from international financial institutions, such as the Bank's Partial Risk Guarantee. Furthermore, the proposed scheme is difficult to administer and, in simpler form outside of Africa in countries with well established electric systems and electricity sector legislation, has not functioned as anticipated. The proposed scheme does offer the potential for small private enterprise funding in distribution, but it is accompanied by more complex electricity sector coordination issues which would also require significant new legislation. It is also doubtful, given the size of the power sector in Liberia, that such a scheme would result in cost savings, but to the contrary, in a higher cost of power.

While the Bank does not necessarily disagree with unbundling of the power sector as a long term objective, it proposes to consider an alternative approach as a transitional arrangement, relying on public sector financing of the transmission and distribution infrastructure while leveraging private sector participation through leasing arrangements for power generation and contracts for efficient management of operations.

### **Project Proposal**

In order to provide a reliable and efficient electricity supply to the population in Monrovia, while benefiting from previous experience with the restructuring of power systems in Africa, the following scheme is proposed:

- **Power Generation.** Lease of 10-15 MW of generating capacity, to be operated and maintained for the term of the lease (three to five years) by the leasing company. The leasing company will be responsible to contract for the procurement of the diesel fuel from the foreign oil companies operating in Monrovia. The leasing company would also guarantee the efficiency of the generating units. Preferably, this would be a single contract where the leasing company would join with a foreign oil company operating in Monrovia, to present a single contract for the production and sales of kWh to the distribution company. Financing institutions (FI), such as the EU, WB or others, would finance: (i) the mobilization, demobilization and commissioning of the diesel units; (ii) transportation of the units and first month lease payment; and (iii) a Guarantee (or a letter of Credit) to secure the lease payment and the fuel supply payment for a period to be agreed.
- **Transmission, Distribution, and Customer Service.** The transmission and distribution system need to be rebuilt under a single contract for supply and installation. The operation of the rehabilitated network would then be let out to a private operator under a Management Contract (MC) for a period of about five years and with periodic reviews of the operator performance. Metering for energy consumption is to be carried

out by “Prepaid Split Meters”, (about 15,000 meters) which have proven to be harder for stealing energy, and easier for the utility to control theft. The FI would finance: (i) the re-building of the network; (ii) spare parts for the network and substations; (iii) supply and installation of the pre-paid split meters and all associated equipment; (iv) the Management Contract for a brief period of about three month, after which the revenue from the power system should pay for the MC; and (v) tools and equipment for the operation and maintenance of the power system.

### **Leasing of Generation.**

Leasing of power generation is usually somewhat more costly than outright purchase, but it has a number of distinct advantages for the Liberia situation. With such a great need for public funds to rebuild the country’s basic infrastructure, leasing of power generation would free up precious capital for other uses. The lease option would enable relatively short period for installation and commissioning of generation equipment and provides a more flexible vehicle to respond to demand growth. Furthermore, theft of fuel (diesel) has proven to be a costly problem for utility run facilities while this would be less of an issue under a well-managed lease arrangement.

### **Investment Requirements**

The investment requirements for a 10-15 MW power supply scheme for Monrovia is presented in the table below and amounts to some US\$20 million. It has been assumed that the cost of fuel and the leasing cost of generating equipment will be born by the consumers through the tariffs, the mobilization, de-mobilization and transportation of the diesel units, which are usually paid upfront, are capitalized, and the cost of the management contract is paid from the operating revenues. Only the first three months are capitalized.

<b>Description</b>	<b>Estimated Costs (US \$ Million)</b>
Leasing of generating units and site preparation	2.0
Transmission and Distribution	9.0
Metering and Associated Equipment	1.5
Management Contract (first 3 month fees)	1.0
Tools and Equipment	2.5
Training and Capacity Building	1.5
Environmental Mitigation Plan	1.0
Contingencies and working capital	1.5
<b>Total</b>	<b>20.0</b>

### **Implementation Plan**

It has been estimated that the completion of the above scheme would at least take 12 months, starting with the preparation of the contract documentation for a power generation lease and an environmental mitigation plan for clean-up of various sites. The bidding documents for the transmission and distribution works, which are on the critical path, have

already been completed and bidding could commence as soon as funding has been secured. The terms of the management contract has also been completed.

### **Electricity Tariffs.**

Past LEC tariffs, before the oil price shock of 2005, were set at 25 cents/kWh while the current rate of privately generated electricity is about 75 cents/kWh. The cost of fuel is a critical factor in the tariff calculation and, based on prevailing diesel oil prices, the rate for consumers have been tentatively estimated at 45 cents per kWh. This level of tariffs would come down as the size of the power sector continues to grow and more economical electricity generation schemes (or imports) are introduced to the power system.

### **Supplementary Issues**

Retrenchment of LEC staff. It is assumed that the private operator would recruit about a third of the 450 LEC staff, leaving some 350 staff to be compensated. *Needs some further work*

LEC US\$114 million debt. Details on terms and conditions are not known but assuming standard market terms amortization servicing this debt would add some 20 cents/kWh, raising the estimated tariff to 65 cents/kWh. Such a rate may discourage customers from connecting to the national power system, thereby reverting to the inefficient and unreliable power supply system now existing, which would be very costly to the economy. It is therefore suggested to find alternative ways to deal with this LEC legacy rather than burdening the emerging new power sector.

Environmental remediation. Substantial environmental degradation at several facilities has been noticed, particularly at the generation site at Bushrod Island, largely due to oil and fuel spills. Remediation measures should be taken prior to rebuilding the facilities. A provision has been made in the investment plan for further study and implementation of such measures.

# Electricity Supply to Monrovia

2 February 2006

Presentation to Donors  
by European Commission

# Electricity Sector Reform

- I. SECE-EC long-term electricity sector reform programme
- II. Government production and distribution tender
- III. Multi-donor emergency power supply scenarios

# Summary

I. SECE-EC long-term electricity sector reform programme

II. Government production and distribution tender

III. Multi-donor emergency power supply scenarios



**Reintegration Programme for Returnees and Displaced  
People of Liberia**  
**EDF funding Liberia 8.ACP.LBR.002**

**An EC-Programme bringing development in a post crisis  
environment**

**Where emphasis is given to self-sustainable economical growth and social impact.**

**Self-Sustainable Development:**

**Electricity Supply in Monrovia: Liberalisation of the sector**

**Water Supply in Monrovia: Liberalisation of the sector**

**Local Community Development: Self-Sustainable projects**

**Health: from emergency to long-term development**

## **Restarting of electricity supply with LEC (end 2003)**

- Repair of damaged power supply (2MW at Bushrod Island) and transmission lines
- Supply of fuel for 3 months of production (revolving fund).

**Supply + recovery lasted for less than 5 months**

### **The Management study:**

***Stated as main issues of the previous power supply:***

- Poor involvement of the present public body management
- A very high theft level
- A total lack of public funding for rehabilitation of a completely broken down equipment

***But noticed also that in Monrovia:***

- Private IPP's produce & distribute electricity (>0.75\$/Kwh) on a sustainable way
- The previous LEC tariff of 0.25 USD/Kwh is commonly accepted as a fair price
- Considering prerequisite of good management, with 0.25 USD/kWh as end-user price, electricity can be supplied in a sustainable way

**Several reform scenarios have been presented from which SECE chose a liberalisation scenario that addressed all issues identified**

## The selected “liberalisation of the electricity supply” addresses:

- the poor management through liberalization in 3 types of operating **licenses** all levels **working on commercial basis**.
- the high theft level is to be addressed through **compulsory advance payment** of metered electricity **at each supply level** as prerequisite for any electricity delivery
- the lack of funding for rehabilitation will be partly addressed by tendering for **private participation** for the electricity production and supply licenses **(concessions)**

## **The institutional reform of the electricity supply**

### **1) Production concession**

First tender for 20 MW Build Operate and Transfer contract (10 years)

Additional tender when the demand reaches 80% of the production capacity.

Tender to be launched by Government

### **2) Transmission operation**

HV-grid operation around the town

Holding company, shares: 20% Gvt (ex LEC assets), 40% producer(s) , 40% distributors

Grid is foreseen to be rehabilitated on EC funding (grid rehabilitation works tender)

Holding company recruits operator and regulator (management contracts)

### **3) Six Independent Distribution Concessions**

Buy MV- and distributes LV-electricity, preferably over sub-concessions

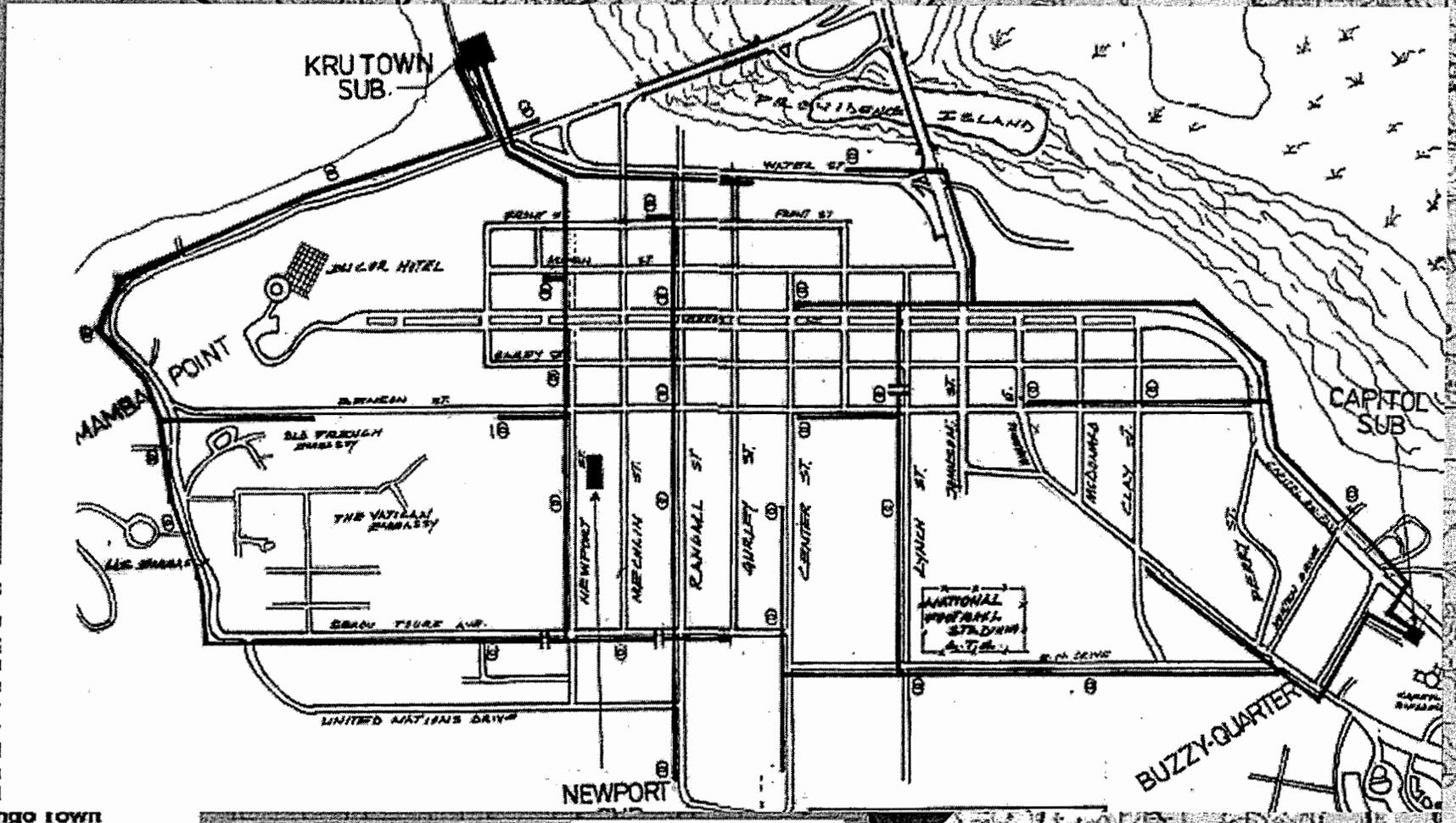
Rehabilitation on EC funding with priority to less attractive concession (Paynesville towards central Monrovia)

Tenders are to be launched by Government as soon as rehabilitation tender is awarded

EC assistance with overall legal framework; draft tenders and concession agreements

Original SECE proposal

Rehabilitation of electricity supply in Monrovia



Zone C

- 01 Nev
- 02 Log
- 03 Clai
- 04 We
- 05 Cer
- 06 Cer
- 07 Sinl
- 08 Lak
- 09 Old
- 10 Congo town
- 11 Paynesville
- 12 Gardnersville
- 13 New Georgia
- 14 Barnersville
- 15 Johnsonville
- 16 Caldwell

# Option 1 - TIMELINE

<b>SECE-EC sustainable electricity program</b>	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	
<b><u>HV + MV grids works</u></b>		EC participation: €6.3 million (possibly more)																	
Publication	█																		
Tendering process		█	█	█															
Contract awarding					█														
Works							█	█	█	█	█	█	█	█	█	█	█	█	█
<b><u>Addapting of legal issues</u></b>		EC participation: €0.5 million																	
Analysis of proposals	█																		
Implementing of legal issues		█	█																
<b><u>IPP tender</u></b>		Private participation: €20-25 million																	
Preparation of tender	█																		
Tendering process		█	█	█															
Contract awarding					█														
Works							█	█	█	█	█	█	█	█	█	█	█	█	█
<b><u>Concession distribution tenders</u></b>		Private participation: €1 to 5 million																	
Preparation of tender	█				█														
Tendering process						█	█	█											
Concession awarding									█										
Works										█	█	█	█	█	█	█	█	█	█
<b><u>First supply of electricity</u></b>													█	█	█	█	█	█	█

# Summary

I. SECE-EC long-term electricity sector reform programme

II. Government production and distribution tender

III. Multi-donor emergency power supply scenarios

# Government Tender (BNEDT)

- Government launched a tender for production of 2x10MW and installation of a part of the networks (MV and LV in Bushrod, Central Monrovia, Sinkor)
- Two bids have been received:
  - **Proinsa:** USD40 millions ( $\pm$  USD15 millions distribution equipment),  $\pm$ 15 CT/kWh from IPP
  - **Afipco:** USD 33.5 millions ( $\pm$  USD14millions distribution equipment),  $\pm$ 21 CT/kWh from IPP

# BUT

- Some clarifications have to be made on the proposals
- The tender does not foresee the terms of operation of the network and supply of electricity to consumers
- The governmental guarantees for purchasing the whole electricity load (25 millions per year) is not feasible. (Government budget likely insufficient)
- No incentives for payment collection; no system for covering possible “before meter theft”
- There are no effective formulas for price revision, particularly regarding the fuel price variation

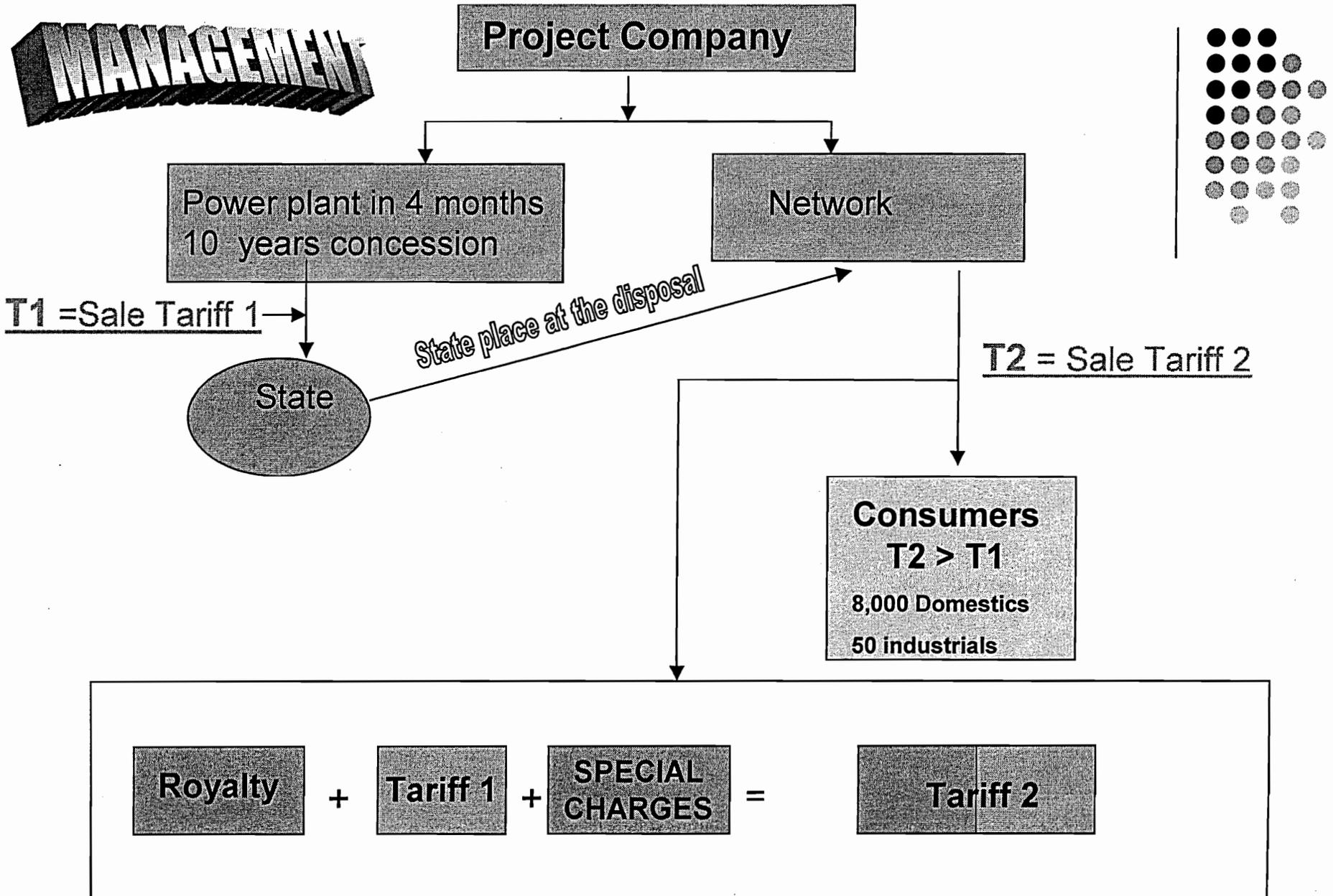
# Next steps (1)

- Clear analysis should be made about what is proposed, possibly with clear request for reply on missing bill of quantities for the distribution (mainly for Proinsa)
- May be Afipco should be requested to provide clear financial details

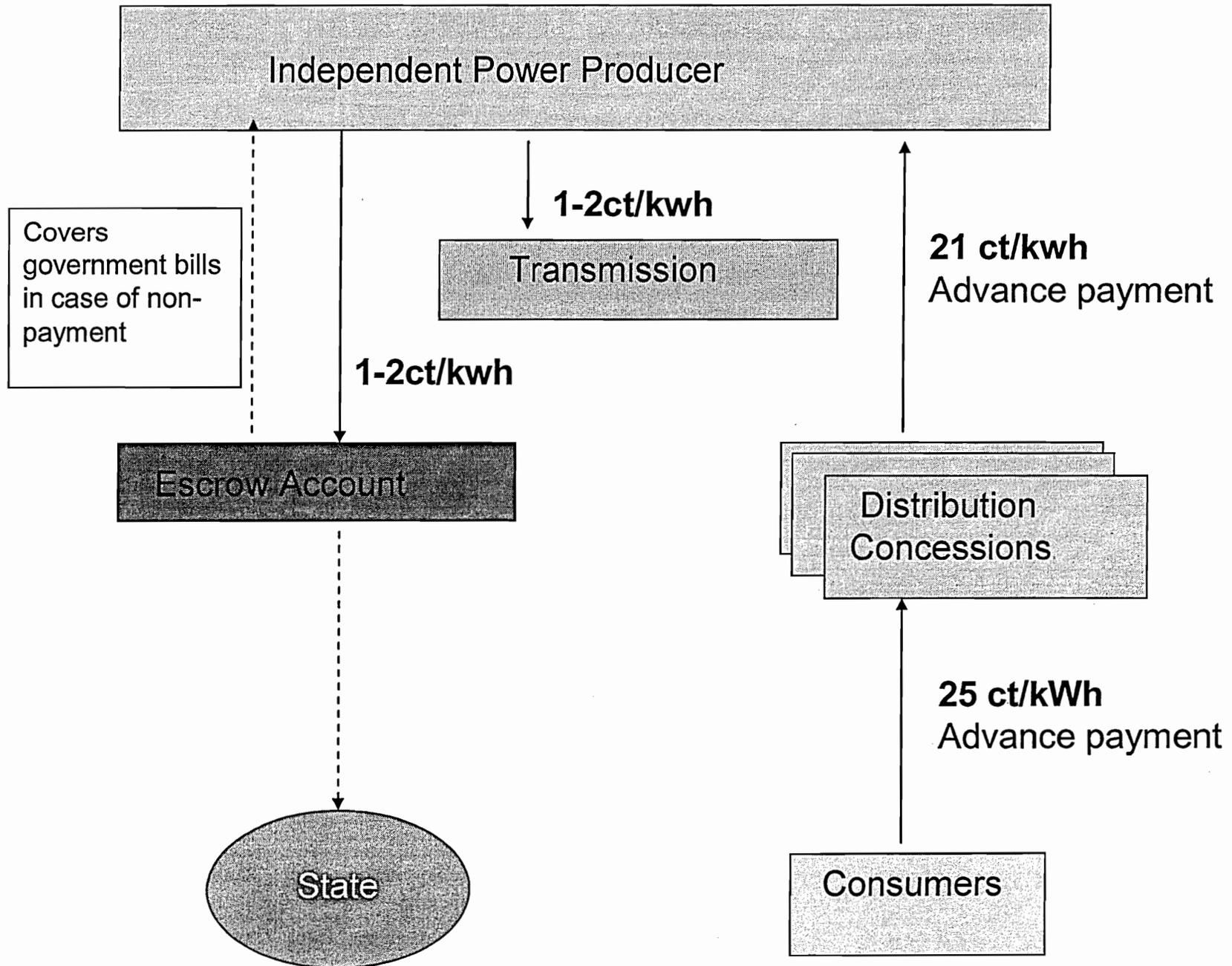
# Next steps (2)

- Concerning distribution and guarantees: negotiation could be opened to propose
  - The distribution through concessions as foreseen in the SECE studies (launching of concession tender?)
  - Payment for the electricity to the IPP directly by the distribution concessionaires (no government power purchase agreement)
  - Royalties would be maintained in an Escrow account to cover non-payment of government bills

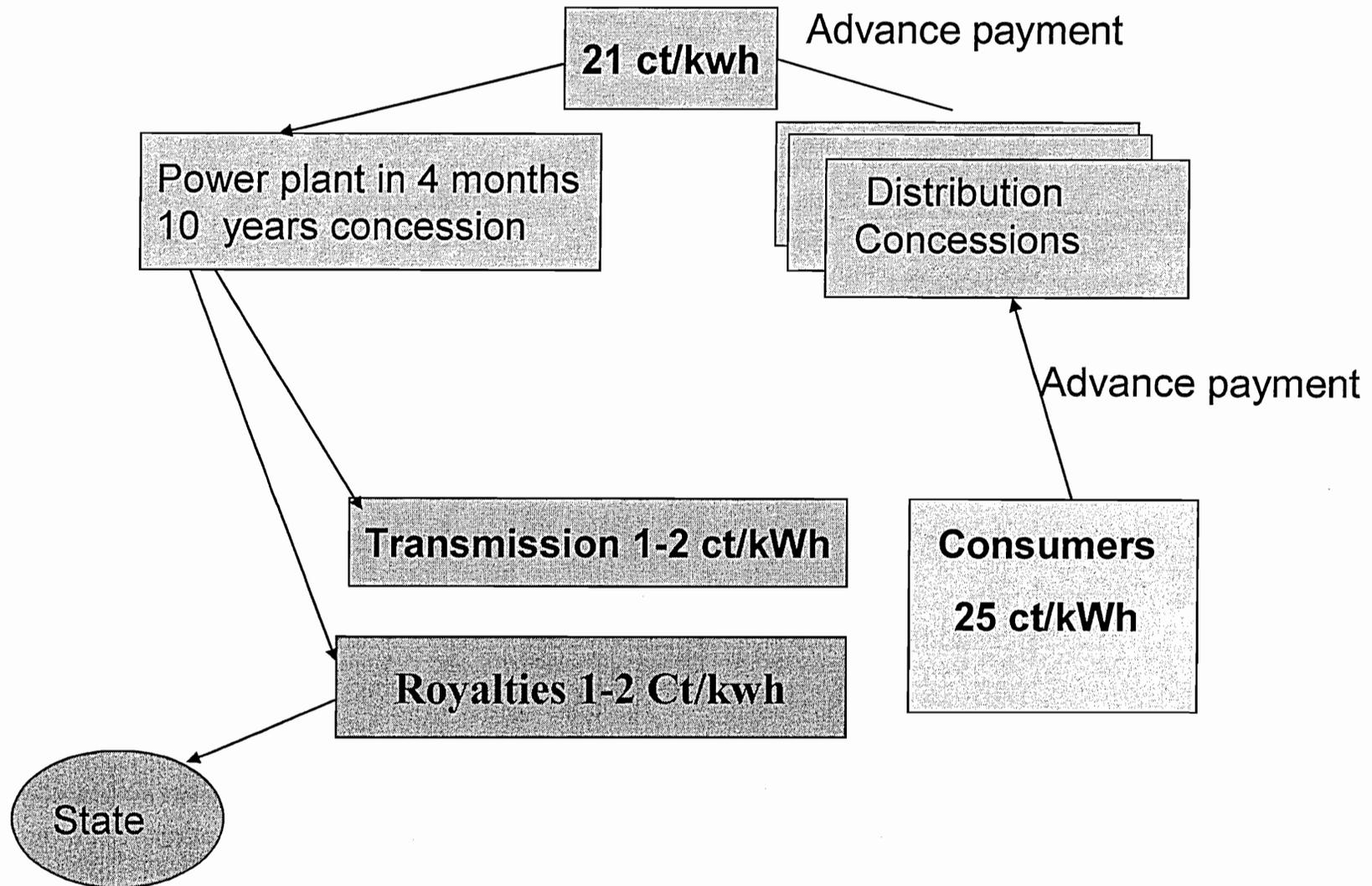
# Financial flow according to Government tender



# Financial Flows



# Revised financial flow for negotiations as proposed by EC



## Option 2 - TIMELINE

	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07		
<b>SECE-EC project with Gvt tender</b>																				
<b><u>Addapting of legal issues</u></b>																				
Analyse of proposals	█	EC participation: €0.5 million																		
Implementing of legal issues		█	█																	
<b><u>IPP tender</u></b>																				
Evaluation of the tender	█	Private participation: \$33-40 million including part of network																		
Negotiation and signature of the contract		█	█																	
Works on generation Units				█																
Works on distibution grids (MV+LV)				█																
<b><u>First concession distribution tender</u></b>																				
Preparation of tender	█	Private participation: €1 to 2 million																		
Tendering process		█	█	█																
Concession awarding				█																
<b><u>Power in Central, Bushrod, Sinkor</u></b>																				
									█											
<b><u>HV + MV grids (EC tender)</u></b>																				
Publication	█	EC participation: €6.3 million (possibly more)																		
Tendering process		█	█	█																
Contract awarding				█																
Works					█															
<b><u>Supply in other areas of the city</u></b>																				
										█										

# Summary

- I. SECE-EC long-term electricity sector reform programme
- II. Government production and distribution tender
- III. Multi-donor emergency power supply scenarios

## Option 3 – Buying generators to provide electricity in spot areas through Low Voltage lines (Bushrod, Krutown, Capital and Paynesville)

	EUR
<b>BUDGET</b>	
• Lease or buy generators : 1MW (4X 200-400 KW )	315,000
• LV lines	205,000
• Consumer premise equipment (meters) for 2000 consumers	635,000
• Fuel for 6 months	165,000
• Personnel to rehabilitate and operating generators	
• 2 international supervisors TA	220,000
• 6 local supervisors	36,000
• Personnel transmission and distribution	
• 2 international engineers for construction& supervisors	220,000
• 10 local mechanics	60,000
• Billing collection	
• 2 international accountant	220,000
• 12 local collection staff	72,000
• Office equipment	
• 6 PCs and printers	12,000
• Overhead (25%)	540,000
<b>TOTAL</b>	<b>2,700,000</b>

**This is for 4 spots. Doing 7 would cost EUR3.75 million.**

## Option 3 – Buying generators to provide electricity in spot areas

### TIMELINE

	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07
<b>Spot provision</b>																		
Recruitment of international TA	█																	
Shopping list for generators and LV		█																
Transport and delivery period			█	█														
Installation of power units					█													
Installation of network (LV)					█													
Supply of electricity						█	█	█	█	█	█	█	█	█	█	█	█	█

### ISSUES

- This would only give very limited power per customer (0.2 KW=lamp and TV)
- Beneficiaries will be localised 1 mile around substations without possibility of extension of coverage following demand
- Beneficiaries are chosen based on ease to serve instead of needs
- Difficulty of management and high risk of theft
- Crowding out existing private investment (existing IPPs in the city)

### ADVANTAGE

- Positive political benefit
- Power units could be used elsewhere in Liberia
- Low voltage lines can be eventually incorporated in long term project
- The 4 proposed neighborhoods are located around a sub-station that are already being rehabilitated as part of the EC long-term electricity provision project.

## Option 4 - Rehabilitate installed capacity at Bushrod Island and provide power two three main streets in central Monrovia

	<u>EUR</u>
<b>BUDGET</b>	
• Generators spare parts: 2X1MW	100,000
• MV lines	
• UN Drive	25,000
• Broad Street	25,000
• Bushrod Island Boulevard	100,000
• LV lines	65,000
• Transformer HV to MV (10)	60,000
• Consumer premise equipment (meters) for 1000 consumers	140,000
• Fuel for 6 months	400,000
• Personnel to rehabilitate and operating generators	
• 2 international supervisors TA	220,000
• 6 local supervisors	36,000
• Personnel transmission and distribution	
• 2 international engineers for construction& supervisors	220,000
• 10 local mechanics	60,000
• Billing collection	
• 2 international accountant	220,000
• 12 local collection staff	72,000
• Office equipment	
• 6 PCs and printers	12,000
• Overhead (25%)	439,000
<b>TOTAL</b>	<b>2,193,750</b>

## Option 4 - Rehabilitate installed capacity at Bushrod Island and provide power two three main streets in central Monrovia

### TIMELINE

	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	
<b>Installed capacity rehabilitation</b>																			
Recruitment of international TA	█																		
Shopping list for spare parts, LV, MV	█	█																	
Transport and delivery period			█	█															
Rehabilitation of power units					█	█													
Rehabilitation of network (LV and MV)					█	█	█												
Supply of electricity							█	█	█	█	█	█	█	█	█	█	█	█	█

### ISSUES

- Generators might be in poor conditions (tbc)
- Limited power supply in hours and in coverage (1000 customers in three streets)
- Sank costs of investing in old machines that can not be used in future
- Not sustainable

### ADVANTAGE

- Investment in transmission and distribution can be used for longer term project

## Option 5 – Install new generators at Bushrod Island and provide power two three main streets in central Monrovia

	<u>EUR</u>
<b>BUDGET</b>	
• Generators: 2X1MW	1,250,000
• MV lines	
• UN Drive	25,000
• Broad Street	25,000
• Bushrod Island Boulevard	100,000
• LV lines	65,000
• Transformer HV to MV (10)	60,000
• Consumer premise equipment (meters) for 1000 consumers	140,000
• Fuel for 6 months	400,000
• Personnel to rehabilitate and operating generators	
• 2 international supervisors TA	220,000
• 6 local supervisors	36,000
• Personnel transmission and distribution	
• 2 international engineers for construction& supervisors	220,000
• 10 local mechanics	60,000
• Billing collection	
• 2 international accountant	220,000
• 12 local collection staff	72,000
• Office equipment	
• 6 PCs and printers	12,000
• Overhead (25%)	726,000
<b>TOTAL</b>	<b>3,631,250</b>

## Option 5 – Install new generators at Bushrod Island and provide power two three main streets in central Monrovia

### TIMELINE

	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07
<b>New generators at Bushrod</b>																		
Recruitment of international TA	█																	
Shopping list for generatots		█																
Transport and delivery period of generators			█	█														
Installation of power units					█													
Shopping list for distribution		█																
Transport and delivery period of MV and LV			█	█														
Rehabilitation of network					█	█												
Supply of electricity							█	█	█	█	█	█	█	█	█	█	█	█

### ISSUES

- Limited power supply in hours and in coverage (1000 customers in three streets)
- Not sustainable

### ADVANTAGE

- Power units could be used elsewhere in Liberia
- Investment in transmission and distribution can be used for longer term project

## ***The streetlight project***

November 2004:

The Chairman, Mr Gyude Bryant, requests for a streetlight project in Monrovia  
An MOU is signed where

- The EC will support
  - rehabilitation of the streetlights
  - fund the powering of the streetlights by independent producers
- The Gvt will support the retrenchment of the LEC personnel in equivalent financial terms (institutional reform)

Supply contract.

Individual contracts for supplying of power to streetlight portions paid at  
 $0,25 \text{ USD/kWh} \times \text{number of lights powered} \times \text{hours of light} \times 0,25 \text{ kW/light}$

Rehabilitation.

By locally recruited team of retrenched LEC workers on Imprest Account base,

Transfer.

After restoration of electricity supply, the streetlights will be hooked on to the grids and handed over to the concerned municipalities.

# **OVERVIEW OF THE NEEDS AND INTERIM PLANS FOR THE ELECTRIC POWER SECTOR IN LIBERIA<sup>1</sup>**

**Report of the Electricity Transition Team  
Harry T. Yuan, Sr., Chairman**

## **1.0 INTRODUCTION**

Liberia has undergone nearly two decades of civil war that left every sector of the nation's economy in total ruins.

The election of Mrs. Ellen Johnson-Sirleaf as President-Elect following the October and November 2005 elections that the International Community acclaimed to be free, fair and transparent has ushered in a new era that has changed the political landscape of the country. This new era has now set the stage for the nation to embark upon the massive reconstruction and socio-economic development activities required.

The colossal task of nation reconstruction and development must however be meticulously conceived, planned and executed in a manner that will yield tangible, visible and measurable targets to meet set objectives while at the same time attracting the much needed external funding to hasten the process.

As a first step towards the development of a detailed road map for the reconstruction and development of the nation, a Transition Team has been constituted to assist in the initial formulation of a sound sector policy that will avoid pit falls that has the tendency to stifle growth and development and encourage corruption. Such policy and its adherence will set the basis for priority projects implementation and will provide the guide for the sector's development in a harmonious way thus reducing over spending of meager resource.

This Electricity Transition Team term of reference (TOR) includes amongst other things a sector assessment with the aim of identifying weaknesses and opportunities in terms of

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<sup>1</sup> Sent to IRG for use by USAID, by Harry T. Yuan, Sr., Managing Director Designate, Liberia Electricity Corporation.

resource availability and policy as well as advancing a vision for the commencement of sector reconstruction and development activities.

This document constitutes a report of the Electricity Transition Team.

## **2.0 OBJECTIVE OF THE SECTOR**

Electricity is an important and indispensable catalyst that stimulates the nation's socio-economic development. To provide this vital economic service the Liberia Electricity Corporation (LEC) was enacted by legislature to generate, transmit and distribute electricity throughout the length and breadth of the nation. However, the prolonged civil crisis disrupted all socio-economic activities of the nation including the supply of electricity.

The restoration of electricity supply is a vital prerequisite for the recommencement of any meaningful socio-economic development activity in Liberia. It is envisaged that the revitalization of this sector will be carried out in the following phases:

### **3.0 PHASED IMPLEMENTATION OF PROJECTS IN THE ELECTRICITY SECTOR**

#### **3.1 Phase 1: The Emergency phase (*Securing the Peace*) with duration of one year**

Following the civil crisis, our International Partners have expended resources to restore "The Peace" in Liberia culminating the holding of successful elections in October and November 2005, however, the election and installation of the Government does not in itself ensure that "The Peace" has been secured. The immediate restoration of basic services including electricity by the Government in collaboration with its International partners will engender trust from the citizenry, thereby further securing the "The Peace". In this regard, the Emergency plans in securing "The Peace" are as follows:

- That the Government continues to collaborate with the European Union (EU) on the liberalization of the electricity sector out of which effort the EU has committed funding for the liberalization of the

electricity sector and the below listed projects:

- i. Monrovia Street Lights;
  - ii. Monrovia Transmission and Distribution Rehabilitation.
- That the Government continues to further implement the BNETD Emergency Power Project for the City of Monrovia.
  - World Bank financed Emergency Power Projects for Liberia:
    - i. 15MW for Monrovia; plus the associated transmission and distribution;
    - ii. 3MW for three (3) Rural Communities; plus the associated transmission and distribution.
  - That the government in collaboration with International Partners source funding to undertake feasibility studies for renewable energy sources;
    - i. Mount Coffee Hydro Plant and the development of the St. Paul River Basin Hydro Projects;
    - ii. Mini Hydro, Solar, Biomass, and Wind Power Projects for Rural Areas.
  - That the government will seek donor funding for feasibility studies for Liberia's connection to the regional ECOWAS Interconnection Project known as the West African Power Pool (WAPP).

The implementation of this Emergency Phase will enhance a secure environment, and set into motion economic activities that will further secure **“The Peace”**.

### **3.2 PHASE 2: The short term with duration of two years:**

#### **3.2.1 Generation Expansion:**

- The generation will be expanded from 35MW to 65MW thermal in the Monrovia system and in the rural areas up to 10MW of thermal power;
- Detail engineering for Mount Coffee Hydro Project and contract award for the rehabilitation of the Mount Coffee Hydro Plant;
- Detail engineering for mini hydro projects in Rural Liberia and award of contract for their construction;

- Detail engineering and Contract award for the ECOWAS WAPP interconnection of the Liberian grid to the WAPP grid.

### **3.2.2 Transmission and Distribution Expansion:**

- In order to deliver the additional 30MW capacity there is a need to expand the transmission and distribution networks to additional load centers in Monrovia and outlying cities of Buchanan, Kakata, Roberts International Airport, Robertsport and Tubmanburg;
- In the rural communities, isolated networks will be developed to distribute the 10MW thermal power that will be developed based on economic and engineering viability.

### **3.3 PHASE 3: Medium/long term with duration of three to five years and beyond.**

- Expand the generation capacity in the Monrovia system to 105MW (additional thermal 40MW);
- Install at Mount Coffee the original capacity of 64MW or greater to be determined by the feasibility study;
- Install mini hydro capacity in the rural areas;
- Expand the transmission and distribution networks to develop a national grid that interconnects the Monrovia and Rural grids;
- Implement the project to interconnect the Liberian grid to the ECOWAS WAPP network.

## **4.0 CURRENT SITUATION OF THE ELECTRICITY SECTOR**

### **4.1 Status of infrastructure, equipment, and facilities:**

All generation plants (thermal, hydro) and Transmission and Distribution Networks are in an inoperable state and should be written off. New capital investments in plants and equipment are to be made.

### **4.2 Staffing levels:**

The LEC currently has a staff of **452 employees**. The Board of Directors of the LEC has approved a **75%** reduction in staff as follows:

- i) **235 employees** to be retrenched and paid off;
- ii) **118 employees** to be retired;
- iii) **99 employees** to be retained.

#### **4.3 Outputs and indicators:**

Due to the inability of the LEC to operate, the present outputs and indicators are given at the planning level:

- Ongoing “Liberalization of the Electricity Sector” studies reports; the NTGL and the European Commission (EC) in 2003 signed a Memorandum Of Understanding to implement the liberalization of the Electricity Sector;
- EU supported street lights project for the City of Monrovia; will purchase, install, and maintain **500 pieces** of street lights in the City of Monrovia at the cost of **USD 500,000.00** while the Government will provide equivalent matching funds for the retrenchment and other personnel costs at the LEC;
- The BNETD plan for the emergency power project for the City of Monrovia; will provide **20MW** with transmission and distribution systems and customer services system on an IPP (Independent Power Producers) basis. IPP will be operated for 10 years by the investors;
  
- The World Bank **15MW** Emergency Power Project for Monrovia and three Rural Community Supply Projects. The World Bank carried out a feasibility study for a **15MW** power plant to be built in Monrovia and three Rural Community Power Projects to be implemented in Buchanan, Kakata, and Gbarnga with a capacity of **1MW** each;
- Planned staff reduction program at LEC;
  - i) **235 employees** to be retrenched and paid off;
  - ii) **118 employees** to be retired;
- iv) **99 employees** to be retained.

- EU planned transmission and distribution rehabilitation project includes the rehabilitation of the Paynesville, Capitol and Kru Town Substations, the construction of 66kV lines from Bushrod to Kru Town, to Capitol, to Paynesville and to Bushrod via Gardnersville. 22kV distribution lines will be built in low economic areas.

#### **4.4 Existing problems:**

- Overstaffing;
- Lack of funds to meet current expenditure;
- Lack of funds for investment;
- Lack of funds to service local and external debts.

#### **4.5 Existing plans:**

- Reform of the Electricity Sector that will lead to “Liberalization of the Sector;
- EU street light project for the City of Monrovia;
- The BNETD planned emergency power supply for the City of Monrovia;
- The EU Transmission & Distribution project for the rehabilitation of a portion of the T&D network in Monrovia;

- World Bank financed Emergency Power Projects for Liberia
  - i. 15MW for Monrovia; plus the associated transmission and distribution;
  - ii. 3MW for three (3) Rural Communities; plus the associated transmission and distribution.
- Staff reduction plan as approved by the Board of Directors and the National Transitional Government of Liberia (NTGL).

#### **4.6 Existing policies:**

The LEC operates as a wholly Government owned public electric utility with the mandate to generate, transmit and distribute electricity throughout the length and breadth of the country.

**4.7 Results from Governance Reform Commission (GRC) review of mandate and functions:**

Results are not available for the LEC.

**4.8 Identify legal instruments:**

The Legislative Act that created the Liberia Electricity Corporation on July 12, 1973.

**4.9 Weaknesses and Opportunities:**

**4.9.1 Weaknesses:**

- Total collapsed of the key infrastructures of the Corporation;
- Lack of the ability to raise capital for investment;
- Unpaid internal & external debt;
- Inability of the Institution to change the mind set of its customers that public utility is not free;
- Power theft;
- Salary arrears for existing personnel of LEC (employees, retirees).

**4.9.2 Opportunities:**

- Take advantage of funds being provided by the EU for street lights and the rehabilitation of the T&D network;
- Take advantage of the budgeted GOL funds available for the reduction in staff at the LEC;
- Take advantage of the ECOWAS interconnection project WAPP for the interconnection of the Liberian grid to the ECOWAS WAPP grid.

**4.10 Areas of the Country where activities are undertaken:**

- Street light projects – Monrovia;
- Transmission & Distribution Projects wherever generation projects are provided in Monrovia;
- Emergency power project – Monrovia;
- Community base power supply for Rural Urban Cities;
- Quick Win Projects; Monrovia and Ganta, Nimba County;
- Mini Hydro, Solar, Wind and Biomass energy projects anywhere feasible in Liberia;
- Interconnection Project will provide power for use wherever transmission and distribution grid are available in Liberia;
- Mount Coffee Hydro project will be implemented in Harrisburg, Montserrado County. Electric power from Mount Coffee will be available throughout Liberia where transmission and distribution are available.

#### **4.11 Agreements with donors and their initiatives in the sector:**

- Memorandum of Understanding for the “Liberalization of the Electricity Sector” between the NTGL and the European Commission;
- Contract with BNETD (An Ivorian Consultancy Company) for consultancy services, launching of tender, evaluation of tender and project supervision for a 2x10MW diesel plant and associated transmission and distribution network for emergency power supply for the City of Monrovia.

#### **5.0 VISION FOR THE FUTURE:**

To liberalize the electricity sector and progressively revitalize the electricity sector such that the generation will be expanded along with the associated transmission and distribution capacities to deliver electricity beginning with 35MW thermal power in the Emergency phase to service about 10,000 customers; 65MW thermal power in the Short Term to service an additional 15,000 customers and 105MW thermal power and 64MW hydro power in five years and beyond for further 20,000 customers.

During the Emergency Phase, develop a 3MW Rural Community base electricity network to supply 3,000 customers and increase in the short term to 10MW to supply

additional 10,000 customers with a further 20MW to supply additional 20,000 customers in the medium/long term.

In order to achieve the above vision the following institutional reforms will have to be implemented:

- Increase in Government funding in the electricity sector to gradually improve the infrastructure and prepare the way for full liberalization of the sector;
- Liberalization of the electricity sector to facilitate private sector participation in the sector;
- The appointment of a National Commission to oversee the progressive liberalization of the electricity sector;
- Due to the huge renewable energy resources (biomass and hydro) that exist in Liberia; the high cost of oil and its impact on electricity costs; the low financial ability of the average Liberian to pay for electricity, the Government should appoint a Renewable Energy Development Authority (REDA). The responsibility of REDA will be to carry out feasibility studies, select and implement renewable energy projects that are economically most viable;
- Reduction in the present staff level to commensurate with the level of work being carried out;
- Embark upon a vigorous manpower development scheme;
- The transformation of the commercial activities incorporating prepayment schemes;
- Enact the New Electricity Law that will reflect the progressive liberalization of the electricity sector;
- Government to take over LEC's debt repayment.

**6.0 ONE YEAR BUDGET FOR THE REALIZATION OF THE EMERGENCY PHASE:**

NOS.	PLANS/ PROGRAM	ACHIEVABLE TARGETS	RESOURCE REQUIRE.	SPECIALIZED SKILLS	FUNDING TYPE	PROPOSE BUDGET
1	MONROVIA STREET	500 STREET LIGHTS INSTALL IN	FUNDS	N/A	GOL EU	0.5MUS <sup>1</sup>

	LIGHTS	PARTS OF MONROVIA				0.5MUS <sup>2</sup>
						0.2MUS <sup>3</sup>
2	MONROVIA  TRANSMISSION & DISTRIBUTION  REHABILITAION	T0 BUILD  42km TRANS  35km DIST.  3 SUBSTATIONS	FUNDS	CONSULTANTS  CONTRACTORS  FOR T&D NET	GOL  EU	4.8MUS <sup>3</sup>  8.0MUS <sup>2</sup>
3	BNETD EMERGENCY POWER PROJECT FOR MONROVIA	CONSTRUCT  2X10MW UNIT  20km T&D  NETWORK	FUNDS	CONSULTANTS  CONTRACTORS FOR PLANT INSTALLATION & T&D	PRIVATE INVESTORS	40.0MUS <sup>3</sup>
4	WORLD BANK RURAL COMMUNITY POWER SUPPLY	3X1000KW  DIESEL GENERATOR SETS  T&D	FUNDS	CONSULTANTS  CONTRACTORS FOR PLANT AND T&D	WORLD BANK  FUNDING	N/A
5	WORLD BANK EMERGENCY POWER FOR MONROVIA	15MW DIESEL GENERATOR SETS WITH T&D	FUNDS	CONSULTANTS CONTRACTORS FOR PLANT AND T&D	WORLD BANK FUNDING	N/A

1 Funds committed by GOL

2. Funds committed by EU

3. Funds not committed

## 7.0 QUICK WIN PLAN DURATION SIX MONTHS

Two sector high visibility and high impact projects (one in Monrovia and the other in the rural city of Ganta) have been selected for implementation.

### 7.1 Monrovia Quick Win Project:

The Monrovia project involves the construction of a 1.5MVA diesel satellite Power Station at the existing site of the Liberia Electricity Corporation's at Congo Town Substation along with the associated medium voltage distribution network. Two (2) radial

22kV distribution over head lines (OHL) will emanate from this station. These new lines will initially be operated at 11kV because of the availability of distribution transformers at this voltage level within the present system. One of the over head line spanning approximately 6.8km will extend towards the Sinkor area to as far as Capitol Hill while the second over head line stretching about 4.3km will extend towards the Congo Town area and will end at the new Defense Ministry.

This station service area will provide electricity to medical institutions such as the John F. Kennedy Medical Center and the St. Joseph Catholic Hospital in addition to a number of schools, commercial entities and residences. A total of approximately 155 customers will initially be supplied from this satellite station.

## 7.2 Monrovia Quick Win Project Budget:

The total project estimated cost for the Monrovia Quick Win Project is put at **USD1,956,348.00 (One Million Nine Hundred Fifty-Six Thousand Three Hundred Forty-Eight United States Dollars)** and allocated as follows:

Civil Works (power house, genset pad, MV switchgear Pad, unit transformer pad)	USD50,000.00
Supply and installation of 3x500kVA, 400V, 50Hz, Diesel genset complete with all auxiliary and Synchronization equipment plus 5000 hour spare kit each	400,000.00
Supply of lubricants for six (6) months	30,000.00
Supply of fuel for six (6) months operation at USD 3.35/gallon	648,348.00
Supply and installation of 1x1000kVA, 400V/11kV, 50Hz, Outdoor type, oil immersed transformer	30,000.00
Supply and installation of one (1) medium voltage (15kV) Switchgear with 1x100A incomer and 2x50A outgoing	25,000.00
Supply of concrete poles, hardware, conductors and Accessories and construct 11.1km of 22kV distribution OHL	313,000.00

Supply and installation of 11/0.4kV, 50Hz, oil Immersed distribution transformers of various ratings (minimum rating 50kVA)	70,000.00
Supply and installation of 1-ph and 3-ph, 50Hz energy Meters and service feeders	30,000.00
Supply and installation of 200 street lights	80,000.00
Operation and Maintenance (O&M)	120,000.00
Vehicles, special tools (T&D, Generation)	<u>160,000.00</u>
<b>TOTAL:</b>	<b>USD1, 956,348.00</b>

Monrovia Quick Win Project (Monthly Measurement of Achievement and Generation, Billing and Collection Projections) are shown in Appendix 1 and 3

### **7.3 Ganta Quick Win Project:**

The Quick Win Project for the rural city of Ganta will concentrate on the implementation of a community driven electrification scheme. This rural city has been selected based on its potential load growth due to increase in commercial activities and other factors such as economic prospects, security and easy access.

The project will provide electricity to the city residents and power a number of street lights along the principal routes of the city. The project coverage areas will include the main access route from the power house on the Saclaepea Road to the city center. Power will be extended towards the Methodist Hospital and School along the Sanniquillie highway and towards the Barracks along the Gbarnga highway.

Inputs for the project implementation will mainly involve the provision and installation of 2x300kVA diesel generating sets as well as the provision of materials, equipment hardware and accessories and construction of approximately 8km of 22kV primary distribution overhead lines that will initially be operated at 11kV.

### **7.4 Ganta Quick Win Project Budget:**

The total project estimated cost for the Ganta Quick Win Project is put at **USD1,216,304.00 (One Million Two Hundred Sixteen Thousand Three Hundred Four United States Dollars)** and allocated as follows:

Civil Works (power house, genset pad, MV switchgear

Pad, unit transformer pad) USD20,000.00

Supply and installation of 2x300kVA, 400V, 50Hz,

Diesel genset complete with all auxiliary and

synchronization equipment plus 5000 hour spare kit each 230,000.00

Supply of lubricants for six (6) months 18,000.00

Supply of fuel for six (6) months operation

at USD 3.50/gallon (including transportation) 290,304.00

Supply and installation of 1x1000kVA, 400V/11kV,

50Hz,outdoor type , oil immersed transformer 23,000.00

Supply and installation of one (1) medium voltage (15kV)

switchgear with 1x100A incomer and 2x50A outgoing 25,000.00

Supply of concrete poles, hardware, conductors and

Accessories and construct 8.0km of

22kV distribution OHL 250,000.00

Supply and installation of 11/0.4kV, 50Hz, oil

immersed distribution transformers of various ratings

(minimum rating 50kVA) 50,000.00

Supply and installation of 1-ph and 3-ph,

50Hz energy meters and service feeders 20,000.00

Supply and installation of 100 street lights 40,000.00

Operations and Maintenance (O&M) 90,000.00

Vehicles, special tools (T&D, Generation) 160,000.00

**TOTAL: USD1,216,304.00**

Ganta Quick Win Project (Monthly Measurement of Achievement and Generation, Billing and Collection Projections) are shown in Appendix 2 and 4

## 8.0 RECOMMENDATIONS

1. That the government will adopt the phased implementations outlined in this report as a useful guide for future policy making and financial planning to ensure the revitalization and sustainability of the electricity sector to attract investors and continued donor support.
2. That the Government engages the EU to review the Monrovia Transmission and Distribution Project. The discussions should lead to the EU accelerating the project and the possible EU provision of additional **USD 4.8 Millions** to finance the outstanding portion of the project.
3. The Government to hold urgent discussion with the World Bank for the full implementation of the **15MW** Emergency Power Project for Monrovia and the Three (3) Rural Emergency Power Projects, for which studies have been carried out by the Bank.
4. The Government should commit itself for the full implementation of the NTGL-BNETD **20MW** Project for the City of Monrovia.
5. The Government should appoint the National Commission to oversee the progressive liberalization of the electricity sector.
6. Due to the huge renewable energy resources (biomass and hydro) that exist in Liberia; the high cost of oil and its impact on electricity costs; the low financial ability of the average Liberian to pay for electricity, the Government should appoint a Renewable Energy Development Authority (REDA). The responsibility of REDA will be to carryout feasibility studies, select and implement renewable energy projects that are economically viable.
7. The Government embarks upon plans to include provision in all future concessionaire agreements that will make it mandatory for concessionaires to plan the development of their operational power requirement in concert with the national development plans of the electricity sector.
8. Government should institute an appropriate wage levels for engineers and technicians as an incentive to attract them to work for the Corporation.

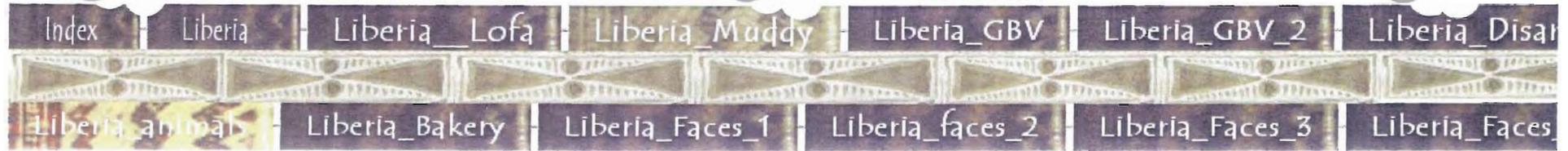
## 9.0 ACKNOWLEDGEMENTS

THIS REPORT WAS PREPARED BY THE TRANSITION ELECTRICITY TEAM  
COMPRISING OF THE FOLLOWING:

- |                              |                 |
|------------------------------|-----------------|
| 1. Mr. Harry T. Yuan Sr.     | Chairperson     |
| 2. Mr. Dunstan L.D. Macauley | Member          |
| 3. Mr. Lionel A. Keller, Sr. | “               |
| 4. Mr. Francis Kapuwa        | “               |
| 5. Mr. Ian E. Yhap           | “               |
| 6. Mr. Lasana M. Donzo       | “               |
| 7. Mr. Joseph T. Mayah       | Resource Person |
| 8. Mr. Alfred G. Jallah      | “ “             |
| 9. Philip G. Freeman         | “ “             |
| 10. Mr. Mark W. Bropleh      | “ “             |
| 11. Mr. Christopher Z. Neyor | Contributor     |



Liberia: The Mud – photo essay by Kevin McNulty  
[www.pahte.com](http://www.pahte.com)



# Liberia: The Mud



Kolahon Highway - Lofa, Liberia

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Ah! Mud! If there was one striking aspect about Lofa County, it was it's mud. The knee deep rust cake that permeates everything with that



road in Voinjama between town and IRC office. Lofa, Liberia



Monrovia Highway. Lofa, Liberia

sweet effervescence of dirt, stagnant water and rotting foliage. .... uh gorgeous.

"Dig" was our mantra. And I loved it. Coming home covered in muck and sweat from head to toe. The giggles that happened as you lost a shoe or did a face plant. Clean was an anomaly. What else would a boy want?.

Power, in Lofa, came in the form of terracota clay. It stopped everything from our Toyota Land Cruisers to UN tanks and bulldozers. We couldn't reach our sites. In fact we had trouble selecting sites because no one could return to their old villages until the roads were passable.

During the disarmament exercise trucks carrying medicine, food, tents etc., sat in the mud for up to 2 weeks. The district Vahun, was completely cut off. We were all stuck but we did our level best, however slowly.

Technically the rainy season is to last between June 1 - October 15, but during the year I lived in Liberia there was a total of three month in which we could access all areas of Lofa County. At points Voinjama was completely isolated. The road leading to Monrovia had a variety of mud spots that would shift over the season. In general the road was rather decent for a dirt highway.

But there were a number of areas that would get bogged down. As one mud pit was cleared several new bad spots would appear. It completely cut off our access to food and escape



"sea of mud" on the Monrovia Highway. Lofa, Liberia

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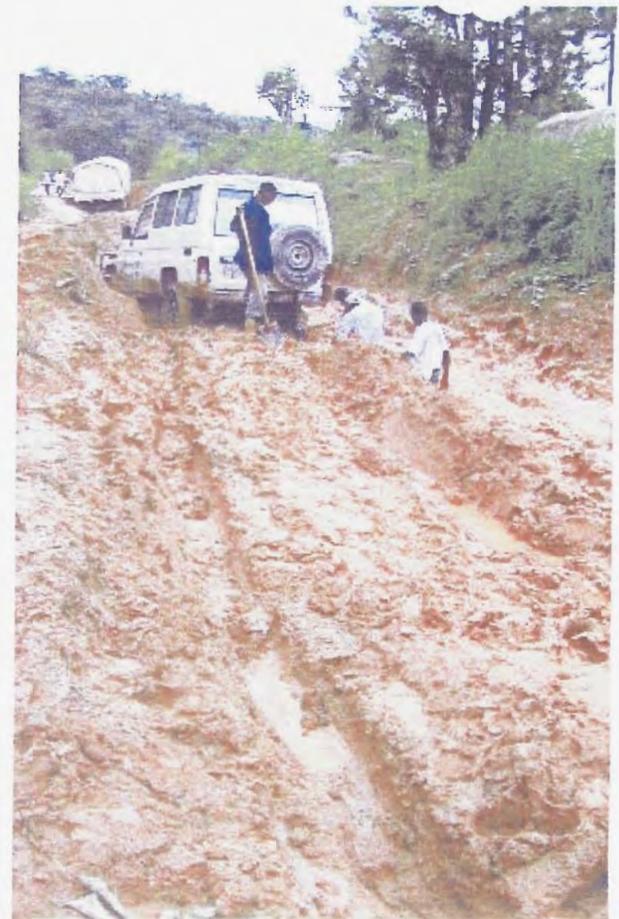
Monrovia Highway. Lofa, Liberia

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routes to Guinea if security incidents rekindled. At times we relied completely on UN helicopter flights fly us to Monrovia, old russian tin cans that made you happy to be on the ground.

While the roads to Monrovia and Guinea were had periods of bad times. The road to Kolahun was pathaetic. We literally had three months to access Kolahun and Foya districts. The roads dried up in January and shut down again by April. Even during the dry period there were some nasty holes.

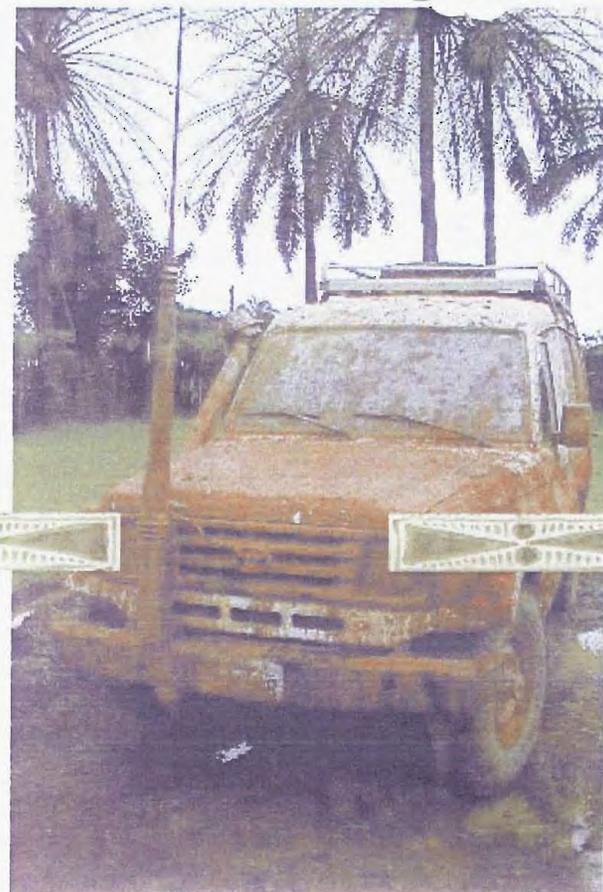
It's amazing how mud forges camaraderie. There is no doubt between the people and agencies I worked with that our collaboration and friendships were bond in mud. In order to get around this obstacle we had to band our resources together and therefore worked closer together.



Kolahun Highway. Lofa



is trying to pass  
y. Lofa, Liberia



after driving the Kolahun Highway. Lofa.

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Kolahun Highway. Lofa, Liberia



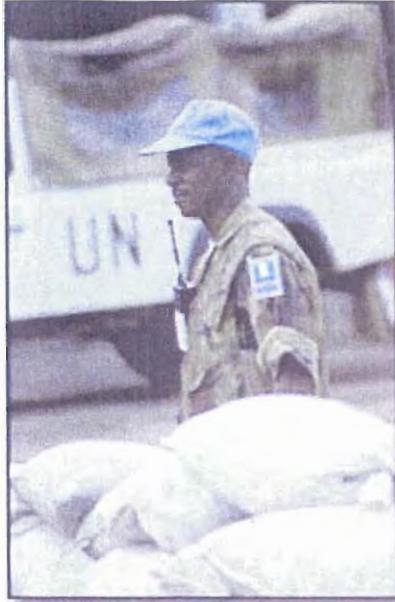
45 miles with joy like this. Kolahun Highway. Lofa.

<a href="#">Index</a>	<a href="#">Liberia</a>	<a href="#">Liberia_Lofa</a>	<a href="#">Liberia_Muddy</a>	<a href="#">Liberia_GBV</a>	<a href="#">Liberia_GBV_2</a>	<a href="#">Liberia_Disast</a>
<a href="#">Liberia_animals</a>	<a href="#">Liberia_Bakery</a>	<a href="#">Liberia_Faces_1</a>	<a href="#">Liberia_faces_2</a>	<a href="#">Liberia_Faces_3</a>	<a href="#">Liberia_Faces</a>	

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Debbie Hakes (2005). The Carter Center. *Final Web  
Log from Liberia*  
[www.cartercenter.org](http://www.cartercenter.org)

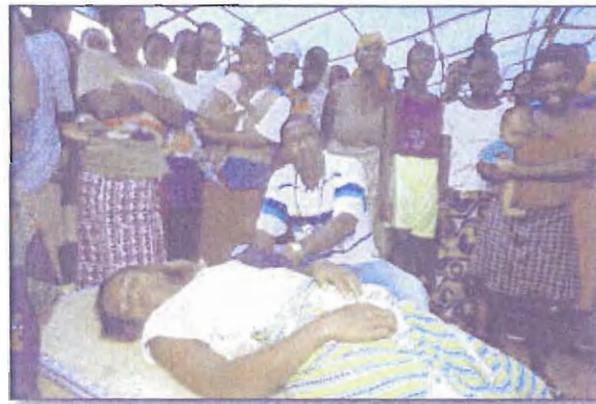


*With Captains*



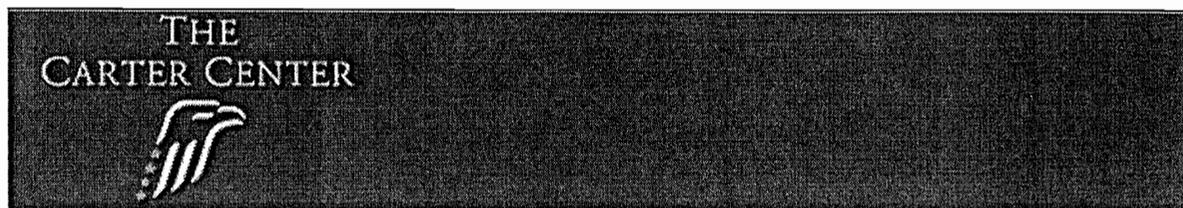


Volunteer Esther Rennie, 43, has lived in Perry Town for two years.









## Final Web Log From Liberia: Intern Reflects on Election's Impact

14 Oct 2005



### *Liberians want peace, say "it is time to live together"*

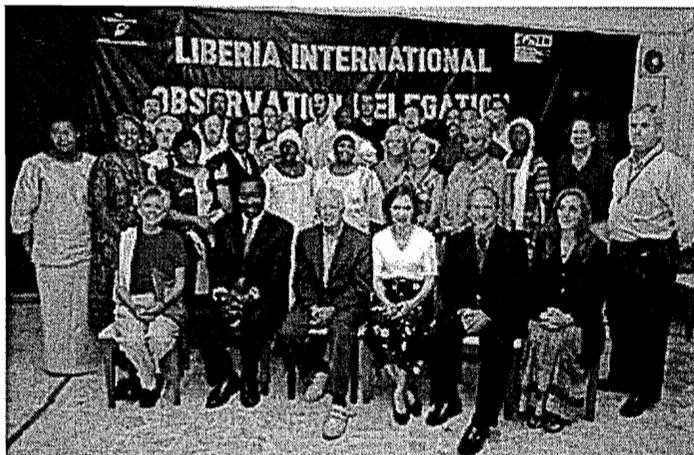
The Web logs of Carter Center intern Debbie Hakes (left), traveling with the Carter Center election observation team in Liberia, give a first-hand look into the lives of Liberians and the work of the team. Ms. Hakes earned a master's degree in journalism in May 2005, from Michigan State University. She was awarded a fellowship during summer 2005, through The Poynter Institute, a journalism school that promotes excellence and integrity in the media.

[View slide show, read article: Election Day in Liberia, Oct. 11, 2005.](#)

[Read more about the Carter Center's role in Liberia and the historic elections.](#)

### Leaving Monrovia, Liberia: Oct. 14, 2005

I sit on the airplane and look out the small window at Liberia. How easy it is for me to fly away from all of this and go back home. The devastation and ruins get smaller and smaller as the plane turns and climbs.



All Photos: Debbie Hakes/The Carter Center

The Carter Center/National Democratic Institute Liberia international observation delegation.

I remember walking down a Monrovia street, seeing bright eyes looking at me from dark shadows. People who lived in the recessed spaces behind columns of buildings or piles of rubble watching me walk by. I wonder what hope they have for the future, if they find strength in the elections just held.

I remember on election day photographing President Carter across Monrovia. As he walked away from one voting station, a Liberian woman ran up to him. He stopped and listened to her while she expressed her gratitude for his visit. She cried out to him with great emotion

that his work has given Liberia hope.

It is a hope that was expressed joyfully as elections neared, and more quietly after people voted. Waiting for change and hoping it really comes this time.

Yesterday I ate lunch with Rugie from Bo-Waterside, and her sister Evelyn. They took me to Auntie Anne's restaurant, a small cement building with green paint peeling off the rickety screen door. We ate at a small table and talked about the world. They laughed at me when I gingerly took a bite of foo foo, a starchy, dough-like ball made from cassava in soup and spices.

The meal was good. We shared the foo foo, chopped rice, chicken, plantains and cake. They tell me about life here, about working, and about surviving the war. Evelyn said she once had to run from her house as armed rebels approached. They stripped the house of everything from mattresses to food to scrap metal. Rebels even killed her dogs before leaving, she said with a tinge of bitterness.

But they have survived and often work with the very people who once took everything from them. They express hope in the elections and for change. They are grateful for the help of NGOs like The Carter Center but look forward to Liberia one day being able to sustain itself.

It is in the rare moments like this, as the three of us laugh about life and the changes one goes through, that the world becomes so small and differences disappear. I have made new friends here and am sad to leave them. I tell them I wish good things for them and hope that Liberia becomes a better place to live. They thank me, and laughingly say it couldn't get much worse.

And now as I fly away, I remember President Carter's words at the press conference on Thursday. He said that The Carter Center would stay involved in Liberia; we weren't here just for the elections and then to disappear. I hope that Liberians found comfort in his words and that they find strength in how far they've come on their own towards change.



U.N. tanks on patrol in Monrovia. There was no violence, but peacekeepers were letting their presence be known. Their rumbling could be heard minutes before the tanks came into view.



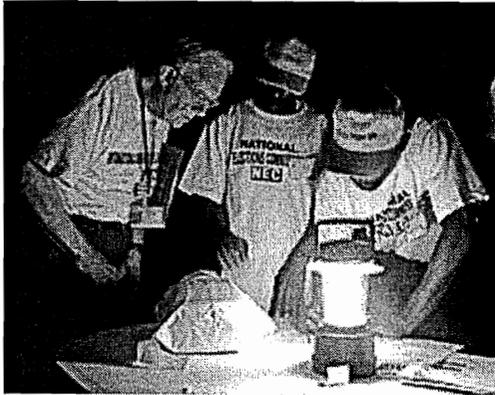
The fire station we visited had not been in use for years, and the lone truck was up on blocks. Adults played checkers on the other side of the garage. Children waited for their mother, who was preparing food to sell in front of the truck.



A man pushes his cart of water-filled containers at a market in Monrovia.

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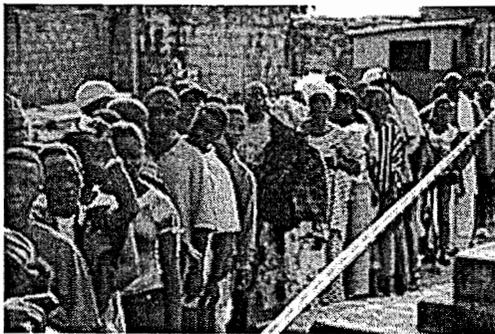
Monrovia, Liberia: Oct. 11, 2005



Because there is no electricity, ballots in Monrovia are counted by the light of an electric lantern issued to each polling site. President Carter watches the process unfold.

By the time we reached the end of the block, we saw the lines: they snaked around corners and through fences. People sat on the curb and peeled fruit while they waited, then children carried the fruit on their heads in small baskets to sell as the day wore on.

Women swaddled infants on their back, babies crying with impatience. Many had been in line since the evening before, camping on the curb in order to secure their place. The morning was pleasant, but temperatures would soon climb past the 90-degree mark.



Liberians wait patiently to vote, many having camped out overnight at polling places.

As the hours passed, the lines eventually began to move and the voting process seemed to go relatively smooth. President and Mrs. Carter observed at stations across the city, checking their lists to make sure the voting was fair and transparent. By the end of the day, lines had shortened and people out on the streets seemed more relaxed.

The light from the sky was already fading at 6 p.m. when the polls closed. Observers at city hall must have been tired, but they gave no indication. They sat patiently on their wooden chairs, watching election officials reseal each ballot box and prepare for counting. And then, by lantern light, the counting began. President and Mrs. Carter arrived to watch and sat in the near-dark with everyone else.



Children mingle among the crowds of voters, with some selling fruit from small containers carried on their heads.

On the drive home, I noticed people gathered around single lights, listening to the local radio station for news of the day. News will come slowly though. It will take up to 15 days for election results to be announced. Be assured that Liberian citizens will be excitedly anticipating the results.

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Monrovia, Liberia: Oct. 10, 2005



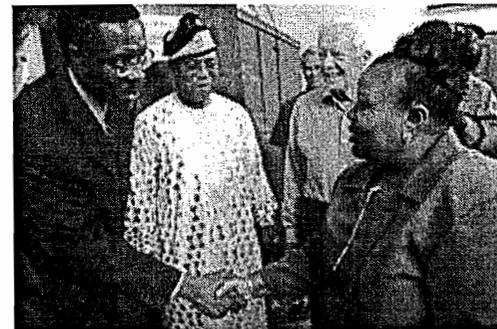
Liberians march down the streets in support of their favorite election candidates. It is estimated that hundreds of thousands of people peacefully gathered last week.



Former U.S. President Jimmy Carter and Rosalynn Carter attend a meeting at ECOWAS in Monrovia on Oct. 10, 2005 with election and other leaders, including election co-leader and President of Benin Nicephore Soglo.



Jacob Lablah, head of National Human Rights Center of Liberia, points out how to properly vote to residents of an IDP camp outside Monrovia.



The unexpected meeting came mid-afternoon when candidates Ellen Johnson-Sirleaf and George Weah ran into each other on the balcony of the Mamba Point Hotel.

Frances Johnson-Morris, president of Liberia's National Election Committee (NEC), shakes hands with Christopher Fomunyoh, NDI's senior associate for Africa as President Carter and President of Benin Nicephore Soglo look on.

I rushed outside with the other media persons present to capture the event. Here they were, two frontrunners in tomorrow's presidential election shaking hands, talking and smiling.

Just two days before, Monrovia's streets were packed for miles with citizens bearing signs of support for various candidates. It was a peaceful march of hundreds of thousands of citizens.

Several of us had driven through the impressive scene, stuck in the gigantic parade of people chanting, dancing and singing. Vehicles were swallowed in the crowd and the road seemed to disappear. Large groups for each candidate mixed together with no hint of violence.

The streets were quiet today though. But it was a busy day for those involved with the election. Candidates and other dignitaries attended meetings around the city at places like NEC, ECOWAS and the U.N. building. President Carter started the day off with a statement to the press expressing his hope for a peaceful election.

Yesterday the election observers were dispersed to their various voting districts. Those who returned to Monrovia today expressed that everything was going smoothly, and was ready for tomorrow.

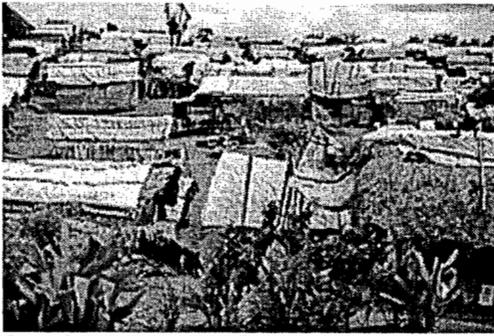
Time will soon tell, but all signs seem to point to a transparent and hopefully violence-free election process. Voting begins in just seven and a half hours and will go through  
6 p.m. Monrovia time.

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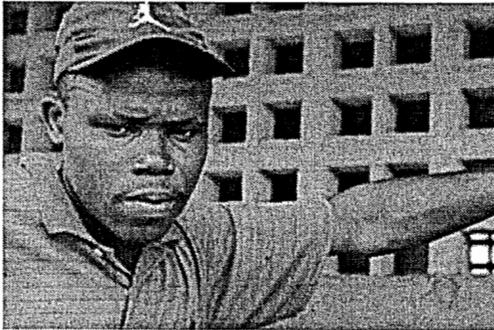
**Bo-Waterside, Liberia: Oct. 7, 2005**

Fourteen years of civil war devastated the country of Liberia. I see evidence of this from my window; dodging 10-foot craters along Claratown's roads, riding past cement stumps where lights poles once stood and gazing at bombed-out shells of cement buildings that bleed rust and grime.

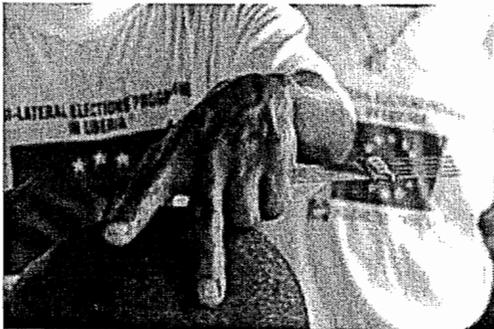
But next to the bombed-out building a painted sign now boasts "Supreme Pharmacy." And just down the road a barber cuts a man's hair. The customer sits patiently on an upturned bucket as people walk past. Crowds gather at the market along Bushrod Island to exchange goods in little plastic bags - a cup of sugar, a pair of neon flip-flops. People go about their business, whatever it may be in a country with 85 percent unemployment.



Conneh IDP Camp in Kakata, Liberia, holds over 12,000 residents. The shelters were built to last three to four months. Three to four years later, residents are still not being allowed to return home.



This man went by the name of "Bulldog" during Liberia's last civil war. As a rebel general, he controlled most of the country's northwest areas. CAREFound of Bo-Waterside has trained him as a mason in order to reintegrate him in the community. His life now is peaceful.



Ex-combatants are trained as masons, cooks, barbers, and carpenters at CAREFound of Bo-Waterside - a project partially funded by The Carter Center.

I see odd combinations of objects like a rusted out boat shell dug into the ground next to a queen sized wooden bed frame for sale. The war years have made for some strange arrangements - first we pass the perfectly intact Club Beer factory, then beautiful U.N. housing along the riverfront, and finally the "Water in the Desert" displaced persons camp where makeshift huts crowd the hillside.

Our driver Abu takes us past all this, past the long expanses of lush, green trees and eventually to Bo-Waterside, a small town bordering Sierre Leone. Here we meet Rugie Barry, the executive director of CAREFound, a grassroots organization - partially funded by The Carter Center - whose programs include vocational training for some of the country's estimated 103,000 ex-combatants and voter registration for those in rural areas.

She leads us around town to meet some of her graduates. Two ex-combatants smooth cement along a warehouse wall, they are trained masons. Another cuts hair down the street in a tiny blue shop with photographs of models and Hollywood actors on the wall.

Our group grows in size as we continue walking through a residential area to meet carpenters and cooks, all ex-combatants trained by CAREFound. Children are fascinated by the cameras and by us. They eagerly give us high fives or simply touch our hand. Some shyly watch from the quiet shadows of a window or doorway.

Twelve of us continue down the street to see the voting station. The humidity of the midday sun drenches us as we go. Children on bicycles race up to the group, then pedal ahead to wait again.

Rugie explains that CAREFound has worked to educate these rural dwellers, forgotten by most campaigners and neglected by many voter education groups. These include people who live beyond the one paved road and into the thick forest. They will have to walk seven or more hours to cast their vote.

It is a vote that means everything to people who have next to nothing, a chance to determine freely and without fear who will run their country.

"These people need to know that their vote counts and can make a difference," said Rugie.

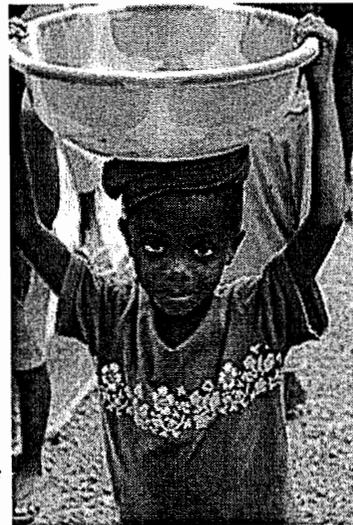
At the voting station, a school hidden beyond tall paths of bush sugar cane plants, we talk with "Bulldog." He is a once rebel general who controlled this entire region during the last civil war. He has learned masonry from CAREFound and works regularly in Bo-Waterside.

"I can build a house or a building just like this," he said, grabbing a wooden pole for emphasis.

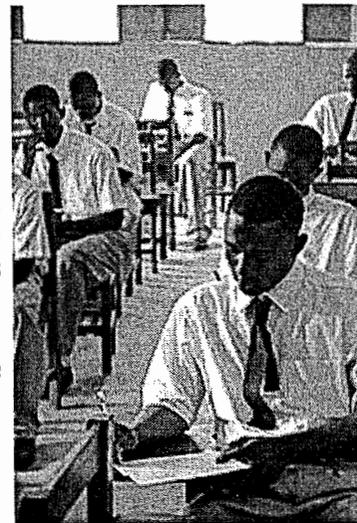
Now he leans against the pole and tells us of former days when he harassed civilians and destroyed property. He seeks peace now and finds it in this community, which has willingly embraced him and others.

"Liberians are quick to forgive," Abu said later. "We are tired of violence. It is time to live together."

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A child poses in Conneh IDP camp in Kakata, Liberia.



St. Christopher Catholic School in Kakata is about two miles from Conneh IDP camp. The school has 743 students in grades kindergarten through twelfth grade. Students must arrive by 7:30 a.m. for devotions. If they arrive after 8 a.m., they will be sent home. Some walk hours to get to class every day. To pay the cost of attending, some IDP dwellers sell their food rations.



Annex

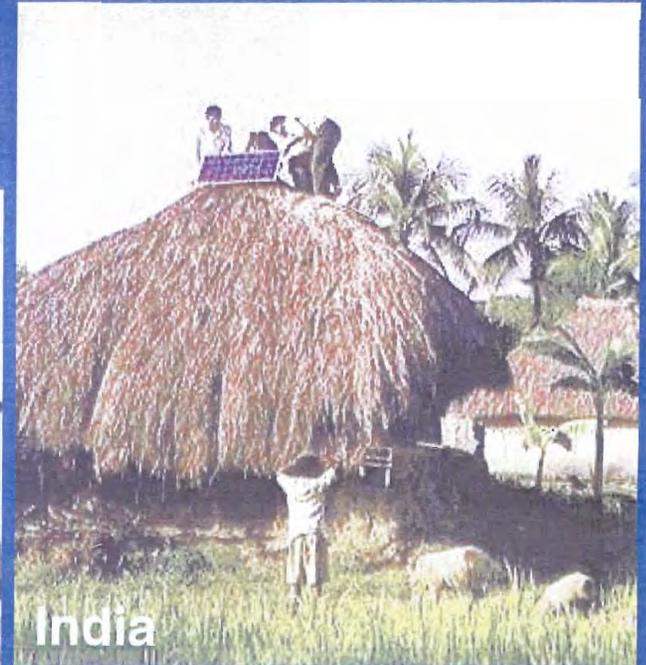
DECENTRALIZED RENEWABLE ENERGY  
APPLICATIONS FOR RURAL SOCIAL AND  
ECONOMIC DEVELOPMENT

From Roger Taylor  
US National Renewable Energy Laboratory

# Solar Home Systems



Brazil



India



China



Ghana

# Public Area Lighting



# Hand Lighting



# Schools

Lights

Computers

VCRs

Distance Learning

Adult Education

Brazil



South Africa



# Health Clinics



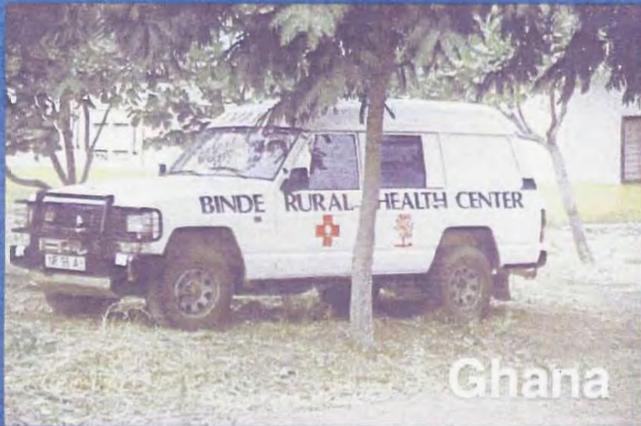
Ghana



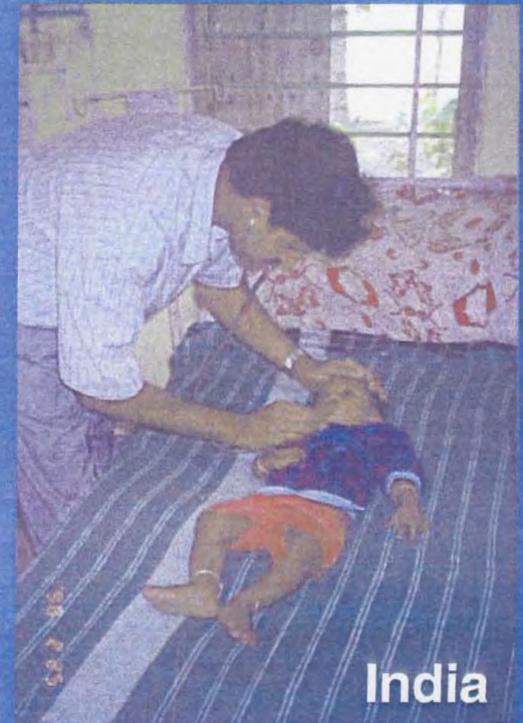
Peru



India



Ghana



India

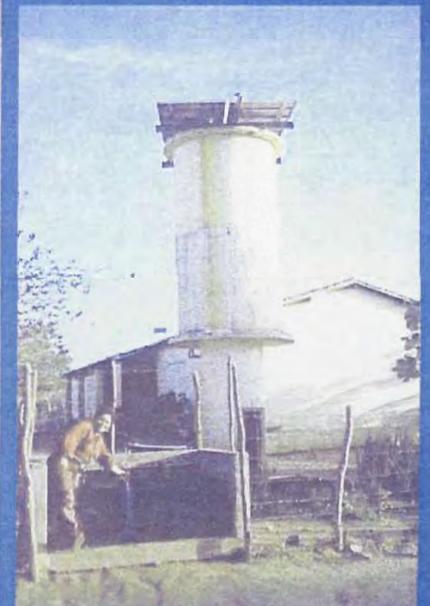
# Water



Brazil



India



# Water Purification



Bangladesh



Philippines



Mexico



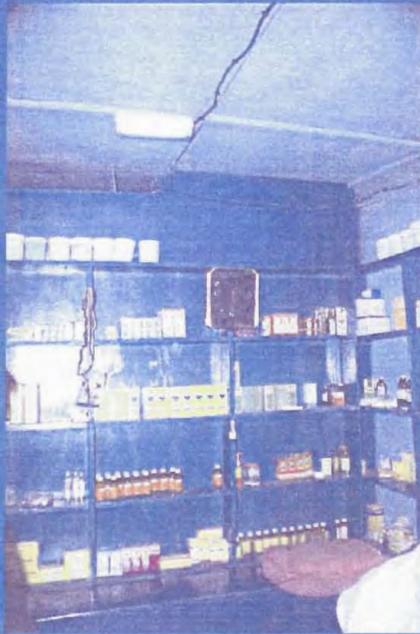
Nigeria



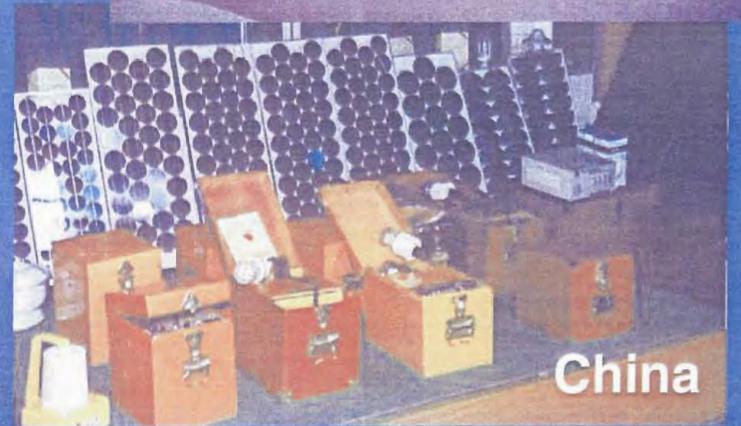
# Microenterprise Development



Ghana



India



China

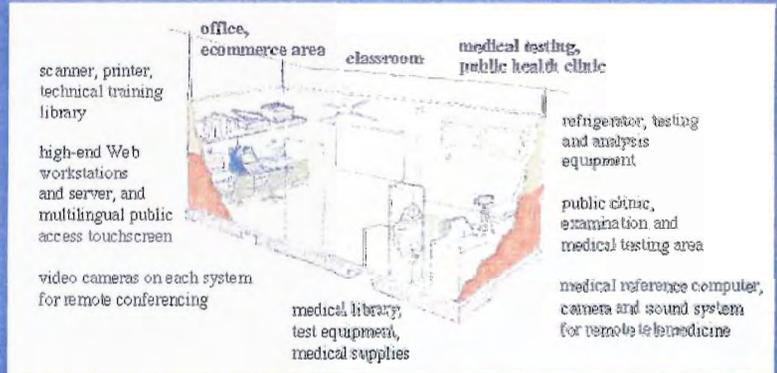
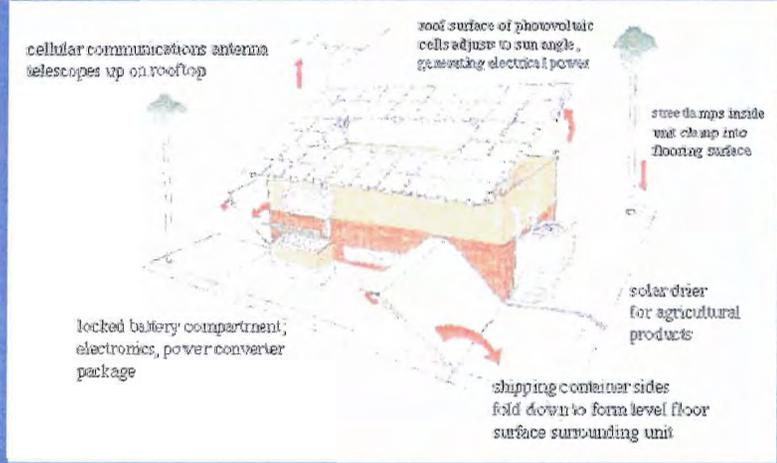
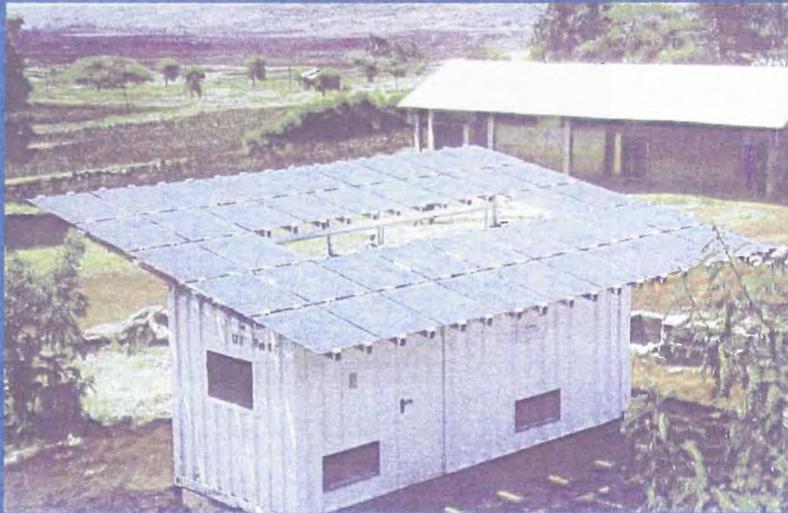
# Rural Telephony



Brazil



# Integrated Commerce



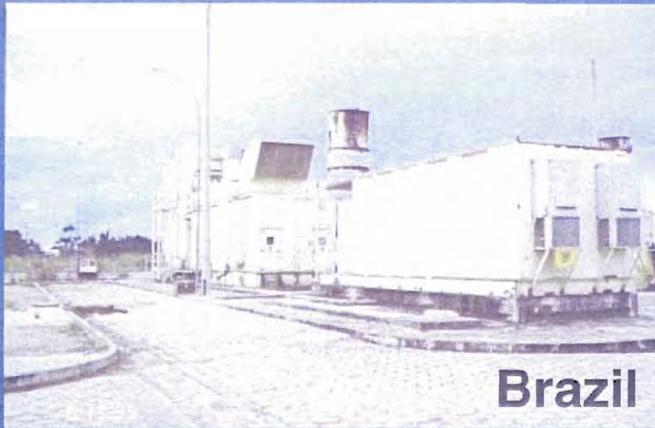
## Community Health Services

Local Products



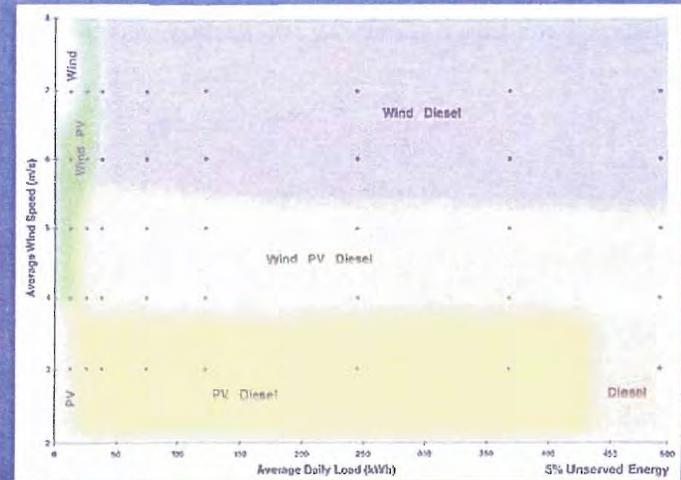
World Markets and Information

# Diesel Retrofits



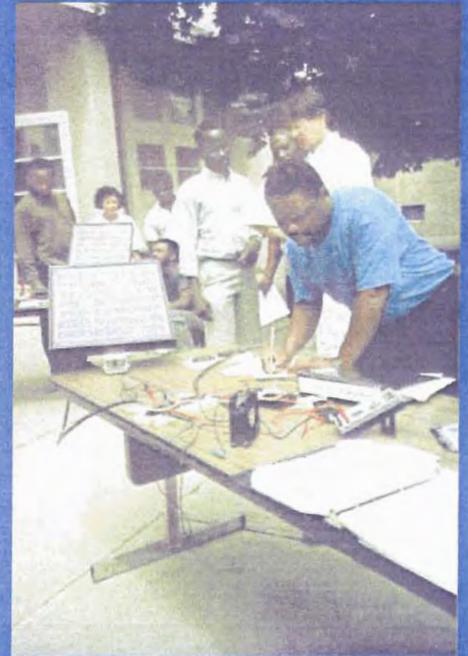
NREL Hybrid Optimization Model for Electric Renewables

\$0.60/liter



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# Training & Standards



**PV GAP**

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 **VILLAGE POWER '98**  
Scaling up Electricity Access for  
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U.S. Agency for International Development  
Winrock International

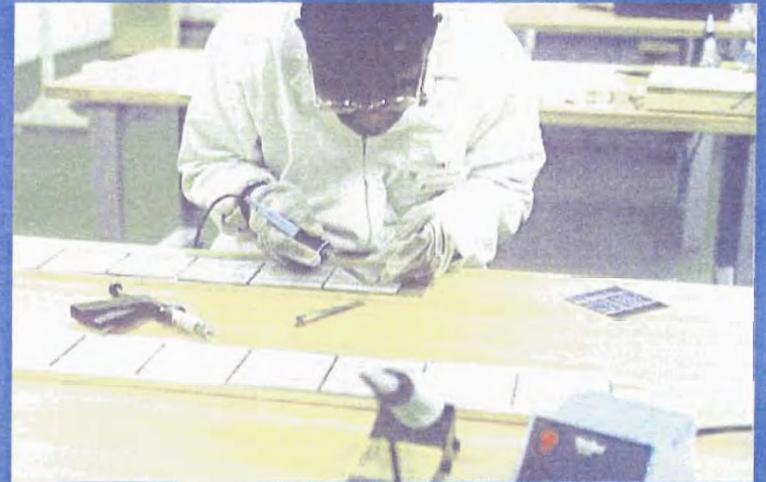




# Manufacturing Joint Ventures



China



South Africa

