

**REQUEST FOR PROPOSALS**

**FEASIBILITY STUDY FOR THE**

**Liberia: Great Monrovia Fiber Optic Ring Feasibility Study**

Submission Deadline: **4:00 P.M.**  
**LOCAL TIME**  
**September 5, 2008**

Submission Place: **Liberia Telecommunications Corporation**  
**Telecommunications Building**  
**Lynch Street**  
**PM Bag 9039**  
**1000 MONROVIA 10**  
**Liberia**

SEALED PROPOSALS SHALL BE CLEARLY MARKED AND RECEIVED PRIOR TO THE TIME AND DATE SPECIFIED ABOVE. PROPOSALS RECEIVED AFTER SAID TIME AND DATE WILL NOT BE ACCEPTED OR CONSIDERED.

## REQUEST FOR PROPOSALS

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## **Section 1: INTRODUCTION**

The U.S. Trade and Development Agency (USTDA) has provided a grant to the Grantee, the Liberian Telecommunications Corporation (LTC). The grant agreement is attached at Annex 4 for reference. The Grantee is soliciting technical proposals from qualified U.S. firms to provide expert consulting services to carry out the Feasibility Study.

### **1.1 BACKGROUND SUMMARY**

Over the last five years, Liberia has worked steadily to rebuild the infrastructure and institutions destroyed by 14 years of civil war. The democratically elected government, headed by Africa's first female president Ellen Johnson-Sirleaf, has implemented significant reforms to rebuild the economy, reduce poverty, and invite foreign investment. As evidence of its progress, Liberia has cleared its obligations to the International Monetary Fund, World Bank, and African Development Bank over the past 16 months, allowing the country to receive much needed financial support from international institutions.

In the telecommunications sector, Liberia has made great strides in creating a platform for investment. Their implementation of key structural and policy reforms, including the creation of a regulatory authority in 2006 and the passing of a telecommunication policy in 2007, has liberalized the sector and encouraged competition and private investment. The expected result is an increase in the quality and availability of ICT services for the people of Liberia.

While a vibrant mobile telephone market has developed in Liberia, the fixed line network is almost nonexistent, having been destroyed during the fighting. The absence of a backbone and local access infrastructure forces Liberia to depend on high-cost satellite links for internal and external connectivity.

To rectify this situation, the state-run LTC plans to develop a fiber optic ring around the city of Monrovia and through its suburban areas, using the existing right of way belonging to LTC. The ring would allow LTC to become a "carrier's carrier," meaning the network would be available for use by existing telecommunications operators. The ring would also allow LTC to provide fixed line services directly to government agencies and the private sector. This project is a key component of the LTC revitalization program launched by the government in 2006. It would be the first step in LTC's future plans to build a National Fiber Backbone connecting the major cities of Liberia and would lay the groundwork for linking the country to one of the planned regional submarine fiber optic cables.

Though the stated goal of Liberia's telecommunications policy is to promote "fair and effective competition," the newly installed government lacks expertise on organizing the sector to attract private investment. The Feasibility Study will design business models that encourage open competition and lay the groundwork for LTC's eventual privatization. The contractor will also offer training to stakeholders, including the Ministry of Post and Telecommunications and the Liberian Telecommunications Authority, on structuring an IT market to attract private sector

investment, so that LTC can expand their market presence in a manner that encourages private sector entrance and expansion in the sector.

A background Desk Study is provided for reference in Annex 2.

## **1.2 OBJECTIVE**

This project will include a Feasibility Study which would focus primarily on:

- Technical network design and specifications
- Business model design (including business model training)
- Determination of estimated Project costs
- Project financing strategies

If the Project is implemented, it would provide fiber optic carrier class connectivity, significantly reducing the current prohibitive cost of telephony and Internet services in and around Monrovia. The Project will improve the country's ICT infrastructure and address the regulatory and political issues involved, setting the stage for the build out of a national ICT infrastructure.

The Terms of Reference (TOR) for this Feasibility Study is attached as Annex 5.

## **1.3 PROPOSALS TO BE SUBMITTED**

Technical proposals are solicited from interested and qualified U.S. firms. The administrative and technical requirements as detailed throughout the Request for Proposals (RFP) will apply. Specific proposal format and content requirements are detailed in Section 3.

COST will not be a factor in the evaluation and therefore, cost proposals should not be submitted; upon detailed evaluation of technical proposals, one firm will be selected for contract negotiations. The amount for the negotiated contract has been established by a USTDA grant of U.S. \$303,000.

## **1.4 CONTRACT FUNDED BY USTDA**

The negotiated contract will be funded by USTDA in accordance with the terms and conditions of its grant to the Grantee. The contract must include certain USTDA mandatory clauses relating to nationality, taxes, payment, reporting, and other matters. The USTDA nationality requirements and the USTDA mandatory clauses are attached at Annexes 3 and 4 for reference.

## **Section 2: INSTRUCTIONS TO PROPOSERS**

### **2.1 PROJECT TITLE**

The Project is called "Liberia: Greater Monrovia Fiber Optic Ring."

### **2.2 DEFINITIONS**

Please note the following definitions of terms as used in this RFP.

The term "Request for Proposals" means this solicitation of a formal technical proposal including qualifications statement.

The term "Offeror" means the U.S. individual, or U.S. firm, including any and all subcontractors, which responds to the RFP and submits a formal proposal and which may or may not be successful in being awarded this procurement.

### **2.3 DESK STUDY REPORT**

USTDA sponsored a Desk Study to address technical, financial, sociopolitical, environmental and other aspects of the proposed project. A copy of the Report is attached at Annex 2 for background information only.

### **2.4 EXAMINATION OF DOCUMENTS**

Offerors should carefully examine this RFP. It will be assumed that Offerors have done such inspection and that through examinations, inquiries and investigation they have become familiarized with local conditions and the nature of problems to be solved during the execution of the Feasibility Study.

Offerors shall address all items as specified in this RFP. Failure to adhere to this format may disqualify an Offeror from further consideration.

Submission of a proposal shall constitute evidence that the Offeror has made all the above mentioned examinations and investigations, and is free of any uncertainty with respect to conditions which would affect the execution, and completion of the Feasibility Study.

## **2.5 PROJECT FUNDING SOURCE**

The Feasibility Study will be funded under a grant from USTDA. The total amount of the grant is not to exceed U.S. \$303,000.

## **2.6 RESPONSIBILITY FOR COSTS**

Offeror shall be fully responsible for all costs incurred in the development and submission of the proposal or any other cost incurred by Offeror prior to issuance of an agreement or contract. Neither USTDA nor the Grantee assumes any contractual obligation as a result of the issuance of this proposal request, the preparation or submission of a proposal by an Offeror, the evaluation of proposals, or final selection.

## **2.7 TAXES**

Offerors should submit proposals which note that in Annex 4, USTDA Mandatory Contract Provisions, USTDA funds are not to be used to pay taxes or duties under the laws of host country.

## **2.8 CONFIDENTIALITY**

The Grantee will use its best efforts to preserve the confidentiality of any business proprietary or confidential information submitted by the Offeror, which is clearly designated as such by the Offeror.

## **2.9 ECONOMY OF PROPOSALS**

Proposal documents should be prepared simply and economically, providing a comprehensive and concise description of the Offeror's capabilities to satisfy the requirements of the RFP. There is no necessity for expensive bindings, colored displays, or other promotional material unless such material is absolutely pertinent to the proposal. Emphasis should be placed on completeness and clarity of content.

## **2.10 SUBSTANTIVE PROPOSALS**

The Offeror shall certify (a) that its proposal is genuine and is not made in the interest of, or on the behalf of, any undisclosed person, firm, or corporation, and is not submitted in conformity with, and agreement of, any undisclosed group, association, organization, or corporation; (b) that it has not directly or indirectly induced or solicited any other Offeror to put in a false proposal; (c) that it has not solicited or induced any other person, firm, or corporation to refrain from submitting a proposal; and (d) that it has not sought by collusion to obtain for himself any advantage over any other Offeror or over the Grantee or USTDA or any employee thereof.

## **2.11 CONDITIONS REQUIRED FOR PARTICIPATION**

Only U.S. firms are eligible to participate in this tender. However, U.S. firms may utilize subcontractors from host country for up to 20 percent of the amount of the USTDA grant. Offerors are encouraged to submit proposals that utilize local labor. USTDA nationality requirements are detailed in Annex 3.

## **2.12 LANGUAGE OF PROPOSAL**

All proposal documents shall be prepared and submitted in English, and only English.

## **2.13 PROPOSAL SUBMISSION REQUIREMENTS**

The **Cover Letter** in the proposal must be addressed to:

Mr. Ben Wolo  
Managing Director  
Liberia Telecommunications Corporation  
Telecommunications Building  
Lynch Street  
PM Bag 9039  
1000 MONROVIA 10  
Liberia

Phone: (231) 7777 3978  
Fax: (231) 7722 6356

**An Original and eight (8) copies of your proposal must be received at the above address no later than 4:00p.m., on September 5, 2008. In addition, the Grantee will not respond to inquiries regarding the proposal or Project after 15 days of this RFP's posting date.**

Proposals may be either sent by mail, overnight courier, or hand-delivered. Whether the proposal is sent by mail, courier or hand-delivered, the Offeror shall be responsible for actual delivery of the proposal to the above address before the deadline. Any proposal received after the deadline will be returned unopened.

Upon timely receipt, all proposals become the property of the Grantee.

## **2.14 PACKAGING**

Each proposal must be sealed to ensure confidentiality of the information. The proposals should be individually wrapped and sealed, and labeled for content including "original" or "copy number

x"; the original and eight (8) copies should be collectively wrapped and sealed, and clearly marked for content.

Neither USTDA nor the Grantee will be responsible for premature opening of proposals not properly labeled.

## **2.15 AUTHORIZED SIGNATURE**

The proposal must contain the signature of a duly authorized officer or agent of the Offeror empowered with the right to bind the Offeror.

## **2.16 EFFECTIVE PERIOD OF PROPOSAL**

The proposal shall be binding upon the Offeror for sixty (60) days after the proposal due date, and Offeror may withdraw or modify this proposal at any time prior to the due date upon written request, signed in the same manner and by the same person who signed the original proposal.

## **2.17 EXCEPTIONS**

Firms agree by their response to the RFP announcement to abide by the procedures set forth therein. Material modifications in the TOR or responsibilities of the parties will not be accepted.

Any exceptions in the proposal shall be clearly identified, and shall include the scope of such exception, and its impact, on the procurement. The Grantee shall make final determination as to the responsiveness of such exceptions and their acceptability.

## **2.18 OFFEROR QUALIFICATIONS**

As provided in Section 3, Offerors shall submit evidence that they have relevant past experience and have previously delivered advisory and Feasibility Study services similar to those required in the TOR.

## **2.19 RIGHT TO REJECT PROPOSALS**

The Grantee reserves the right to reject any and all proposals and to accept or reject any or all of the items in the proposal, and to award the contract in whole or in part if it is deemed in the best interest of the Grantee.

## **2.20 PRIME CONTRACTOR RESPONSIBILITY**

Offerors have the option of subcontracting parts of the services they propose. The Offeror's proposal must include a description of any anticipated subcontracting arrangements, including the name, address, and qualifications of consultants and subcontractors. USTDA nationality provisions are set forth in detail in Annex 3. The successful Offeror shall cause appropriate

provisions of its contract, including all mandatory USTDA clauses, to be inserted in all subcontracts ensuing to ensure fulfillment of all contractual provisions by subcontractors.

## **2.21 AWARD**

An award resulting from this RFP shall be made to the best qualified Offeror, taking into consideration the evaluation factors set forth herein; however, the right is reserved to reject any and all proposals received and, in all cases, the Grantee will be the judge as to whether a proposal has or has not satisfactorily met the requirements of this RFP.

## **2.22 COMPLETE SERVICES**

The successful Offeror shall be required to (a) furnish all supplies, supervision, transportation, and other execution accessories, services, and facilities; (b) provide and perform all necessary labor; and (c) in accordance with good technical practice, with due diligence, and in accordance with the requirements, stipulations, provisions and conditions of this RFP and the resultant contract, execute and complete all specified work to the satisfaction of the Grantee.

## **2.23 INVOICING AND PAYMENT**

Deliverables under the contract shall be delivered on a schedule to be agreed upon in a contract with the Grantee. The Contractor may submit invoices to the designated Grantee Project Director in accordance with a schedule to be negotiated and included in the contract. Upon approval of each invoice, the Grantee will forward the invoice to USTDA which will process payment to the Contractor. All payments by USTDA under the Grant Agreement will be made in U.S. currency.

### **Section 3: PROPOSAL FORMAT AND CONTENT**

To expedite proposal review and evaluation, and to assure that each proposal receives the same orderly review, all proposals must follow the format described in this section.

Proposal sections and pages shall be appropriately numbered and the proposal shall include a Table of Contents. Offerors are encouraged to submit concise and clear responses to the RFP. Proposals shall contain all elements of information requested without exception. Instructions regarding the required scope and content are given in this section. The Grantee reserves the right to include any part of the selected proposal in the final contract.

The proposal shall consist of a technical proposal only. No cost proposal is required as the value of the USTDA grant is established at U.S. \$303,000.

Offerors shall submit one (1) original and eight (8) copies of the proposal. Proposals received by fax cannot be accepted. In addition, the Grantee will not respond to inquiries after 15 days of this RFP's posting date.

The following sections and content are required for each proposal:

- Transmittal Letter,
- Cover/Title Page,
- Table of Contents,
- Introduction and Executive Summary,
- Company Information,
- Organizational Structure, Management Plan, and Key Personnel,
- Technical Approach and Work Plan,
- Experience and Qualifications, and
- Miscellaneous.

Detailed requirements and directions for the preparation of each section are presented below.

#### **3.1 SECTION 1: INTRODUCTION AND EXECUTIVE SUMMARY**

An Executive Summary should be prepared describing the major facts or features of the proposal, including any conclusions, assumptions, and generalized recommendations the Offeror desires to make. Offerors are requested to make every effort to limit the length of the Executive Summary to no more than five (5) pages.

## **3.2 SECTION 2: COMPANY INFORMATION**

### **3.2.1 Company Profile**

Provide the information listed below relative to the Offeror's firm. If the Offeror is proposing to subcontract some of the proposed work to another firm(s), similar information must be provided for each subcontractor. Offerors are requested to limit the length of the Company Profile Information to one (1) page per firm.

1. Name of firm and business address, including telephone and fax numbers.
2. Year established (include former firm names and year established, if applicable).
3. Type of ownership and parent company, if any.
4. Project Manager's name, address, telephone and fax number, if different from (1).

### **3.2.2 Offeror's Authorized Negotiator**

Provide name, title, address, telephone and fax number of the Offeror's authorized negotiator. The person cited shall be empowered to make binding commitments for the Offeror and its subcontractors, if any.

### **3.2.3 Negotiation Prerequisites**

1. Discuss any impact of any current or anticipated commitments which may impact the ability of the Offeror or its subcontractors to complete the Feasibility Study as proposed and within the project schedule.
2. Identify any specific information which is needed from the Grantee before commencing contract negotiations.

## **3.3 SECTION 3: ORGANIZATIONAL STRUCTURE, MANAGEMENT, AND KEY PERSONNEL**

Describe the Offeror's proposed project organizational structure. Discuss how the project will be managed including the principal and key staff assignments for this Feasibility Study. Identify the Project Manager who will be the individual responsible for this project. The Project Manager must have the responsibility and authority to act on behalf of the Offeror in matters related to the proposed Feasibility Study.

Provide a listing of personnel (including subcontractors and consultants) to be engaged in the project, either U.S. or local with the following information for key staff: position in the project; pertinent experience, curriculum vitae; other relevant information. If subcontractors are to be used, the organizational relationship between the firms must be described.

A manpower schedule and the level of effort for the project period, by activities and tasks, as detailed under the Work Plan shall be submitted. A statement confirming the availability of the proposed project manager and key staff over the duration of the project must be included in the proposal.

#### **3.4 SECTION 4: TECHNICAL APPROACH AND WORK PLAN**

Describe in detail the proposed technical approach and work plan. Discuss the project requirements as perceived by the Offeror. Include a brief narrative of tasks within each activity series. Begin with the information gathering phase and continue through delivery and approval of all required reports.

Prepare a detailed schedule of performance that describes all activities and tasks within the Technical Work Plan, including periodic reporting or review points, incremental delivery dates, and other project milestones.

Based on the Technical Work Plan, and previous project experience, explain when and where Offeror will require support from the Grantee. Detail the amount of staff time required by the Grantee or participating agencies and any work space or facilities needed to complete the Feasibility Study.

#### **3.5 SECTION 5: EXPERIENCE AND QUALIFICATIONS**

Provide a discussion of the Offeror's experience and qualifications which are relevant to the objectives and TOR for the Feasibility Study. If a subcontractor(s) is being used, similar information must be provided for the prime and each subcontractor firm proposed for the project. Relevant experience and qualifications of key staff proposed shall be provided including letters of commitment from the individuals proposed concerning their availability for contract performance.

As many as possible but not more than six (6) relevant and verifiable project references must be provided, including the following information:

- Project name,
- Name and address of client (indicate if joint venture),
- Client contact person (name/ position/ current phone and fax numbers),
- Period of Contract,
- Description of services provided,
- Dollar amount of Contract, and
- Status and comments.

Offerors are strongly encouraged to include in their experience summary primarily those projects that are similar to or larger in scope than the Feasibility Study as described in this RFP.

#### **Section 4: AWARD CRITERIA**

Individual proposals will be initially evaluated by a Procurement Selection Committee of representatives from the Grantee. The Committee will then conduct a final evaluation and completion of ranking of qualified Offerors, and the Grantee shall promptly negotiate a contract with the best qualified Offeror. If a satisfactory contract cannot be negotiated with the best qualified Offeror, negotiations will be formally terminated. Negotiations shall then be undertaken with the second most qualified Offeror and so forth.

The selection of the Contractor will be based on the following criteria:

The Feasibility Study Team should have proven and demonstrated expertise in the following areas:

- Academic background and confirmed experience in telecommunications engineering, economics and law (30 percent),
- Creating feasibility studies that consider the technical, economic, legal and institutional impacts associated with the deployment of a fiber optic backbone infrastructure (25 percent),
- Knowledge of telecommunication strategies, policies, and African telecommunication reforms (25 percent),
- Procurement of large scale telecommunication technologies (10 percent),
- Deployment of fiber optic infrastructure and related systems integration (10 percent).
- Assessment of project for environmental and social matters to IFC performance standards (5 percent)

The following positions should be presented for this assignment. The bidder may provide other qualified individuals and local subcontractors (up to 20%) as they see appropriate:

##### Project Manager

*Job Purpose:* The Project Manager will have overall responsibility and serve as the single point for coordination and quality of the Technical Assistance.

##### *Major Skills and Requirements:*

- An established record of providing technical direction and leading multi-disciplinary teams.
- Significant developing country experience, particularly in Sub-Saharan Africa, in identifying constraints to the telecommunications and ICT sector;
- Experience working on regulatory and policy frameworks for the telecommunications industry.
- The Project Manager must have a strong background and skills with an in depth understanding of the technical, business and construction issues involved in national or large scale telecom and ICT backbone projects.
- Strong communication skills, both oral and written.

- Proven project management experience interacting with senior level government officials, and with handling difficult political situations.
- Requires at least a Bachelors degree in Business, Finance, Computer Science or other relevant subject matter, as well as five to ten years industry experience.

### Telecommunications Engineer

*Job Purpose:* The Telecommunications Engineer(s) will take the lead technical role in surveying and analyzing the proposed plan against Liberia's existing infrastructure, conducting a requirements analysis, identify any missing gaps, assessing interconnection points, and proposing technical recommendations.

#### *Major Skills and Requirements:*

- Strong understanding of large telecommunication infrastructure projects.
- The individual should have been instrumental in planning telecommunications infrastructure as well as overseen or at least participated in the implementation of the selected vendor networks and systems.
- Extensive knowledge of data, broadband, radio or satellite communication concepts and technologies is required.
- Demonstrated expertise in architecting and developing detailed technical design specifications and standards.
- Demonstrated experience in developing implementation plans, budgets and cost estimates for complex telecom or ICT projects.
- Requires at least a Bachelors degree in Computer Science, Telecommunications, or Electrical Engineering, as well as five to ten years industry experience in telecommunications and infrastructure corporate operations.
- Telecom Engineer with knowledge and experience in developing countries and the Sub-Saharan region, while not a specific requirement would be a plus.

### Financial Advisor

#### *Job Purpose:*

The Financial Advisor will take the lead in assessing and recommending business models, ownership structure and related financing options for LTC's fiber backbone infrastructure for Monrovia. The Financial Advisor will also assist in developing a detailed project financing strategy and identifying possible financing sources.

#### *Major Skills and Requirements:*

- A financial advisor or investment banker who has experience working with teams of attorneys, tax and management consultants in preparing business cases, ownership structures, and financing agreements;
- Demonstrated experience in advising companies on marketing and financing arrangements;
- Strong communication skills, both oral and written;
- Proven experience interacting with senior level government officials and business executives, and with handling difficult political situations

Requires at least a Bachelors degree in Business, Finance or other relevant subject matter, as well as five to ten years industry experience.

Telecommunications Regulatory Expert and/or Telecommunications Lawyer

*Job Purpose:*

The Consultant may propose either a Telecommunications Regulatory Expert and/or a Telecommunications Lawyer. This function will take the lead role in providing technical assistance and analysis for identifying additions or recommended adjustments to the regulatory, policy and legal framework for implementing the fiber optic ring that promotes affordable, non-restrictive access, and a competitive telecommunications environment.

*Major Skills and Requirements:*

- Strong background in telecommunications field, preferably with regulatory and operating company practices.
- Knowledge of modern management practices in the telecommunications industry.
- Extensive knowledge of cost and pricing models, tariffs, open access models, and interconnection agreements for the telecommunications industry.
- Demonstrated knowledge of best practices in promoting universal access.
- Strong communication skills, both oral and written.
- Proven project management experience interacting with senior level government officials and with handling difficult political situations.
- Regulatory Expert with knowledge and experience in developing countries and the Sub-Saharan region, while not a specific requirement would be a plus.
- Ability to assess or to guide the company in developing environmental and social action plans and assessments complying not only with local laws and regulations but also with World Bank performance standards.

Note: To qualify for consideration of the proposal, the resumes of the Project Manager and the four Senior Specialists must be submitted in a legally binding form, bearing the individuals' original signatures. No substitution of key professionals will be permitted.

Proposals which do not include all requested information may be considered non-responsive.

Price will not be a factor in contractor selection.

## ANNEX 1

Mr. Ben Wolo, Managing Director, Liberia Telecommunications Corporation,  
Telecommunications Building, Lynch Street, PM Bag 9039, 1000 MONROVIA 10,  
Liberia, Phone: (231) 7777 3978, Fax: (231) 7722 6356

#### B - Liberia: Greater Monrovia Fiber Optic Ring Feasibility Study

POC Evangela Kunene, USTDA, 1000 Wilson Boulevard, Suite 1600, Arlington, VA 22209-3901, Tel: (703) 875-4357, Fax: (703) 875-4009. Liberia: Greater Monrovia Fiber Optic Ring Feasibility Study. The Grantee invites submission of qualifications and proposal data (collectively referred to as the "Proposal") from interested U.S. firms which are qualified on the basis of experience and capability to develop a Feasibility Study for the Liberian Telecommunications Corporation (LTC).

Over the last five years, Liberia has worked steadily to rebuild the infrastructure and institutions destroyed by 14 years of civil war. The democratically elected government, headed by Africa's first female president Ellen Johnson-Sirleaf, has implemented significant reforms to rebuild the economy, reduce poverty, and invite foreign investment. As evidence of its progress, Liberia has cleared its obligations to the International Monetary Fund, World Bank, and African Development Bank over the past 16 months, allowing the country to receive much needed financial support from international institutions.

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Though the stated goal of Liberia's telecommunications policy is to promote "fair and effective competition," the newly installed government lacks expertise on organizing the

sector to attract private investment. The Feasibility Study will design business models that encourage open competition and lay the groundwork for LTC's eventual privatization. The contractor will also offer training to stakeholders, including the Ministry of Post and Telecommunications and the Liberian Telecommunications Authority, on structuring an IT market to attract private sector investment, so that LTC can expand their market presence in a manner that encourages private sector entrance and expansion in the sector.

The U.S. firm selected will be paid in U.S. dollars from a \$303,000 grant to the Grantee from the U.S. Trade and Development Agency (USTDA).

A detailed Request for Proposals (RFP), which includes requirements for the Proposal, the Terms of Reference, and a background desk study report are available from USTDA, at 1000 Wilson Boulevard, Suite 1600, Arlington, VA 22209-3901. To request the RFP in PDF format, please go to:

<https://www.ustda.gov/USTDA/FedBizOpps/RFP/rfpform.asp>. Requests for a mailed hardcopy version of the RFP may also be faxed to the IRC, USTDA at 703-875-4009. In the fax, please include your firm's name, contact person, address, and telephone number. Some firms have found that RFP materials sent by U.S. mail do not reach them in time for preparation of an adequate response. Firms that want USTDA to use an overnight delivery service should include the name of the delivery service and your firm's account number in the request for the RFP. Firms that want to send a courier to USTDA to retrieve the RFP should allow one hour after faxing the request to USTDA before scheduling a pick-up. Please note that no telephone requests for the RFP will be honored. Please check your internal fax verification receipt. Because of the large number of RFP requests, USTDA cannot respond to requests for fax verification. Requests for RFPs received before 4:00 PM will be mailed the same day. Requests received after 4:00 PM will be mailed the following day. Please check with your courier and/or mail room before calling USTDA.

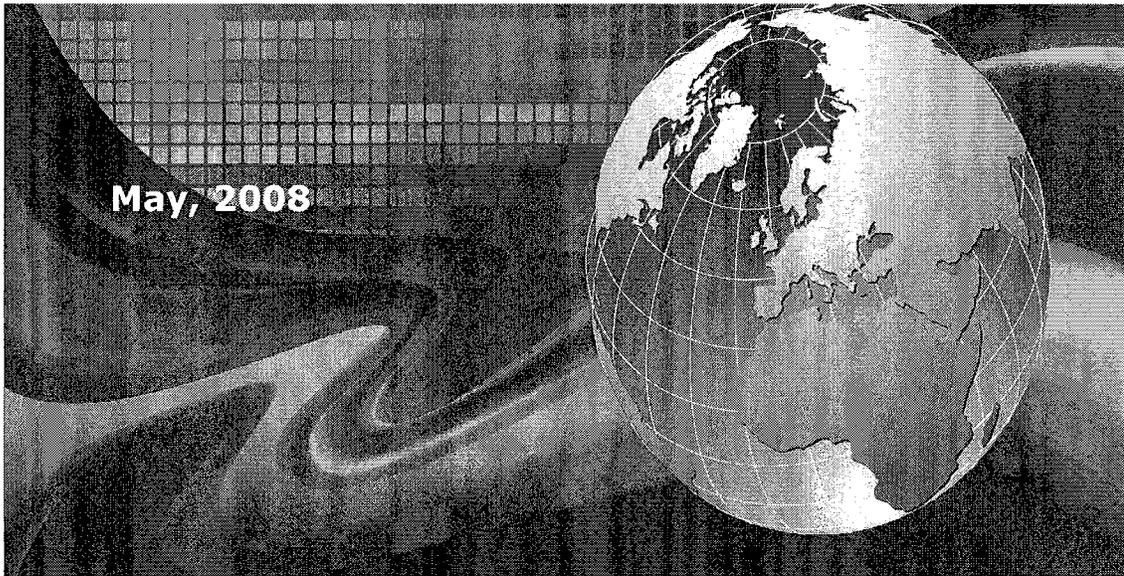
Only U.S. firms and individuals may bid on this USTDA financed activity. Interested firms, their subcontractors and employees of all participants must qualify under USTDA's nationality requirements as of the due date for submission of qualifications and proposals and, if selected to carry out the USTDA-financed activity, must continue to meet such requirements throughout the duration of the USTDA-financed activity. All goods and services to be provided by the selected firm shall have their nationality, source and origin in the U.S. or host country. The U.S. firm may use subcontractors from the host country for up to 20 percent of the USTDA grant amount. Details of USTDA's nationality requirements and mandatory contract clauses are also included in the RFP.

Interested U.S. firms should submit their Proposal in English directly to the Grantee by 4:00 p.m. on September 5, 2008 at the above address. Please note that the Grantee will not respond to inquiries regarding the Proposal or Project after 15 days of this announcement. Evaluation criteria for the Proposal are included in the RFP. Price will not be a factor in contractor selection, and therefore, cost proposals should NOT be submitted. The Grantee reserves the right to reject any and/or all Proposals. The Grantee also reserves the right to contract with the selected firm for subsequent work related to the

project. The Grantee is not bound to pay for any costs associated with the preparation and submission of Proposals.

## ANNEX 2

**U.S. TRADE AND DEVELOPMENT AGENCY  
LIBERIA TELECOMMUNICATIONS CORPORATION  
METROPOLITAN FIBER OPTIC RING FOR  
MONROVIA, LIBERIA  
DESK STUDY**



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# West Africa: Monrovia, Liberia Metropolitan Fiber Optic Ring Desk Study

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## 1. Acronyms

ADSL	Asymmetrical Digital Subscriber Line
BCEAO	Central Bank of West African States
CFA	Unit of West African Currency
DM	Definitional Mission
EAIF	Emerging Africa Infrastructure Fund
FMFM	Frontier Markets Fund Managers
GB	Gigabits
ICT	Information and Communications Technology
IT	Information Technology
IMF	International Monetary Fund
ISP	Internet Service Provider
ITU	International Telecommunications Union
Km	Kilometers
Mbs	Megabits
NICI	National Information and Communications Infrastructure
PIDG	Private Infrastructure Development Group
SAT-3/WASC	Southern Africa – Western Africa Submarine Cable <input type="checkbox"/>
SNO	Second National Operator
TOR	Terms of Reference
USD	United States Dollar
USAID	U.S. Agency for International Development
USTDA	U.S. Trade and Development Agency
VPN	Virtual Private Network
WB	World Bank
WiFi	Wireless Fidelity
WLL	Wireless Local Loop



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## 2. Executive Summary

Computer Frontiers, Inc. was contracted by the U.S. Trade and Development Agency (USTDA) to identify projects for the West Africa ICT Roadmap to Opportunities Conference, to be held in Accra, Ghana, on July 8-10, 2008. During this process Computer Frontiers also identified possible projects, which with some assistance from USTDA, would offer greater opportunity for American companies.

Computer Frontiers, Inc. identified a project in Liberia, sponsored by the government owned Liberian Telecommunications Corporation, (LTC) which has a license to provide telecommunications infrastructure and services throughout Liberia. LTC has an aggressive plan to re-build its network throughout the country, as well as to connect to an international submarine cable. As a first step, LTC would like to build a fiber backbone around the city of Monrovia, which alone, will benefit approximately 40% of the total Liberian population which now lives in and around Monrovia.

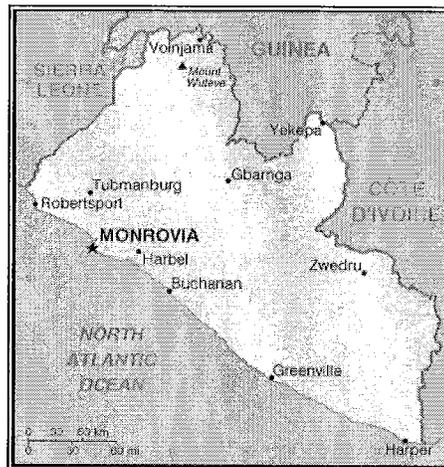
Each day, Liberia moves further away from its conflicted past and into a stable future. Liberia is gradually reintegrating into the international community. At the end of 2007, arrears to the World Bank and the African Development Bank were cleared, and on March 14, 2008, Liberia cleared its long standing IMF obligations of \$888 million, built up since the 1980s.

Normalizing financial relations with the IMF also opens the door for other institutions to provide greater, and much-needed, financial support to Liberia.

In the telecommunications sector, Liberia has made great progress to create a platform for investment by implementing key structural and policy reforms, including the appointment of the chairman of the Liberia Telecommunications Authority in 2006, and the passing of the Telecommunications Act in 2007. The result is expected to increase the quality and availability of ICT services for the people of Liberia.

Liberia has a vibrant mobile telephone market, but fixed line infrastructure is nearly non-existent. This lack of backbone and local access infrastructure forces Liberia to depend on high cost satellite links for internal and external connectivity.

To rectify this situation, the Liberian Telecommunications Company (LTC), is





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proposing to develop a fiber optic metro ethernet ring around the city of Monrovia, to become a carrier's carrier for existing telecommunications operators, as well as providing services directly to government agencies and the private sector. This project is a key component of the long defunct LTC's revitalization program launched by the government in 2006,

To realize this project, LTC needs support in designing the network and developing a business model that includes strategies for financing and management plans.

The project is estimated to cost US\$10.1 million, of which an estimated US\$ 7 million could be used to procure US equipment and services. Due to the potential high value for US exports, its strong potential development impact, we recommend the project to TDA for financing considerations.

## 3. Project – Monrovia, Liberia Metro Fiber Optics Backbone

### A. Background Information

#### PREFACE

Liberia, founded in 1847 by freed African slaves from the United States, is situated on the Atlantic Coast of West Africa bordering Sierra Leone, Guinea,

and Côte d'Ivoire. Liberia has approximately 3.8 million inhabitants and is attempting to reconstruct itself after decades of civil conflict.

In 2003, with the resignation of warlord turned President, Charles Taylor, a transitional government in Liberia was formed. The Accra Comprehensive Peace Agreement signed in 2003 initiated a political transition, culminating in presidential elections in October-November 2005. When the votes were tallied, Africa's first elected female head of state, President Ellen Johnson-Sirleaf was elected. President Johnson-Sirleaf's job is formidable, governing a country with weak or destroyed infrastructure, a mostly poor and under educated population, and broad unemployment.

Liberia's two civil wars during 1989-2003 had a devastating impact on Liberia's economy, reducing real GDP to about 40 percent of its pre-war level. An estimated 64 percent of the population of 3.8 million lives below the national poverty line.

Over the past two years, the Liberian government has implemented significant reforms to rebuild its economy and reduce poverty. With high poverty rates, unemployment of around 85%, no national electricity grid, and devastated infrastructure, the country is making slow but steady progress towards sustainability with the help of the international community. The absence of infrastructure throughout the country



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## Objectives of the Liberian ICT Policy

- To promote the development of Liberian telecommunications infrastructure and markets;
- To promote market liberalization, private sector expansion, and fair and effective competition throughout the telecommunications sector;
- To create and establish an independent regulatory agency responsible for telecommunications and spectrum regulation;
- To promote universal access to telecommunications services throughout Liberia;
- To support education, economic, and social development within Liberia
- To ensure flexibility and adaptability and ease of access to radio spectrum resources in response to technological advances, and economic, social and markets factors.

keep the country connected. Telecommunications services are currently provided through four mobile phone companies, as the landline capacity was completely destroyed during the conflict years.

## REGULATORY BACKGROUND

In the area of telecommunications, the Government of Liberia's goal is to increase the penetration of basic and advanced communications services, so that all citizens should have reasonable ac-

cess to a wide range of communications and information services in the near future.

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## Roles & Responsibilities of the Liberian Telecommunications Authority

- Licensing of operators
- Enforcing license conditions and operator compliance
- Promoting network and service expansion, and universal access
- Spectrum management and licensing
- Standardization and type approval
- Consumer protection
- Technical and economic regulation, including quality of service and tariff regulation
- Competition regulation, including interconnection
- Promoting investment in the sector
- Monitoring sector development



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broad sector policy and development strategy, in conformance with the goals and laws of the Government of Liberia. The Ministry plays a key role in promoting the harmonization of telecommunication policies and regulatory frameworks within regional, sub-regional economic integration arrangements, such as ECOWAS.

The Liberian Telecommunications Authority (LTA), established in 2005 by Act 18 of the Legislature, now has the responsibility as an independent agency to implement the 2007 ICT Policy, regulating and monitoring the development of the telecommunications sector, and ensuring that competition in the market is as open, fair, and effective as possible. Because of the importance of this sector, LTA reports directly to the Head of State. The effectiveness of the LTA depends largely on its independence from the supply of the service and policy making function.

The LTA is “self-financing,” funded and sustained through recurring license fees. LTA’s procedures for issuing rulings or decisions are to be entirely transparent, and allow the affected operators, customers, and other interested parties the opportunity to contribute their views in a public forum as well as the right under the law to seek reconsideration of any regulatory decision.

### ECONOMIC & COMMERCIAL OVERVIEW

Until the 1950s, Liberia's economy was almost totally dependent upon subsistence farming and the production of rubber. The American-owned Firestone plantation was the country's largest employer and held a concession on some one million acres (404,700 hectares) of land. With the discovery of high-grade iron ore, first at Bomi Hills, and then at Bong and Nimba, the production and export of minerals became the country's major cash-earning economic activity. Gold, diamonds, barite, and kainite are also mined.

For a few years in the 1970s, Liberia's per capita income was equivalent to that of Japan. Liberia is now ranked by the World Bank as among the very poorest countries in the world. About 70% of the population works in the agricultural sector. Rice, the main staple, is imported. The country is capable of self-sufficiency in rice production and efforts have been made to develop intensive rice production and to establish rice and fish farms.

Much of the country's industry is concentrated around Monrovia. The lack of skilled and technical labor has slowed the growth of the manufacturing sector. Most productive facilities in Liberia were devastated during the civil conflict, so there is potential for growth in almost every sector.



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The Liberian people have already seen significant benefits from their government's reforms. After falling over 30 percent in 2003, GDP growth steadily increased to an estimated 9.5 percent in 2007 and investment is picking up strongly. Donors have provided substantial resources to help the process of rebuilding. Government revenues have more than doubled and the government now pays wages and suppliers on time.

### ECONOMIC REFORMS

Real GDP growth is projected to average 11.3 percent per annum from 2008 to 2012, underpinned by a sustained recovery in the resource-based sectors, following (1) the lifting of UN sanctions on diamond and timber exports, (2) substantial private investment in the iron ore sector, and (3) continued strong performance in the service sector. A sustained recovery though will depend on maintaining security and strong external financial and technical support, as well as an increase in private sector-led investment in key sectors.

### IMF BACKS DEBT RELIEF FOR LIBERIA

To date, 102 countries, including many low-income countries, participated in the fund-raising effort for Liberia, securing sufficient commitments to finance the IMF's debt relief to Liberia.

Arrears to the World Bank and African Development Bank were cleared in December 2007, and on March 14, 2008 Liberia cleared its long standing obliga-

tions of \$888 million, built up since the 1980s, and normalized its financial relations with the IMF. In response, the IMF:

- Restored Liberia's voting and related rights in the IMF and its eligibility to use the general resources of the Fund.
- Provided financial support totaling \$952 million—comprising a three-year \$391 million arrangement under the Poverty Reduction and Growth Facility (PRGF) and a \$561 million arrangement under the IMF's Extended Fund Facility (EFF)—in support of the Liberia government's economic program for 2008-2010.
- Started providing debt relief to Liberia, along with other creditors, to cover at least \$4.4 billion of the country's \$4.7 billion debt outstanding at end-June 2007.

Normalizing financial relations with the IMF also opens the door for other institutions to provide greater and much-needed financial support for Liberia. More generally, the clearance of Liberia's arrears marks an important step towards the country's reintegration into the international community.<sup>1</sup>

All formalities aside, Liberia has a very liberal business climate intended to attract foreign investment and spur economic growth and development in the country. Through a liberal Investment Incentive Code, Liberia offers several physical benefits, including exemption

<sup>1</sup> IMF Press Release, March 14, 2008



## West Africa: Monrovia, Liberia Metropolitan Fiber Optic Ring Desk Study

from custom duties, income tax, stamp fees and other benefits, to new and expanding business enterprises for approved investments projects in areas such as manufacturing, agriculture, forestry, fishing, and mining. Other potential areas for investment incentives include building and construction and transport and communication. Approved investment projects may also be eligible for support in securing loans and guaranteeing credit by the Central Bank

### **IRON ORE**

Resources such as gold, diamonds and iron ore are present in considerable abundance but the civil war devastated the mining sector. The Liberian economy had relied heavily on the mining of iron ore prior to the civil war, and Liberia was a major exporter of iron ore to the world market. In the 1970s and 1980s, iron mining accounted for more than half of Liberia's export earnings.

The Liberian Government is working hard to rebuild the sector, and is currently offering tenders for new mining concessions.

### **TIMBER**

The eastern part of the country contains the most unspoiled region of the Upper Guinea Forest, a high priority conservation area due to the large number of endemic mammal species. This area has potential for growth in sustainable logging of tropical hardwoods, but on-going heavy exploitation of large concessions

and forestry mismanagement in recent years have raised the concern of environmentalists.

Liberia is also home to the Gola or Ekop [Tetraberlinia Tubmaniana] tree, which presently is only found in Liberia. Ekop is a general utility wood that is used for veneer, plywood, and furniture components. The names "African pine" and "Liberian pine" have been applied to this species, but because it is a hardwood and not a pine, these names are misleading. Gola is a very recent newcomer to the timber market and its potential has yet to be developed. Its workability and relatively light color should permit utilization in both the solid and veneer form for both utility and decorative purposes.

Currently, the largest timber concession, Oriental Timber Corporation (OTC), is Indonesian owned.

### **MANUFACTURING**

Manufacturing accounts for just under 5 percent of GDP, but the availability of agricultural crops, mineral resources, and low cost labor presents opportunities for growth in this sector.

### **TOURISM**

The seacoast of Liberia has many beautiful tropical beaches, a favorable climate in the dry season (September-May), and sport fishing. However, growth in this sector is a long-term prospect because of the lack of adequate infrastructure.



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### MARITIME RELATED BUSINESS

Liberia's success story, however, has been its shipping and corporate registry. Currently it is the world's second largest maritime registry - previously it was the largest registry. The registry has a reputation for quality, efficiency, safety, and service. Liberia also offers one of the most convenient, efficient, and tax effective offshore corporate registries in the world. The registry is operated by LISCR, LLC (The Liberian International Shipping and Corporate Registry), which has offices in the USA (Vienna, Virginia, and New York), Piraeus, Hamburg, Hong Kong, London, Monrovia, Zurich and Tokyo. LISCR has made significant investments in new computer and communication technologies in order to meet the demands of today's shipping industry.

The government derives a sizable income from registering ships, and at the end of 2007, the Liberian-flagged fleet consisted of 2,600 vessels of more than 80 million gross tons.

The Freeport of Monrovia, together with the port of Buchanan, are regular ports of call for major steamship lines operating between Europe, the US and the Far East.

### 4. Liberian Communications and Information Services

Liberia is in a unique situation, as it finds itself with not a single serviceable fixed telephone line. The civil conflict

inflicted serious damage on the national infrastructure, destroying the copper based fixed-line telecommunications network.

The Liberia Telecommunications Corporation (LTC) was established by the Liberian Legislature with the enactment of The Liberia Telecommunications Corporation Act of 1973. The Act provided exclusive rights to build, operate, and provide fixed telecommunications facilities and services within the Republic of Liberia. This was refined in 1978 by the creation of the Ministry of Posts and Telecommunications to provide policy and regulatory authority, leaving LTC to be the state-owned operator.

Although LTC remains non-operational today, the government has recently taken steps to revitalize the organization by hiring an entirely new management team headed by Ben Wolo, who has degrees in Electrical and Computer Engineering with over 15 years of experience in telecommunications and ICT industry. His experience includes leading large team in designing, deploying and managing major telecommunications networks for fortune 100 companies in the United States. . . The team consists of 12 professional managers and 51 contractors brought on board to revive the national operator. The CDMA network being installed by LTC is 80% complete, and services are planned to commence in Fall 2008.

As the fixed line infrastructure deteriorated, a competitive mobile telephony



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market emerged to fill the gap. Licensing of spectrum for mobile operations began in 1998, but up until 2003, mobile density remained at 0.06%. During the transitional government rule in 2003, the spectrum allocation and licenses were reviewed, creating an environment in which four mobile operators were licensed to operate in Liberia.

These four operators have mobile coverage in all fifteen counties and service 60-70% of the population centers in Monrovia. The legislation passed in 2003 limits the ability to provide additional mobile operator licenses. The expectation is that licensing legislation will now follow from the Telecommunications Act of 2007.

### FIXED LINE

Currently, wire line telecommunications are non-existent in the country. LTC intends to resuscitate its operation by providing fixed wireless and mobile services. Not everyone is enthusiastic about how LTC is being revived by the Government. The legislative and policy environment has the potential for being viewed as biased. The inclusion of LTC and the exclusion of other service providers in the creation of new legislation could give both the appearance and the actuality of skewing the decision making process in favor of the government owned LTC.

In February 2008, LTC signed two Memoranda of Understanding that gave it full control and ownership of the recently developed CDMA2000 network.

The MoUs were signed with Alink, an Ivorian telecommunications company, and ZTE Corporation, a Chinese manufacturer of telecommunication equipment, respectively. Both companies were involved in the set-up and launch of the CDMA network. The agreements had quite a bit of history behind them, and took 20 months to negotiate.

ZTE is now expected to supply equipment to extend LTC's network footprint beyond its current single switch in the capital, Monrovia.

If the pattern in the sub-region is followed, the new regulator LTA can expect to come under pressure from the Government and the company to give it back its former monopoly over the international gateway. The justification will be that it can then generate much needed cash-flow to increase the value of the company for privatization. This potential bias may contradict the national ICT policy which states:

*The telecommunications industry should be a vibrant, private sector led, competitive marketplace, with multiple providers offering a variety of services.*

Legislative bias towards one provider could reduce investor confidence, reduce competition, and hamper innovations in the sector. As is illustrated in the next section on Mobile Telecommunications, there has been a great deal of private investment in the Liberian telecommunications sector, and installing new legislation which garners favor to one provider



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over the other, especially in the case of LTC controlling all international gateway services, could cause set-backs across the telecommunications market in Liberia, hindering its goal for universal access, rather than encouraging it.<sup>2</sup>

### MOBILE MARKET

The mobile market has a 19% penetration rate which is comprised of corporate businesses, government officials and private citizens. The current mobile subscriber base is estimated at approximately 450,000 lines. A high percentage of these are located in commercial sites within the city of Monrovia.

All of the mobile service providers operate 2G GSM networks with various spectrum allocations. All, but Cellcom, offer fixed wireless Internet services as well. Network coverage among the four providers is estimated to reach 70% of Liberia's population centers.

**Lonestar:** LoneStar was a subsidiary of Investcom, a holding company based in Beirut, Lebanon, with subsidiaries in eight African and Middle Eastern countries. It was bought by South Africa's MTN in 2006, and as the dominant mobile operator, with 50-60% market share, it continues to invest in expanding coverage and upgrading facilities and features. Estimated investment to date is \$35 million USD. It plans to extend network coverage to 90% of the population in 2009, representing geographic cover-

age ofgsomewhere between 4050%. It has six sites in rural areas currently linked by VSAT.

Lonestar has just started content services and will invest \$1.2 million in GPRS/EDGE. This is part of a total investment of \$10 million over the next two years to ensure that it retains its market position and increases its market share. It believes that the market could grow to just over 600,000 by the end of 2008.

**Cellcom:** Cellcom is owned by a partnership consisting of American and Israeli investors. Cellcom has invested approximately US\$25 million to date. The network currently handles some 30,000 international minutes per month. An email to mobile phone service is active (\$.03 cents per email), and is currently experiencing 2-3,000 emails per day.

Cellcom also offers 'fund' transfers via SMS but is currently limited to a maximum of US\$10 per exchange. Cellcom also has roaming partnerships with some 400 international operators.

Cellcom offers Internet access using Wi-MAX over 2.4 or 3.5 GHz with a flat rate service of 128 kbps at a cost of US\$120 per month.

**Comium:** Comium is owned by the Dalloul Group of Lebanon. The Dalloul Group also owns a GSM operator in Lebanon through Libancell. Dalloul Group has a management contract for a GSM network and Internet services in

<sup>2</sup> *Africa Telecoms & Internet Market*, Russell Southwood, Balancing Act, 2007



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Ngorny Karabakh and Iran (Kish Island). The Dalloul Group also has GSM licenses in Armenia, Sierra Leone; and an ISP license in Iraq. Comium, with the smallest subscriber base appears to be attempting to grow its fixed wireless service as a differentiator with between 400 and 700 subscribers (25-40% of market). It offers a wireless broadband service through a separately owned ISP in the group and says it has 900 subscribers for this service, which is unverified. It will soon be installing GPRS.

Comium has an external value-added provider that offers data content services like horoscopes and ring tones. Currently there are about 3,000 users for these services which only provide a very modest income stream.

**Libercell:** Libercell is the network name of Atlantic Wireless (Liberia) Inc., an operator owned by Lebanese investors. The company reports an estimated US\$15 million investment to date with some US\$10 million having been spent recently to upgrade to GPRS/EDGE capability within Monrovia. Additional licensing is required to operate 3G networks in Liberia. Approximately 10% of their estimated 60,000 customers are post-paid accounts. Libercell currently has towers in 13 of the 15 counties with 35 base stations. It plans to add an additional 50 base stations to provide coverage to the entire country.

Saudi-owned HiTs Telecom bought a 45% stake in Libercell, in April 2007, and has an option to purchase 75% in

2008. HiTs Telecom is making a major push into Africa, with an acquisition under its belt and a \$1 billion investment plan. HiTs wants to set up eight operators by 2009 and another two within three years, offering a range of mobile and fixed-line voice, 3G, WiMax, data, and international gateway services.

HiTs acquired a universal service license in Uganda in March 2007. The company is also in discussions to acquire licenses in Tanzania and the Democratic Republic of Congo.

### **VoIP**

There is currently no legislation or regulation specific to VoIP communications in Liberia. However, the chairman of the regulatory authority has said that this was under review and that regulations may be introduced in the future. VoIP is currently constrained by the lack of reliable Internet bandwidth and high latency due to international satellite transit times.

### **INTERNET**

Another area of the sector making strides is the Internet market. Currently, there is a growing user base, with unverified estimated at 1,000 to 1,500 Internet users, but this is unverified. There are currently 10 functioning Wireless Internet Service Providers (WISPs) in Liberia: Delta Tech, Vital Technology, Consolidated Group, LIBCOM, Intertel, Cellcom, Comium, Global Technology, Libercell/AWI, and Power Tech. None of these ISPs are operating outside of the



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greater Monrovia region. Most of the operators have less than 100 customers, and the largest is Comium, which has between 400 and 700 customers.

### SATELLITE SERVICES & EXISTING FIBER OPTIC BACKBONE NETWORK

Liberia lacks *any* national backbone or transit fiber. All remote connections are managed by individual operators using microwave links (75%) or satellite (25%). Each operator handles its own international connections. These include some 88 licensed VSAT operations, 10 WISPs plus one additional mobile operator which is not a WISP. The costs of satellite bandwidth are approximately 20% more than in neighboring Ghana, largely due to lack of competition and the absence of access to the SAT-3 submarine cable.

## B. Project Description

### Project Summary Information

Host Country	Liberia
Project Name	Greater Monrovia Fiber Optic Ring Project
Sector	ICT
Region	Sub-Saharan Africa
Project Location	Liberia
Project Costs	US\$10.1 million
US Exports	US\$ 7.07 million
Grantee	Liberia Telecommunications Corporation (LTC)

### About the Grantee and Supporting Organizations

The Liberia Telecommunications Corporation (LTC) was created in 1973 to provide a terrestrial telecommunications network across the country. This land-based network included fixed lines, fax facilities and cable networks. LTC, the government telecommunications operator, has been completely out of commission since 2005. The Government intends to revitalize the corporation, a vital conduit for the implementation of Liberia's Information and Communications Technology (ICT) plans. LTC seeks strategic partners or investors for infusion of funds to jumpstart its operations in the short-term and construct a modern telecommunications infrastructure in the long-term.

The revitalization of LTC is paramount to the redevelopment of the country's infrastructure. The proposed roadmap to the rebuilding the corporation includes the following steps:

1. Immediate resuscitation of the corporation's infrastructure and the establishment of an operational network, an operational income stream, and a subscriber base.
2. A National Fiber Optics Network in major cities and towns.
3. Access to fiber optic cable system connecting to the rest of the world (SAT3) or similar fiber optics cable.



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The target markets LTC will pursue are as follows:

- Current Mobile Users
- Government Agencies
- Public Corporations
- Mining Concessions
- Small, Medium & Large Businesses
- Education Sector
- Banks & Financial Institutions
- Residential Homes & Apartment Complexes
- Embassies, UN & EU Facilities
- AU & ECOWAS Facilities
- Seaports, Airports & Transportation Facilities
- Hotels,
- Hospitals, Clinic & Medical Facilities
- Supermarkets, Clothing Stores & Consumer Goods outlets

### EXISTING INFRASTRUCTURE

In 2004, LTC signed an agreement valued at USD \$7.6 million dollars with ALINK Telecom and ZTE for a CDMA2000 turn-key telecommunications network. The network is designed to cover a 50-mile radius from the capital city Monrovia. The CDMA2000 network is 90% installed and scheduled to be in operation by fourth quarter 2008. LTC signed two Memoranda of Understanding with Alink, an Ivorian telecommunications company, and ZTE

Corporation, a Chinese manufacturer of CDMA telecommunication equipment. The first MoU turned over the telecommunication equipment to LTC, while the other gave full ownership and control of the entire network systems.

The CDMA2000 has a capacity for 600,000 subscriber lines and will provide the following services; fixed wireless; mobile services; wireless Internet; and two-way radio. The network design includes 12 Base Tower Stations within the 50-mile radius of Monrovia and its environs.

### LTC ASSETS

Apart from the CDMA2000 equipment, the corporation has three main assets that are of value:

- Thirty-five (35) tower locations, of which thirty (30) of the towers are still standing and leased to the current GSM Operators.
- Six (6) modern buildings across the country. The buildings will need some rehabilitation and these sites are on properties owned by the corporation or leased to the corporation.
- Existing duct work throughout Monrovia that can be utilized to lay new cable, such as a fiber optic cable.

Mr. Ben Wolo, the current Managing Director of LTC, desires to develop the following:

1. **An international voice gateway:**  
Mr. Wolo is working with banking



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and other lending institutions to secure debt-financing to fund the construction of an international voice gateway. LTC's original plan was to use the existing ZTE switch to originate/terminate international voice traffic from/to Liberia through negotiated interconnects to all national operators. Mr. Wolo, through the President, has taken it a step further and now intends to secure regulatory control of international voice access for Liberia, requiring all international voice traffic to be routed through LTC's gateway.

This revised strategy will leave the CDMA switch as is, just part of a national operator. The voice gateway will be built as a standalone, independent technology solution.

Mr. Wolo estimates that in the first month, LTC should terminate up to 2,480,000 voice minutes (in a 31 day month) and scale to 9,600,000 voice minutes in two years. He proposes to start operation with 4 E1 links over satellite and scale up to more than 16 E1s in 2 years.

2. **Fiber Ring in Monrovia:** LTC plans to build a metropolitan Fiber Optic Ring around Monrovia, and through its suburban areas, using the existing duct way that belongs to LTC. This network is expected to achieve the following:
  - a. A Metro Ethernet network
  - b. Provide network services to government offices

- c. Provide network services to businesses and residences
- d. Provide transmission capacity to other operators
- e. Provide transmission capacity to the LTC CDMA network
- f. Setup a fixed network alternative to FWA over CDMA

LTC also has future plans to build a National Fiber Backbone, connecting the major cities of Liberia. This project is expected to be at least two years down the road.

### 3. Build a National Data Centre

LTC wants to provide hosted services for the IT and communication needs of all government offices and parastatals. There is an opportunity for data sharing and consolidation across government entities. LTC would also like to provide telehousing services to other operators and businesses across Liberia.

LTC would also like to develop a call center solution. At first, the center would support LTC's CDMA network, eventually supporting all other LTC services.

### 4. Managed Services

LTC is also interested in providing managed services as part of its strategy to move from being a traditional telephone company to an integrated technology solution provider. LTC would like to better understand how to develop the various managed services that could be offered, including: managed WAN; managed Inter-



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net service; managed firewall and security services; hosted PBX; and, a managed contact center.

### 5. International Fiber Optic Cable Connection

LTC has a vision of linking to the AT&T submarine cable landing point in Dakar, Senegal within the next two years. This is due to the fact that it was not able to connect to the Sat-3 cable because of the conflict occurring in Liberia when the cable was built. The cost of cutting into the existing cable to create a landing point is now prohibitive.

### SELECTED OPPORTUNITY

Although all five projects hold potential, in consultation with stakeholders in Liberia, it was suggested that the implementation of a fiber ring around Monrovia, where 33% of Liberia's population resides, would facilitate access to both voice and data services, provide the quickest return on investment, create fewer political obstacles for LTC to overcome, and would have the greatest developmental impact on the Liberian people.

### Objectives

There is no terrestrial voice or data network, and no wholesale carriers' carrier utilizing less expensive or more efficient conduit in Liberia, such as fiber optic cable. Instead, Liberia relies on expensive satellite connections and suffers

from high local and international telecommunications costs, lack of local access and backbone capacity, and a range of inter-operability problems among local carriers.

LTC wishes to establish itself as a carriers' carrier and to operate a fiber ring in and around Monrovia to achieve the following objectives::

- a. Provide network services to government offices
- b. Provide network services to businesses and residences
- c. Provide transmission capacity to other operators
- d. Provide transmission capacity to the LTC CDMA network
- e. Setup a fixed network alternative to FWA over CDMA

LTC also has future plans to build a National Fiber Backbone, connecting the major cities of Liberia. This project is expected to be at least two years down the road.

### Challenges and Constraints

The following elements are challenges and constraints within the national ICT environment:

- Limited development of local expertise,
- Continual requirement for security of both staff and equipment as networks



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are rolled out across the country.

- Inadequacy of existing infrastructure with respect to integration with new technologies defined in the ICT plan,
- Availability of adequate and clean power is a major concern.

### Next Steps

There are several next steps needed to move the project forward. These steps will help shape and prepare the project for procurement and implementation.

First, a technical feasibility study and technical network design needs to be developed for the city of Monrovia, and its suburbs. To date, a technical feasibility study has not been conducted nor has a technical network plan been developed (other than rough designs). This feasibility study is crucial in helping to define the project and technical implementation plan.

A key question to be answered as part of the technical feasibility study is whether existing telecom operators and infrastructure owners will be allowed to use the fiber ring around Monrovia, and at what cost. Currently LTC is a government parastatal. However, there has been discussion relating to the privatization of LTC. Critical issues including use of right of ways, and maintaining a competitive open market place, etc. must be part of the study, to ensure the best, and

most conducive long term effect for the development of Liberia. How these and related issues are addressed will have implications for the technical design as well as for the ownership, management, financing options and regulatory framework for the proposed Monrovia fiber ring – a critical requirement for an efficient, affordable national ICT infrastructure.

Second, realistic and detailed estimated project costs need to be developed based upon the technical network design and project implementation plan. Documents shared with the desk study consultant provide a broad overview of the proposed project, and some estimated costs. Part of the next steps is to cost out the various components of the proposed network as well as an aggregated estimated project cost.

Third, a project financing strategy needs to be researched and put into place. There are a number of possible financing sources that could be pursued for this project. These sources include donor financing (e.g. World Bank, International Finance Corporation, African Development Bank, NEPAD, and other bilateral donor organizations and multilateral development banks) as well as public-private partnership arrangements and vendor financing schemes. However, LTC needs assistance in determining which financing options make the most sense for its market situation. LTC also needs support defining its strategy for how to approach or pursue these financing options.



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### C. Developmental Impact

The overall objective of this project is to provide fiber optic carrier class connectivity, significantly reducing the current prohibitive cost of telephony and Internet services in and around Monrovia, Liberia. The benefits of this project will improve ICT infrastructure in Monrovia and bring to the fore the regulatory and political issues involved, which will set the stage for the buildout of a national ICT infrastructure.

The Government of Liberia views this telecommunications project as crucial to the overall economic development of the country and to expansion of the ICT sector as a whole.

Potential benefits and development impact include:

- **Infrastructure/Industry:** The project will establish the physical and ICT infrastructure for Monrovia and its environs, where 33% of the population resides, resulting in a significant increase in the supply of high quality, reliable broadband capacity for voice and data while simultaneously reducing bandwidth costs. The improved access to the Internet resulting from the project will also lead to a parallel reduction in end-user prices for telecommunications service (both telephony and Internet). This is expected to help provide the

conditions for growth of existing businesses and to attract new enterprises that need modern low cost connectivity.

- **Market Oriented Reform:** The project will foster an open, non-discriminatory communications regime that ensures that capacity is available to all at a fair price.
- **Human Capacity Development:** The improved access to the Internet resulting from the project would also benefit educational and medical institutions and will help boost general computer usage and literacy through the country.
- **Technology Transfer/Productivity Improvement:** The project will help Liberia acquire new equipment and upgrades necessary to bring the country in-line with other nations in the region. The study will also help Liberia understand U.S. technology in the areas of telecommunications and ICT.

### D. Implementation Financing

LTC has made a gross estimate of the cost of the fiber optic backbone infrastructure. This estimate is based on some initial consulting reports, and based on discussions with possible vendors. The total estimated cost is US\$ 10.1 million as the cost for the infrastructure build out and services.



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Accordingly, a break down can be done, in rough order of magnitude for the project, as a percentage of total cost:

- Fiber: 30%
- Civil work: 20%
- Equipment: 40%
- Survey and control: 10%

In the terms of reference it is specified that the feasibility study will provide a more precise evaluation of the backbone costs for the fiber optic infrastructure.

There are several possible sources of implementation financing for the proposed project. An important aspect of the feasibility study will include assisting the potential financiers with inputs on costs and anticipated revenues, based on market size, potential share, growth and pricing. These are key drivers that will determine the financial viability of the project

Some of the potential U.S. suppliers and companies that would benefit from the proposed fiber optic network rollout could include:

- Fiber optic plant: AMP, GTE Communicaitons Systems, Harris
- Transmission/Distribution equipment: Lucent, Harris, Nortel, Motorola
- Switches and routers: Cisco, Lucent, Nortel, Qualcomm
- Packet switching equipment: Digital Hewlett Packard, Hughes, Micom
- Communicaitons processors: IBM, Unisys, Amdahl, Harris, Digital
- Data storage manufacturers: EMC, Hewlett Packard

## 4. TDA Evaluation Factors

### A. U.S. Export Potential

The Fiber Optic infrastructure for Monrovia, Liberia will be a major generator of U.S. exports. It is estimated that up to 75% of material and services costs for the optic fiber cable, transmission equipment, power supply system, telecommunications engineering, installation, and integratoin could be of U.S. origin.

### B. Foreign Competition

While U.S. companies are strong players in the telecommunications market, they face competition in West Africa from European and Asian telecommunications equipment manufacturers.

Siemens, Ericsson, and Nokia are three examples of European companies with strong ties to the telecommunications industry in Liberia and the West Africa region.



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Among the Asian competitors, Chinese vendors, in particular, ZTE, which have already supplied equipment to LTC, have a growing advantage in Africa due to the prevalence of vendor financing and availability of loans offered by the Government of China. Huawei is another Chinese company that has shown strong interest in the African market and have succeeded in closing major contracts for fiber optic and mobile backbone network deployments.

USTDA funding of the proposed feasibility study would help U.S. vendors create a “U.S. footprint” by getting in at an early stage of project development and by establishing commercial relationships with the sponsor and its partners. In addition, the feasibility study would also advise on network design and the most suitable telecommunications equipment and technology solutions for building the Monrovia fiber ring in Liberia, and U.S. companies are known to be among the leaders in producing some of the world’s best telecommunications equipment.

The sponsors of the project are likely to undertake the entire procurement process through open competition, where U.S. companies will be eligible to apply. If U.S. consultants develop the specifications and rollout plan, it is likely that the U.S. companies would be better placed to win the resulting contracts.

### C. Impact on the Environment

The project is not expected to have any adverse impact on the environment. However, the build-out of the backbone network will require an examination of existing grids (i.e. telecommunications, power, etc.) and existing ductwork in Monrovia that could be used to lay fiber for the backbone. It is also envisioned that, wherever possible, the fiber route will be laid on existing infrastructure, or in parallel with the roadways. Civil works construction or trenching will be required. Therefore, environmental considerations should be evaluated during the feasibility study for such facts as grid-plans, power supply, road access, and other potential environmental impacts.

### D. Impact on U.S. Labor

The project would not reduce the number of employees of any U.S. company and will not displace any U.S. company outside of the United States.

Funding for the proposed project will result in the creation of U.S. jobs if major telecommunications equipment items as well as systems integration and computer hardware and software are purchased from U.S. manufacturers and engineering firms.



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### E. Qualifications Required by the TA Contractors

The Feasibility Study Team should have proven and demonstrated expertise in the following areas:

- Academic background and confirmed experience in telecommunications engineering, economics and law (30 percent),
- Creating feasibility studies that consider the technical, economic, legal and institutional impacts associated with the deployment of a fiber optic backbone infrastructure (25 percent),
- Knowledge of telecommunication strategies, policies, and African telecommunication reforms (25 percent),
- Procurement of large scale telecommunication technologies (10 percent),
- Deployment of fiber optic infrastructure and related systems integration (10 percent).
- Assessment of project for environmental and social matters to IFC performance standards (5 percent)

The following positions should be presented for this assignment. The bidder may provide other qualified individuals and local subcontractors (up to 20%) as they see appropriate:

#### Project Manager

*Job Purpose:* The Project Manager will have overall responsibility and serve as

the single point for coordination and quality of the Technical Assistance.

#### *Major Skills and Requirements:*

- An established record of providing technical direction and leading multi-disciplinary teams.
- Significant developing country experience, particularly in Sub-Saharan Africa, in identifying constraints to the telecommunications and ICT sector;
- Experience working on regulatory and policy frameworks for the telecommunications industry.
- The Project Manager must have a strong background and skills with an in depth understanding of the technical, business and construction issues involved in national or large scale telecom and ICT backbone projects.
- Strong communication skills, both oral and written.
- Proven project management experience interacting with senior level government officials, and with handling difficult political situations.
- Requires at least a Bachelors degree in Business, Finance, Computer Science or other relevant subject matter, as well as five to ten years industry experience.

#### Telecommunications Engineer

*Job Purpose:* The Telecommunications Engineer(s) will take the lead technical role in surveying and analyzing the proposed plan against Liberia's existing infrastructure, conducting a requirements analysis, identify any missing gaps,



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assessing interconnection points, and proposing technical recommendations.

### *Major Skills and Requirements:*

- Strong understanding of large telecommunication infrastructure projects.
- The individual should have been instrumental in planning telecommunications infrastructure as well as overseen or at least participated in the implementation of the selected vendor networks and systems.
- Extensive knowledge of data, broadband, radio or satellite communication concepts and technologies is required.
- Demonstrated expertise in architecting and developing detailed technical design specifications and standards.
- Demonstrated experience in developing implementation plans, budgets and cost estimates for complex telecom or ICT projects.
- Requires at least a Bachelors degree in Computer Science, Telecommunications, or Electrical Engineering, as well as five to ten years industry experience in telecommunications and infrastructure corporate operations.
- Telecom Engineer with knowledge and experience in developing countries and the Sub-Saharan region, while not a specific requirement would be a plus.

### Financial Advisor

#### *Job Purpose:*

The Financial Advisor will take the lead in assessing and recommending business models, ownership structure and related financing options for LTC's fiber backbone infrastructure for Monrovia. The Financial Advisor will also assist in developing a detailed project financing strategy and identifying possible financing sources.

### *Major Skills and Requirements:*

- A financial advisor or investment banker who has experience working with teams of attorneys, tax and management consultants in preparing business cases, ownership structures, and financing agreements;
- Demonstrated experience in advising companies on marketing and financing arrangements;
- Strong communication skills, both oral and written;
- Proven experience interacting with senior level government officials and business executives, and with handling difficult political situations

Requires at least a Bachelors degree in Business, Finance or other relevant subject matter, as well as five to ten years industry experience.

### Telecommunications Regulatory Expert and/or Telecommunications Lawyer

#### *Job Purpose:*

The Consultant may propose either a Telecommunications Regulatory Expert and/or a Telecommunications Lawyer. This function will take the lead role in providing technical assistance and analy-



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sis for identifying additions or recommended adjustments to the regulatory, policy and legal framework for implementing the fiber optic ring that promotes affordable, non-restrictive access, and a competitive telecommunications environment.

### *Major Skills and Requirements:*

- Strong background in telecommunications field, preferably with regulatory and operating company practices.
- Knowledge of modern management practices in the telecommunications industry.
- Extensive knowledge of cost and pricing models, tariffs, open access models, and interconnection agreements for the telecommunications industry.
- Demonstrated knowledge of best practices in promoting universal access.
- Strong communication skills, both oral and written.
- Proven project management experience interacting with senior level government officials and with handling difficult political situations.
- Regulatory Expert with knowledge and experience in developing countries and the Sub-Saharan region, while not a specific requirement would be a plus.
- Ability to assess or to guide the company in developing environmental and social action plans and assessments complying not only with local laws and regulations but also

with World Bank performance standards.

### **F. Grantee's Request**

LTC plans to build out a metropolitan fiber optic backbone infrastructure to support ICT infrastructure development in Monrovia, Liberia. This infrastructure will transport voice, data, radio and television signals around the city, and eventually on a nationwide basis.

However, as referenced in the project description, there are several steps required to move this project to implementation.

Therefore, LTC is requesting USTDA's support to conduct a feasibility study and to provide technical assistance to develop and deploy a metropolitan fiber optic backbone in Monrovia, Liberia. Specifically, LTC seeks assistance to:

- Develop planned technical network design and specifications;
- Develop budgets for project costs;
- Evaluate the regulatory and legal framework.
- Perform an environmental and developmental impact assessments

### **G. Justification**

USTDA involvement in this project is justified on the basis of U.S. export potential as well as the critical market tim-



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ing, strategic importance and developmental impact of this project to Liberia.

At a policy level, the Government of Liberia is committed to improving the national ICT infrastructure and increasing access to ICT services. At an economic level, Liberia views this project as a critical infrastructure (just as it view the building of roads, dams, power plants, etc.) to support the development of the economy.

If U.S. consultants assist LTC to conduct the feasibility study, then it is highly likely that U.S. technology would be used for all or key parts of the project. On the other hand, if Liberia retains European or Asian consultants to develop this plan, there is a very real risk that the technology would be procured from suppliers in Europe or other countries, including France and China. If Liberia turns to China for government supported loans or vendor financing schemes, then the debt burden of Liberia is likely to be negatively impacted.

In addition to providing valuable technical recommendations for the national ICT infrastructure, we believe that USTDA can provide expertise to draft the roadmap for success using U.S. and industry best practices to develop sound business models, solid management and organizational structure, and project financing strategies for the implementation of the national ICT infrastructure project.

## H. Terms of Reference & Budget

### Objective

LTC has determined that there is a need to create a fiber optic backbone Network around Monrovia, Liberia (the Host Country) that enables LTC and other network operators to effectively transport voice, data, and video in and around Monrovia, which represents 33% of the population.

The tasks below describe the activities that will take place as part of the Feasibility Study ("Study") that will review the technical, economic, legal and institutional aspects associated with the successful deployment of a Fiber Optic Backbone Network ("Project") in the Host Country. The Grantee for this Study is the Liberian Telecommunication Corporation ("Grantee").

### Tasks and Scope of Work

#### Task 1: Background Research

The Contractor shall conduct background research to thoroughly familiarize itself with the Project and to review similar studies and relevant models for this type of development activity. Particularly:

- 1.1 The Contractor shall familiarize itself with the key stakeholders and ICT environment of the Host Country as it relates to the Project;



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- 1.2 The Contractor shall gather reports or background documents, relevant to the Project, from the Grantee and from other local network operators;
- 1.3 The Contractor shall review similar projects or models for metropolitan fiber backbone networks in other countries in Sub-Saharan Africa and the lessons learned; and
- 1.4 The Contractor shall host a kick-off meeting with the Grantee to review and agree on the method and approach for completing the Terms of Reference.

## Deliverables for Task 1:

- a) The Contractor shall prepare a written report summarizing the kick-off meeting proceedings, including key comments and issues raised.
- b) The Contractor shall prepare a work plan for implementing the TOR of the Study, with timelines and major milestones to be achieved. The work plan shall be reviewed by the Grantee.

The deliverables of Task 1 shall be included in the Final Report.

## **Task 2: Requirements Analysis**

The Contractor shall work with the Grantee, and other stakeholders, such as the local network operators (fixed, mobile and Internet), to evaluate the exist-

ing infrastructure and to comprehensively define the scope of the Project.

- 2.1 The Contractor shall review and assess any existing studies identified by the Grantee or from private sector operators that examined technical requirements and options for development and construction of the Project, a fiber optic backbone, optimized for the mutual transport of voice, data and video.
- 2.2 The Contractor shall review existing telecom infrastructure within the Host Country and how existing components can be leveraged and integrated into the build-out of the Project. This shall include interviews and visual inspections of the various telecommunication operator networks and communication infrastructure in the Host Country.
- 2.3 The Contractor shall explore and identify existing grids that can be used for laying fiber (i.e. existing microwave networks, power grids, old rail lines, and roads) and identify any gaps in existing grids that will require new construction.
- 2.4 In consultation with the Grantee, the Contractor shall determine the targeted population centers and locations for deploying the Project in the Host Country. Population centers likely to be included are within a five mile radius of the city center of Monrovia, and include an extension to cover the airport, some 40 kilometers away.



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2.5 In consultation with the Grantee, the Contractor shall determine the most likely routes and linkage points for interconnection to key partners, clients, and other telecommunication licensees. As part of this task, the consultant shall:

- Visit and assess the telecommunications readiness of the identified key partners and clients; and
- Identify and define the requirements for building a terrestrial spur or other technologies to link the proposed Project to each identified licensee.

2.6 The Contractor shall identify and define major issues and gaps in the current infrastructure, grids, equipment, technical operations, and network coverage necessary to support the build-out of the Project.

2.7 The Contractor shall, based on the information gathered, recommend the best choice of backbone technologies for construction of the Project, preferably a fiber optic backbone, optimized for the mutual transport of voice, data and video.

2.8 The Contractor shall consolidate findings into a draft requirements assessment, which shall be provided to the Grantee for review. The Contractor shall convene a meeting with representatives of the Grantee and other stakeholders to discuss and refine the requirements assessment. The Contractor shall revise the requirements

assessment based on the outcome of the stakeholders meeting.

### Deliverables for Task 2:

- a) The Contractor shall develop a written technical assessment of the current technical capabilities such as infrastructure, grids, equipment, technical operations, and network coverage. The Contractor shall indicate what is in place today that can be used to support the Project.
- b) The Contractor shall develop a written technical assessment of the gaps in the existing technical capabilities and expansion plans with respect to infrastructure, grids, equipment, network coverage, and trans-border interconnection points for the Project.
- c) The Contractor shall develop and provide recommendations for infrastructure development, technology, equipment and materials needed to support build-out of the Project.

The deliverables of Task 2 shall also be included in the Final Report.

### **Task 3: Technical Network Design, Equipment Specifications, and Project Costs**

The Contractor shall use the input from Task 2 to develop a detailed network design and a list of the necessary products and services required for the im-



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plementation of the fiber optic backbone infrastructure, including, but not limited to:

- Ducts, fibers, and chambers;
- Trenching, communications towers or other civil works;
- SDH and other equipment;
- Routers, gateways, and other active equipment; and
- Power and ancillary equipment.

The Contractor shall develop an implementation plan and project costs for deploying the Project in the Host Country. The Contractor shall take into consideration all options to maximize efficiencies for the Project in terms of time, resources, and costs. While preparing the implementation plan, the Contractor shall take into consideration and make a specific recommendation as to whether the Project should be implemented as a single network deployment or implemented in a segmented or phased approach.

3.1 The Contractor shall create a high level network architecture schematic focusing on optimizing the use of any existing infrastructure while meeting the stated goals for coverage, capacity, and functionality of the Project. This schematic shall serve as a baseline reference and planning tool for the remainder of the Project efforts.

3.2 The Contractor shall develop a Project implementation plan for building the Project based on the recom-

mended rollout schedule of individual network segments.

3.3 The Contractor shall develop a detailed budget estimate and major investment expenditures associated with the recommended network design and equipment specifications. These figures should take into account: equipment, survey, network design, transport and installation, network integration and commissioning, and documentation.

3.4 The Contractor shall develop a total cost for the Project as well as a breakdown of costs for each phase of the Project implementation plan.

### Deliverables for Task 3:

- a) The Contractor shall identify the high level technology architecture, standards and network design for deploying the Project to targeted locations throughout the metropolitan area of Monrovia, Liberia.
- b) The Contractor shall prepare a detailed list of the specific products and services necessary for implementation and rollout of the Project.
- c) For each required product and service, the Contractor shall develop detailed specifications (e.g. functionality, capacity, quality guarantees, and compatibility requirements).
- d) The Contractor shall compile a list of potential U.S. suppliers for each major product and service area.



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- e) The Contractor shall develop a detailed Project budget and major investment expenditures.
  - f) The Contractor shall develop a schedule of Project costs and projected cash outflows based on the phased Project implementation plan.
- c) In close consultation with the Grantee, the Contractor shall make presentations to other stakeholders of the various scenarios and participate in discussions that will assist the stakeholders to reach a consensus on the best scenario to be adopted. In addition, the Contractor shall develop the written business case, ownership structure, and supporting justification for the business and financial model to be used for the Project based on the most likely scenario to be adopted.

The deliverables of Task 3 shall also be included in the Final Report.

### **General Factors to Be Analyzed and Included in the Above:**

Sources for statistical and other data should always be clearly and precisely identified, to allow fact verification by the Sponsors. Assumptions, assertions and inferences should be clearly distinguished and identified, and contrasted with facts.

- a) The Contractor shall provide a written report recommending optimal business, ownership and financial models that best fit and support the Host Country's priorities and goals for managing the Project on a non-restrictive access and competitive telecommunications environment.
  - b) The Contractor shall identify and recommend alternative financial models that would minimize the Grantee's debt burden in constructing and managing the Project.
- The deliverables of Task 4 shall also be included in the Final Report.
- ### **Task 4: Business and Operational Management Implementation Alternatives**
- The Contractor shall conduct research to determine implementation scenarios for the Project suitable for the Host Country's overall economic, social, and telecommunications sector environment.
- 4.1 The Contractor shall identify and analyze possible scenarios of institutional organization required for the operation, maintenance and development of the proposed infrastructure.
  - 4.2 The Contractor shall analyze the conditions under which network operators could share the infrastructure.
  - 4.3 The Contractor shall review and assess various business, ownership,



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and financing models for managing the Project. This review shall include, but not be limited to: public, private, donor, government subsidies or equity stake; cost-based tariffs, non-extortionate pricing and competitive pricing for overall economic and social efficiency; open, non-restrictive or competitive access; and combinations thereof. Potential models that the Contractor shall review include: competitive public-private partnership, cooperative public-private or private partnership, or government-supported build out..

4.4 The Contractor shall review and assess approaches supported by industry best practices and lessons learned, such as universal services funds, various financing options, or other incentives that could be engaged to support the build-out of segments on the Project that are not financially attractive on a stand alone basis.

#### Deliverables for Task 4:

a) The Contractor shall provide a written report recommending optimal business, ownership and financial models that best fit and support the Host Country's and the Grantee's priorities and goals for managing the Project on a non-restrictive access and competitive telecommunications environment.

- b) The Contractor shall identify and recommend alternative financial models that would minimize the Grantee's debt burden in constructing and managing the Project.
- c) In close consultation with the Grantee, the Contractor shall make presentations to other stakeholders of the various scenarios and participate in discussions that will assist the stakeholders to reach a consensus on the best scenario to be adopted. In addition, the Contractor shall develop the written business case, ownership structure, and supporting justification for the business and financial model to be used for the Project based on the most likely scenario to be adopted.

The deliverables of Task 4 shall also be included in the Final Report.

#### **Task 5: Regulatory and Legal Framework**

The Contractor shall analyze the impact of the current regulatory and legal framework upon the market assessment. Specifically:

5.1 Regulatory Framework and Licenses: Description and assessment of the regulatory framework. Assess whether the licenses obtained or to be obtained by the Grantee adequately cover its intended scope of operations. Assessment of which other permits the Grantee may require, e.g. inter-connection rights



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and agreements, environmental assessments and/or permits, etc.

5.2 The Contractor shall assist the Grantee in reviewing the existing ICT regulatory framework and policies in the Host Country that impact build-out, management and operation of the recommended Project.

5.3 The Contractor shall review the Host Country's existing interconnection cost and pricing models, including cost-based, market-based and other models specifically related to interconnection of operators within the Host Country as well as interconnection of neighboring countries to the Project.

### Deliverable for Task 5:

- a) The Contractor shall prepare a written report that recommends and explains the regulatory framework, and its impact on the project.

The deliverables of Task 5 shall also be included in the Final Report.

### **Task 6: Environmental Impact Assessment**

The Contractor shall perform a preliminary review of the Project's environmental impacts consistent with local requirements in the Host Country and those of the financiers. This review shall identify potential negative impacts, discuss the extent to which they can be

mitigated, and develop plans for a full environmental impact assessment if and when the Project moves forward to implementation stage. Specifically, the Contractor shall focus on developing plans for a full environmental impact assessment related to the buildings and sites for communications towers, their emissions, and power requirements, and their location in regards to schools, water sources, hospitals and other internationally recognized site location restrictions relative to human habitation.

### Deliverable for Task 6:

The Contractor shall prepare a report on its preliminary review of the short and long term environmental impacts. Measures for environmental control and mitigation, and treatment facilities shall be proposed, including their costs.

The complete findings of Task 6 shall also be included in the Final Report.

### **Task 7: Development Impact Assessment**

The Contractor shall report on the potential development impact of the Project in the Host Country. The Contractor shall focus on the potential economic development outcomes if the Project is implemented according to the Study recommendations. While specific focus should be placed on the immediate impact of the Project, the Contractor shall include, where appropriate, any additional developmental benefits of the Pro-



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ject, including spin-off and demonstration effects. The Contractor's analysis of the potential benefits shall be as concrete and detailed as possible. The development impact factors are intended to provide the Project's decision-makers and interested parties with a broader view of the Project's potential effects on the Host Country. The Contractor shall provide estimates of the Project's potential benefits in the following areas:

(A) Infrastructure/Industry - The Contractor shall provide a statement on the infrastructure impact. The contractor shall provide a high level estimate of the economic benefits to the communication industry in the Host Country, in terms of various measures such as the potential of service development and time to market.

(b) Market-Oriented Reforms - The Contractor shall provide a description of any regulation, laws, or institutional changes that are recommended and the effect they would have if implemented.

(c) Human Capacity Building - The Contractor shall address the number and type of positions that would be needed to construct and operate the proposed project, as well as the number of people who will receive training and a brief description of the training program.

(d) Technology Transfer and Productivity Enhancement - The Contractor shall provide a description of any advanced technologies that will be implemented as a result of the Project that includes a

quantitative description of any efficiency that would be gained whenever possible.

(e) Other - The Contractor shall identify any other developmental benefits of the Project, including any spin-off or demonstration effects.

### Deliverables for Task 7:

The Contractor shall create a report on the developmental impact and the advantages of building a modernized, convergent and shared telecommunication infrastructure in the Host Country.

### **Task 8: Final Report**

The Contractor shall ensure that the Final Report is submitted in accordance with Clause I of Annex II of the Grant Agreement. The Final Report shall be a substantive and comprehensive report of work performed to carry out all of the tasks set forth in the Terms of Reference and shall include, among other things, an Executive Summary and all deliverables. Each task of the Terms of Reference shall form a separate chapter of the Final Report.

The Final Report shall also include a comprehensive list of U.S. suppliers, including potential sources of U.S. equipment and services, relevant to the implementation of each component of the Project as outlined in the Study.

The Contractor shall submit the Final Report in English. The Contractor shall provide, in English, five (5) hard copies



## West Africa: Monrovia, Liberia Metropolitan Fiber Optic Ring Desk Study

and one (1) electronic version of both the confidential and public versions of the Final Report to the Grantee and shall provide copies to USTDA in accordance with Clause I of Annex II of the Grant Agreement.

### Notes:

- (1) The Contractor is responsible for compliance with U.S. export licensing requirements, if applicable, in the performance of the Terms of Reference.
- (2) The Contractor and the Grantee shall be careful to ensure that the public version of the Final Report contains no security or confidential information.
- (3) The Grantee and USTDA shall have an irrevocable, worldwide, royalty-free, non-exclusive right to use and distribute the Final Report and all work products that is developed under these Terms of Reference.

### Contractor Commitment

The Contractor shall commit not to communicate to any party about, or make any other use of, the information or findings gathered as part of this project without formal authorization of the Government of Liberia.

### Contractor Technical and Financial Offers

The Contractor shall submit individual technical and financial offers.

The technical offer shall include the following:

- Contractor references and experience, particularly all references for projects of similar scope,
- Firm's experience in the country/region/continent,
- Description of the methodology that will be used to carry out the study,
- Implementation plan that includes a clear indication of the person(s) in charge of each step,
- Curriculum vitae of every person involved in the study,
- Proposed format/structure of your report,
- Confirmation that your firm does not have any conflict of interest with any involved party in the Project (e.g. work for competing enterprises; any significant on-going business relationship with any of the Sponsors/Grantees should also be disclosed), and
- Provide any further information (i.e. documents, etc.) required to undertake the assignment.

Our preference is for submission of your proposal by Word 2003 and in Adobe Acrobat PDF file formats, attached to an e-mail or sent via a secure file transfer service such as yousendit.com; a follow-on printed version is appreciated, but not essential.

The Grantee expects the consultant to enter into a confidentiality agreement with the Grantee.

**Comment [J1]:** I'm guessing we don't need French for Liberia?



## West Africa: Monrovia, Liberia Metropolitan Fiber Optic Ring Desk Study

The financial offer shall include a clearly justified description of all costs associated with the Contractor services.

### **Timeframe**

It is expected that the work shall take the Contractor four to six weeks, and shall conduct the tasks outlined above within a three (03) month calendar period.

### **Budget for the Feasibility Study and Technical Assistance**

The Computer Frontiers' estimate (budget) for the cost to implement the Contractor's portion of the TOR is US\$ 214, 270.00

The work will need to be performed in the U.S. and on-site in Liberia. The requirements analysis and environmental assessment will require travel to selected areas within and around no more than a 50 mile radius of the Capital city of Monrovia. International travel is limited to Liberia only. Therefore, additional travel will not be required outside of Liberia.

Given the complexity of working with various stakeholders to research the technical plans, the regulatory environment, conduct a marketing assessment, conduct an environmental impact study and a developmental assessment of the projects impact, it will be necessary for the Project Manager, the Telecommunications Engineer, the Financial Expert, and the Regulatory Expert to work in-country in order to provide the required

results. These tasks will also require in-country interviews with local companies, existing and potential customers, and government agencies. Therefore, the budget reflects up to 20 days of in-country travel in Liberia for the Project Manager, Telecommunications Engineer, the Financial Expert, and the Regulatory Expert, respectively.

Some project management office (PMO) tasks and some of the research and reporting can be written in the U.S.

The recommended budget is included below.



# West Africa: ICT Definition Mission Project: Liberia Fiber Optics Infrastructure

Feasibility Study Budget for LTC Metropolitan Fiber Optic Backbone in Monrovia, Liberia						
	Daily Rate - US\$	Project Manager	Telecom Engineer	Financial Advisor	Regulatory Expert	Totals
	\$1,500	1500	1700	1400		
Task 1: Background Research		2	2	2	1	7 \$10,800
Task 2: Requirement Analysis		3	10	2		15 \$22,900
Task 3: Network Design, Equipment Specifications & Project Costs		3	15	3		21 \$32,100
Task 4: Business & Management Models		2	5	12	1	20 \$32,300
Task 5: Regulatory Framework		1			7	8 \$11,300
Task 6: Environmental Impact Assessment		2	10		1	13 \$19,400
Task 7: Development Impact		4	1	1	1	7 \$10,800
Task 8: Final Report		5	5	3	2	15 \$22,900
Total Days		22	48	23	13	106
Total Days on Location		21	21	8	8	58
<b>Total Labor Costs</b>						
			Type		Unit Cost	\$162,300
Other Direct Costs			Trip	4	3000	\$12,000
International Airfare RT to/from Liberia				58	160	\$9,280
Hotel				58	90	\$5,220
Meals & Incidentals				21	150	\$3,150
Ground Transport				40	58	\$2,320
Internet access/copies/communications						\$20,000
French translation						\$51,970
<b>Total Direct Costs</b>						
<b>Total Cost of Technical Assistance</b>						
						<b>\$214,270</b>



# West Africa: ICT Definition Mission Project: Liberia Fiber Optics Infrastructure

## 5. Recommendation

USTDA involvement in this project is justified on the basis of export potential and the opportunities for U.S. vendors and consultants as well as the strategic and development impact of the project in dramatically improving the provision of telecommunications at an increased capacity and lower costs in Liberia.

Computer Frontiers is recommending that USTDA fund this project as described in the Terms of Reference with an estimated budget cost of US\$ 214,270.

## 6. Contacts Consulted During DM

Ben Wolo  
Managing Director  
Liberia Telecommunications Company  
E-mail: [bwolo@libtelco.com](mailto:bwolo@libtelco.com)  
Tel: 231 7777 3978

## 5. Glossary of Technical Terms

**ADSL** – *Asymmetrical Digital Subscriber Line* is a data communications technology that uses copper telephone lines but with faster data transmission speeds and over short distances.

**Fiber Optics** – An optical fiber is a glass or plastic fiber that carries light along its length. Optical fibers are widely used in fiber optic communication, which permits transmission over longer distances and at

higher data rates than other forms of communications.

**ISP** – *Internet Service Provider* is a business or organization that provides access to the Internet and related services to customers.

**PPP** – *Public Private Partnership* is when a government service is funded and operated through a partnership with government and one or more private sector companies.

**SAT-3** - Submarine communications cable linking Portugal and Spain to South Africa, with connections to several West African countries along the route. It forms part of the SAT-3/WASC/SAFE cable system, where the SAFE cable links South Africa to Asia.

**VoIP** – *Voice over Internet Protocol* is the routing of voice conversations over the Internet or any other IP-based network.

**VPN** – *Virtual Private Network* is a private communications network often used within or between several companies and organizations to communicate securely.

**WiFi** – *Wireless Fidelity* is a certification for technologies that meet the IEEE 802.11 specifications and was originally licensed by the Wi-Fi Alliance. It is used primarily for wireless devices such as laptops but is increasingly being extended to new, advanced services.

## ANNEX 3



**U.S. TRADE AND DEVELOPMENT AGENCY**  
**Arlington, VA 22209-2131**

**NATIONALITY, SOURCE, AND ORIGIN REQUIREMENTS**

The purpose of USTDA's nationality, source, and origin requirements is to assure the maximum practicable participation of American contractors, technology, equipment and materials in the prefeasibility, feasibility, and implementation stages of a project.

**USTDA STANDARD RULE (GRANT AGREEMENT STANDARD LANGUAGE):**

Except as USTDA may otherwise agree, each of the following provisions shall apply to the delivery of goods and services funded by USTDA under this Grant Agreement: (a) for professional services, the Contractor must be either a U.S. firm or U.S. individual; (b) the Contractor may use U.S. subcontractors without limitation, but the use of subcontractors from host country may not exceed twenty percent (20%) of the USTDA Grant amount and may only be used for specific services from the Terms of Reference identified in the subcontract; (c) employees of U.S. Contractor or U.S. subcontractor firms responsible for professional services shall be U.S. citizens or non-U.S. citizens lawfully admitted for permanent residence in the U.S.; (d) goods purchased for implementation of the Study and associated delivery services (e.g., international transportation and insurance) must have their nationality, source and origin in the United States; and (e) goods and services incidental to Study support (e.g., local lodging, food, and transportation) in host country are not subject to the above restrictions. USTDA will make available further details concerning these standards of eligibility upon request.

**NATIONALITY:**

1) Rule

Except as USTDA may otherwise agree, the Contractor for USTDA funded activities must be either a U.S. firm or a U.S. individual. Offerers are encouraged to submit proposals that utilize local labor. Prime contractors may utilize U.S.

subcontractors without limitation, but the use of host country subcontractors is limited to 20% of the USTDA grant amount.

## 2) Application

Accordingly, only a U.S. firm or U.S. individual may submit proposals on USTDA funded activities. Although those proposals may include subcontracting arrangements with host country firms or individuals for up to 20% of the USTDA grant amount, they may not include subcontracts with third country entities. U.S. firms submitting proposals must ensure that the professional services funded by the USTDA grant, to the extent not subcontracted to host country entities, are supplied by employees of the firm or employees of U.S. subcontractor firms who are U.S. individuals.

Interested U.S. firms and consultants who submit proposals must meet USTDA nationality requirements as of the due date for the submission of proposals and, if selected, must continue to meet such requirements throughout the duration of the USTDA-financed activity. These nationality provisions apply to whatever portion of the Terms of Reference is funded with the USTDA grant.

## 3) Definitions

A "U.S. individual" is (a) a U.S. citizen, or (b) a non-U.S. citizen lawfully admitted for permanent residence in the U.S. (a green card holder).

A "U.S. firm" is a privately owned firm which is incorporated in the U.S., with its principal place of business in the U.S., and which is either (a) more than 50% owned by U.S. individuals, or (b) has been incorporated in the U.S. for more than three (3) years prior to the issuance date of the request for proposals; has performed similar services in the U.S. for that three (3) year period; employs U.S. citizens in more than half of its permanent full-time positions in the U.S.; and has the existing capability in the U.S. to perform the work in question.

A partnership, organized in the U.S. with its principal place of business in the U.S., may also qualify as a "U.S. firm" as would a joint venture organized or incorporated in the United States consisting entirely of U.S. firms and/or U.S. individuals.

A nonprofit organization, such as an educational institution, foundation, or association may also qualify as a "U.S. firm" if it is incorporated in the United States and managed by a governing body, a majority of whose members are U.S. individuals.

## **SOURCE AND ORIGIN:**

### 1) Rule

In addition to the nationality requirement stated above, any goods (e.g., equipment and materials) and services related to their shipment (e.g., international transportation and insurance) funded under the USTDA Grant Agreement must have their source and origin in the United States, unless USTDA otherwise agrees. However, necessary purchases of goods and project support services which are unavailable from a U.S. source (e.g., local food, housing and transportation) are eligible without specific USTDA approval.

### 2) Application

Accordingly, the prime contractor must be able to demonstrate that all goods and services purchased in the host country to carry out the Terms of Reference for a USTDA Grant Agreement that were not of U.S. source and origin were unavailable in the United States.

### 3) Definitions

“Source” means the country from which shipment is made.

“Origin” means the place of production, through manufacturing, assembly or otherwise.

*Questions regarding these nationality, source and origin requirements may be addressed to the USTDA Office of General Counsel.*

**ANNEX 4**

USDN# 08-11023A

**GRANT AGREEMENT**

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This Grant Agreement is entered into between the Government of the United States of America, acting through the U.S. Trade and Development Agency ("USTDA") and Liberia Telecommunications Corporation ("Grantee"). USTDA agrees to provide the Grantee under the terms of this Agreement US\$303,000 ("USTDA Grant") to fund the cost of goods and services required for a feasibility study ("Study") on the proposed Greater Monrovia Fiber Optic Ring ("Project") in Liberia ("Host Country").

**1. USTDA Funding**

The funding to be provided under this Grant Agreement shall be used to fund the costs of a contract between the Grantee and the U.S. firm selected by the Grantee ("Contractor") under which the Contractor will perform the Study ("Contract"). Payment to the Contractor will be made directly by USTDA on behalf of the Grantee with the USTDA Grant funds provided under this Grant Agreement.

**2. Terms of Reference**

The Terms of Reference for the Study ("Terms of Reference") are attached as Annex I and are hereby made a part of this Grant Agreement. The Study will examine the technical, financial, environmental, and other critical aspects of the proposed Project. The Terms of Reference for the Study shall also be included in the Contract.

**3. Standards of Conduct**

USTDA and the Grantee recognize the existence of standards of conduct for public officials, and commercial entities, in their respective countries. The parties to this Grant Agreement and the Contractor shall observe these standards, which include not accepting payment of money or anything of value, directly or indirectly, from any person for the purpose of illegally or improperly inducing anyone to take any action favorable to any party in connection with the Study.

**4. Grantee Responsibilities**

The Grantee shall undertake its best efforts to provide reasonable support for the Contractor, such as local transportation, office space, and secretarial support.

## **5. USTDA as Financier**

### **(A) USTDA Approval of Competitive Selection Procedures**

Selection of the U.S. Contractor shall be carried out by the Grantee according to its established procedures for the competitive selection of contractors with advance notice of the procurement published online through *Federal Business Opportunities* ([www.fedbizopps.gov](http://www.fedbizopps.gov)). Upon request, the Grantee will submit these contracting procedures and related documents to USTDA for information and/or approval.

### **(B) USTDA Approval of Contractor Selection**

The Grantee shall notify USTDA at the address of record set forth in Article 17 below upon selection of the Contractor to perform the Study. Upon approval of this selection by USTDA, the Grantee and the Contractor shall then enter into a contract for performance of the Study. The Grantee shall notify in writing the U.S. firms that submitted unsuccessful proposals to perform the Study that they were not selected.

### **(C) USTDA Approval of Contract Between Grantee and Contractor**

The Grantee and the Contractor shall enter into a contract for performance of the Study. This contract, and any amendments thereto, including assignments and changes in the Terms of Reference, must be approved by USTDA in writing. To expedite this approval, the Grantee (or the Contractor on the Grantee's behalf) shall transmit to USTDA, at the address set forth in Article 17 below, a photocopy of an English language version of the signed contract or a final negotiated draft version of the contract.

### **(D) USTDA Not a Party to the Contract**

It is understood by the parties that USTDA has reserved certain rights such as, but not limited to, the right to approve the terms of the contract and any amendments thereto, including assignments, the selection of all contractors, the Terms of Reference, the Final Report, and any and all documents related to any contract funded under the Grant Agreement. The parties hereto further understand and agree that USTDA, in reserving any or all of the foregoing approval rights, has acted solely as a financing entity to assure the proper use of United States Government funds, and that any decision by USTDA to exercise or refrain from exercising these approval rights shall be made as a financier in the course of funding the Study and shall not be construed as making USTDA a party to the contract. The parties hereto understand and agree that USTDA may, from time to time, exercise the foregoing approval rights, or discuss matters related to these rights and the Project with the parties to the contract or any subcontract, jointly or separately, without thereby incurring any responsibility or liability to such parties. Any approval or failure to approve by USTDA shall not bar the Grantee or USTDA from asserting any right they might have against the

Contractor, or relieve the Contractor of any liability which the Contractor might otherwise have to the Grantee or USTDA.

**(E) Grant Agreement Controlling**

Regardless of USTDA approval, the rights and obligations of any party to the contract or subcontract thereunder must be consistent with this Grant Agreement. In the event of any inconsistency between the Grant Agreement and any contract or subcontract funded by the Grant Agreement, the Grant Agreement shall be controlling.

**6. Disbursement Procedures**

**(A) USTDA Approval of Contract Required**

USTDA will make disbursements of Grant funds directly to the Contractor only after USTDA approves the Grantee's contract with the Contractor.

**(B) Contractor Invoice Requirements**

The Grantee should request disbursement of funds by USTDA to the Contractor for performance of the Study by submitting invoices in accordance with the procedures set forth in the USTDA Mandatory Clauses in Annex II.

**7. Effective Date**

The effective date of this Grant Agreement ("Effective Date") shall be the date of signature by both parties or, if the parties sign on different dates, the date of the last signature.

**8. Study Schedule**

**(A) Study Completion Date**

The completion date for the Study, which is February 28, 2009, is the date by which the parties estimate that the Study will have been completed.

**(B) Time Limitation on Disbursement of USTDA Grant Funds**

Except as USTDA may otherwise agree, (a) no USTDA funds may be disbursed under this Grant Agreement for goods and services which are provided prior to the Effective Date of the Grant Agreement; and (b) all funds made available under the Grant Agreement must be disbursed within four (4) years from the Effective Date of the Grant Agreement.

## **9. USTDA Mandatory Clauses**

All contracts funded under this Grant Agreement shall include the USTDA mandatory clauses set forth in Annex II to this Grant Agreement. All subcontracts funded or partially funded with USTDA Grant funds shall include the USTDA mandatory clauses, except for clauses B(1), G, H, I, and J.

## **10. Use of U.S. Carriers**

### **(A) Air**

Transportation by air of persons or property funded under the Grant Agreement shall be on U.S. flag carriers in accordance with the Fly America Act, 49 U.S.C. 40118, to the extent service by such carriers is available, as provided under applicable U.S. Government regulations.

### **(B) Marine**

Transportation by sea of property funded under the Grant Agreement shall be on U.S. carriers in accordance with U.S. cargo preference law.

## **11. Nationality, Source and Origin**

Except as USTDA may otherwise agree, the following provisions shall govern the delivery of goods and services funded by USTDA under the Grant Agreement: (a) for professional services, the Contractor must be either a U.S. firm or U.S. individual; (b) the Contractor may use U.S. subcontractors without limitation, but the use of subcontractors from Host Country may not exceed twenty percent (20%) of the USTDA Grant amount and may only be used for specific services from the Terms of Reference identified in the subcontract; (c) employees of U.S. Contractor or U.S. subcontractor firms responsible for professional services shall be U.S. citizens or non-U.S. citizens lawfully admitted for permanent residence in the U.S.; (d) goods purchased for performance of the Study and associated delivery services (e.g., international transportation and insurance) must have their nationality, source and origin in the United States; and (e) goods and services incidental to Study support (e.g., local lodging, food, and transportation) in Host Country are not subject to the above restrictions. USTDA will make available further details concerning these provisions upon request.

## **12. Taxes**

USTDA funds provided under the Grant Agreement shall not be used to pay any taxes, tariffs, duties, fees or other levies imposed under laws in effect in Host Country. Neither the Grantee nor the Contractor will seek reimbursement from USTDA for such taxes, tariffs, duties, fees or other levies.

### **13. Cooperation Between Parties and Follow-Up**

The parties will cooperate to assure that the purposes of the Grant Agreement are accomplished. For five (5) years following receipt by USTDA of the Final Report (as defined in Clause I of Annex II), the Grantee agrees to respond to any reasonable inquiries from USTDA about the status of the Project.

### **14. Implementation Letters**

To assist the Grantee in the implementation of the Study, USTDA may, from time to time, issue implementation letters that will provide additional information about matters covered by the Grant Agreement. The parties may also use jointly agreed upon implementation letters to confirm and record their mutual understanding of matters covered by the Grant Agreement.

### **15. Recordkeeping and Audit**

The Grantee agrees to maintain books, records, and other documents relating to the Study and the Grant Agreement adequate to demonstrate implementation of its responsibilities under the Grant Agreement, including the selection of contractors, receipt and approval of contract deliverables, and approval or disapproval of contractor invoices for payment by USTDA. Such books, records, and other documents shall be separately maintained for three (3) years after the date of the final disbursement by USTDA. The Grantee shall afford USTDA or its authorized representatives the opportunity at reasonable times to review books, records, and other documents relating to the Study and the Grant Agreement.

### **16. Representation of Parties**

For all purposes relevant to the Grant Agreement, the Government of the United States of America will be represented by the U. S. Ambassador to Host Country or USTDA and Grantee will be represented by Benjamin Wolo (*Managing Director*). The parties hereto may, by written notice, designate additional representatives for all purposes under the Grant Agreement.

### **17. Addresses of Record for Parties**

Any notice, request, document, or other communication submitted by either party to the other under the Grant Agreement shall be in writing or through a wire or electronic medium which produces a tangible record of the transmission, such as a telegram, cable or facsimile, and will be deemed duly given or sent when delivered to such party at the following:

To: Liberia Telecommunications Corporation  
Telecommunications Building  
Lynch Street  
PM Bag 9039  
1000 MONROVIA 10  
Liberia  
Phone: (231) 7777 3978  
Fax: (231) 226 356

To: U.S. Trade and Development Agency  
1000 Wilson Boulevard, Suite 1600  
Arlington, Virginia 22209-3901  
USA

Phone: (703) 875-4357  
Fax: (703) 875-4009

All such communications shall be in English, unless the parties otherwise agree in writing. In addition, the Grantee shall provide the Commercial Section of the U.S. Embassy in Host Country with a copy of each communication sent to USTDA.

Any communication relating to this Grant Agreement shall include the following fiscal data:

Appropriation No.: 11 8/9 1001  
Activity No.: 2008-11023A  
Reservation No.: 2008110042  
Grant No.: GH2008110010

#### **18. Termination Clause**

Either party may terminate the Grant Agreement by giving the other party thirty (30) days advance written notice. The termination of the Grant Agreement will end any obligations of the parties to provide financial or other resources for the Study, except for payments which they are committed to make pursuant to noncancellable commitments entered into with third parties prior to the written notice of termination.

## **19. Non-waiver of Rights and Remedies**

No delay in exercising any right or remedy accruing to either party in connection with the Grant Agreement shall be construed as a waiver of such right or remedy.

## **20. U.S. Technology and Equipment**

By funding this Study, USTDA seeks to promote the project objectives of the Host Country through the use of U.S. technology, goods, and services. In recognition of this purpose, the Grantee agrees that it will allow U.S. suppliers to compete in the procurement of technology, goods and services needed for Project implementation.

**[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK]**

IN WITNESS WHEREOF, the Government of the United States of America and the Liberia Telecommunications Corporation, each acting through its duly authorized representative, have caused this Agreement to be signed in the English language in their names and delivered as of the day and year written below. In the event that this Grant Agreement is signed in more than one language, the English language version shall govern.

For the Government of the United States of America

For the Liberia Telecommunications Corporation

By: 

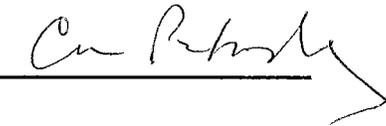
BEN WOLO  
MANAGING DIRECTOR  
By: 

Date: 7/8/08

Date: 7/9/08

Witnessed:

Witnessed: Jeremiah Sulunteh - Minister  
By: 

By: 

Annex I -- Terms of Reference

Annex II -- USTDA Mandatory Clauses

## Annex I

### Terms of Reference

#### **Objective**

The Liberia Telecommunications Corporation has determined that there is a need to create a fiber optic backbone network around Monrovia, Liberia (the Host Country) that enables the Liberia Telecommunications Corporation and other network operators to effectively transport voice, data, and video in and around Monrovia, which represents 33% of the population.

The tasks below describe the activities that will take place as part of the Feasibility Study (“Study”) that will review the technical, economic, legal and institutional aspects associated with the successful deployment of a Greater Monrovia Fiber Optic Ring (“Project”) in the Host Country. The Grantee for this Study is the Liberia Telecommunications Corporation (“Grantee”).

#### **Task 1: Background Research**

The Contractor shall conduct background research to thoroughly familiarize itself with the Project and to review similar studies and relevant models for this type of development activity. Particularly:

- 1.1 The Contractor shall familiarize itself with the key stakeholders and ICT environment of the Host Country as it relates to the Project;
- 1.2 The Contractor shall gather reports or background documents, relevant to the Project, from the Grantee and from other local network operators;
- 1.3 The Contractor shall review similar projects or models for metropolitan fiber backbone networks in other countries in sub-Saharan Africa and the lessons learned; and
- 1.4 The Contractor shall host a kick-off meeting with the Grantee to review and agree on the method and approach for completing the Terms of Reference.

#### Deliverables for Task 1:

- a) The Contractor shall prepare a written report summarizing the kick-off meeting proceedings, including key comments and issues raised.
- b) The Contractor shall prepare a work plan for implementing the TOR of the Study, with timelines and major milestones to be achieved. The work plan shall be reviewed by the Grantee.

The deliverables of Task 1 shall be included in the Final Report.

## **Task 2: Requirements Analysis**

The Contractor shall work with the Grantee, and other stakeholders, such as the local network operators (fixed, mobile and Internet), to evaluate the existing infrastructure and to comprehensively define the scope of the Project.

- 2.1 The Contractor shall review and assess any existing studies identified by the Grantee or from private sector operators that examined technical requirements and options for development and construction of the Project, a fiber optic backbone, optimized for the mutual transport of voice, data and video.
- 2.2 The Contractor shall review existing telecom infrastructure within the Host Country and how existing components can be leveraged and integrated into the build-out of the Project. This shall include interviews and visual inspections of the various telecommunication operator networks and communication infrastructure in the Host Country, including:
  - Atlantic Wireless Liberia (Libercell)
  - Cellcom Liberia
  - MTN Liberia (Lonestar Communications)
  - Comiun Liberia
  - Data Technology Solutions
  - EcoTech
- 2.3 The Contractor shall explore and identify existing grids that can be used for laying fiber (i.e. existing microwave networks, power grids, old rail lines, and roads) and identify any gaps in existing grids that will require new construction.
- 2.4 In consultation with the Grantee, the Contractor shall determine the targeted population centers and locations for deploying the Project in the Host Country. Population centers likely to be included are within a five mile radius of the city center of Monrovia, and include an extension to cover the airport, some 40 kilometers away.
- 2.5 In consultation with the Grantee, the Contractor shall determine the most likely routes and linkage points for interconnection to key partners, clients, and other telecommunication licensees. As part of this task, the consultant shall:
  - Visit and assess the telecommunications readiness of the identified key partners and clients; and
  - Identify and define the requirements for building a terrestrial spur or other technologies to link the proposed Project to each identified licensee.
- 2.6 The Contractor shall identify and define major issues and gaps in the current infrastructure, grids, equipment, technical operations, and network coverage necessary to support the build-out of the Project.

2.7 The Contractor shall, based on the information gathered, recommend the best choice of backbone technologies for construction of the Project, a fiber optic backbone, optimized for the mutual transport of voice, data and video.

2.8 The Contractor shall consolidate findings into a draft requirements assessment, which shall be provided to the Grantee for review. The Contractor shall convene a meeting with representatives of the Grantee and other stakeholders to discuss and refine the requirements assessment. The Contractor shall revise the requirements assessment based on the outcome of the stakeholders meeting.

Deliverables for Task 2:

- a) The Contractor shall develop a written technical assessment of the current technical capabilities such as infrastructure, grids, equipment, technical operations, and network coverage. The Contractor shall indicate what is in place today that can be used to support the Project.
- b) The Contractor shall develop a written technical assessment of the gaps in the existing technical capabilities and expansion plans with respect to infrastructure, grids, equipment, network coverage, and trans-border interconnection points for the Project.
- c) The Contractor shall develop and provide recommendations for infrastructure development, technology, equipment and materials needed to support build-out of the Project.

The deliverables of Task 2 shall also be included in the Final Report.

**Task 3: Technical Network Design, Equipment Specifications, and Project Costs**

The Contractor shall use the input from Task 2 to develop a detailed network design and a list of the necessary products and services required for the implementation of the fiber optic backbone infrastructure, including, but not limited to:

- Ducts, fibers, and chambers;
- Trenching, communications towers or other civil works;
- SDH and other equipment;
- Routers, gateways, and other active equipment; and
- Power and ancillary equipment.

The Contractor shall develop an implementation plan and project costs for deploying the Project in the Host Country. The Contractor shall take into consideration all options to maximize efficiencies for the Project in terms of time, resources, and costs. While preparing the implementation plan, the Contractor shall take into consideration and make a specific recommendation as to whether the Project should be implemented as a single network deployment or implemented in a segmented or phased approach.

- 3.1 The Contractor shall create a high level network architecture schematic focusing on optimizing the use of any existing infrastructure while meeting the stated goals for coverage, capacity, and functionality of the Project. This schematic shall serve as a baseline reference and planning tool for the remainder of the Project efforts.
- 3.2 The Contractor shall develop a Project implementation plan for building the Project based on the recommended rollout schedule of individual network segments.
- 3.3 The Contractor shall develop a detailed budget estimate and major investment expenditures associated with the recommended network design and equipment specifications. These figures should take into account: equipment, survey, network design, transport and installation, network integration and commissioning, and documentation.
- 3.4 The Contractor shall develop a total cost for the Project as well as a breakdown of costs for each phase of the Project implementation plan.

Deliverables for Task 3:

- a) The Contractor shall identify the high level technology architecture, standards and network design for deploying the Project to targeted locations throughout the metropolitan area of Monrovia, Liberia.
- b) The Contractor shall prepare a detailed list of the specific products and services necessary for implementation and rollout of the Project.
- c) For each required product and service, the Contractor shall develop detailed specifications (e.g. functionality, capacity, quality guarantees, and compatibility requirements).
- d) The Contractor shall compile a list of potential U.S. suppliers for each major product and service area.
- e) The Contractor shall develop a detailed Project budget and major investment expenditures.
- f) The Contractor shall develop a schedule of Project costs and projected cash outflows based on the phased Project implementation plan.

The deliverables of Task 3 shall also be included in the Final Report.

#### **Task 4: Business and Operational Management Implementation Alternatives**

The Contractor shall conduct research to determine implementation scenarios for the Project suitable for the Host Country's overall economic, social, and telecommunications sector environment.

- 4.1 The Contractor shall identify and analyze possible scenarios of institutional organization required for the operation, maintenance and development of the proposed infrastructure.
- 4.2 The Contractor shall analyze the conditions under which network operators could share the infrastructure.
- 4.3 The Contractor shall review and assess various business, ownership, and financing models for managing the Project. This review shall include, but not be limited to: public, private, donor, government subsidies or equity stake; cost-based tariffs, non-extortionate pricing and competitive pricing for overall economic and social efficiency; open, non-restrictive or competitive access; and combinations thereof. Potential models that the Contractor shall review include: competitive public-private partnership, cooperative public-private or private partnership, or government-supported build out.
- 4.4 The Contractor shall review and assess approaches supported by industry best practices and lessons learned, such as universal services funds, various financing options, or other incentives that could be engaged to support the build-out of segments on the Project that are not financially attractive on a stand alone basis.

#### **General Factors to Be Taken into Account and Included in the Analysis Above:**

Sources for statistical and other data should always be clearly and precisely identified, to allow fact verification by the Grantee. Assumptions, assertions and inferences should be clearly distinguished and identified, and contrasted with facts.

#### Deliverables for Task 4:

- a) The Contractor shall provide a written report recommending optimal business, ownership and financial models that best fit and support the Host Country's and the Grantee's priorities and goals.
- b) The Contractor shall identify and recommend alternative financial models that would minimize the Grantee's debt burden in constructing and managing the Project. The Contractor shall take as a primary objective to seek out financing options which are untied to specific country procurements.
- c) In close consultation with the Grantee, the Contractor shall make presentations to other stakeholders of the various scenarios and participate in discussions that will

assist the stakeholders to reach a consensus on the best scenario to be adopted. In addition, the Contractor shall develop the written business case, ownership structure, and supporting justification for the business and financial model to be used for the Project based on the most likely scenario to be adopted.

The deliverables of Task 4 shall also be included in the Final Report.

### **Task 5: Regulatory and Legal Framework**

The Contractor shall analyze the impact of the current regulatory and legal framework upon the market assessment. Specifically:

- 5.1 The Contractor shall assess whether the licenses obtained or to be obtained by the Grantee adequately cover its intended scope of operations. The contractor will include in this assessment an evaluation of which other permits the Grantee may require, e.g. inter-connection rights and agreements, environmental assessments and/or permits, etc.
- 5.2 The Contractor shall assist the Grantee in reviewing the existing ICT regulatory framework and policies in the Host Country that impact build-out, management and operation of the recommended Project.
- 5.3 The Contractor shall review the Host Country's existing interconnection cost and pricing models, including cost-based, market-based and other models specifically related to interconnection of operators within the Host Country as well as interconnection of neighboring countries to the Project.

#### Deliverable for Task 5:

- a) The Contractor shall prepare a written report that describes, analyzes and explains the regulatory framework, and its impact on the project.

The deliverables of Task 5 shall also be included in the Final Report.

### **Task 6: Environmental Impact Assessment**

The Contractor shall perform a preliminary review of the Project's environmental impacts consistent with local requirements in the Host Country and those of the potential financiers. This review shall identify potential negative impacts, discuss the extent to which they can be mitigated, and develop plans for a full environmental impact assessment if and when the Project moves forward to implementation stage. Specifically, the Contractor shall focus on developing plans for a full environmental impact assessment related to the buildings and sites for communications towers, their emissions, and power requirements, and their location in regards to schools, water sources, hospitals

and other internationally recognized site location restrictions relative to human habitation.

#### Deliverable for Task 6:

The Contractor shall prepare a report on its preliminary review of the short and long term environmental impacts. The Contractor shall propose measures for environmental control and mitigation, and treatment facilities, including their costs.

The complete findings of Task 6 shall also be included in the Final Report.

#### **Task 7: Development Impact Assessment**

The Contractor shall report on the potential development impact of the Project in the Host Country. The Contractor shall focus on the potential economic development outcomes if the Project is implemented according to the Study recommendations. While specific focus should be placed on the immediate impact of the Project, the Contractor shall include, where appropriate, any additional developmental benefits of the Project, including spin-off and demonstration effects. The Contractor's analysis of the potential benefits shall be as concrete and detailed as possible. The development impact factors are intended to provide the Project's decision-makers and interested parties with a broader view of the Project's potential effects on the Host Country. The Contractor shall provide estimates of the Project's potential benefits in the following areas:

- (A) Infrastructure/Industry - The Contractor shall provide a statement on the infrastructure impact. The contractor shall provide a high level estimate of the economic benefits to the communication industry in the Host Country, in terms of various measures such as the potential of service development and time to market.
- (b) Market-Oriented Reforms - The Contractor shall provide a description of any regulation, laws, or institutional changes that are recommended and the effect they would have if implemented.
- (c) Human Capacity Building - The Contractor shall address the number and type of positions that would be needed to construct and operate the proposed project, as well as the number of people who will receive training and a brief description of the training program.
- (d) Technology Transfer and Productivity Enhancement - The Contractor shall provide a description of any advanced technologies that will be implemented as a result of the Project that includes a quantitative description of any efficiency that would be gained whenever possible.
- (e) Other - The Contractor shall identify any other developmental benefits of the Project, including any spin-off or demonstration effects.

Deliverables for Task 7:

The Contractor shall create a report on the developmental impact and the advantages of building a modernized, convergent and shared telecommunication infrastructure in the Host Country.

**Task 8: Final Report**

**The Contractor shall prepare and deliver to the Grantee and USTDA a substantive and comprehensive final report of all work performed under these Terms of Reference (“Final Report”). The Final Report shall be organized according to the above tasks, and shall include an Executive Summary and all deliverables and documents that have been provided to the Grantee. The Final Report shall be prepared in accordance with Clause I of Annex II of the Grant Agreement. Each task of the Terms of Reference shall form a separate chapter of the Final Report.**

The Final Report shall also include a comprehensive list of U.S. suppliers, including potential sources of U.S. equipment and services, relevant to the implementation of each component of the Project as outlined in the Study.

The Contractor shall submit the Final Report in English. The Contractor shall provide, in English, five (5) hard copies and one (1) electronic version of both the confidential and public versions of the Final Report to the Grantee and shall provide copies to USTDA in accordance with Clause I of Annex II of the Grant Agreement.

**Notes:**

- (1) The Contractor is responsible for compliance with U.S. export licensing requirements, if applicable, in the performance of the Terms of Reference.**
- (2) The Contractor and the Grantee shall be careful to ensure that the public version of the Final Report contains no security or confidential information.**
- (3) The Grantee and USTDA shall have an irrevocable, worldwide, royalty-free, non-exclusive right to use and distribute the Final Report and all work product that is developed under these Terms of Reference.**

## Annex II

### USTDA Mandatory Contract Clauses

#### A. USTDA Mandatory Clauses Controlling

The parties to this contract acknowledge that this contract is funded in whole or in part by the U.S. Trade and Development Agency ("USTDA") under the Grant Agreement between the Government of the United States of America acting through USTDA and the Liberia Telecommunications Corporation ("Client"), dated \_\_\_\_\_ ("Grant Agreement"). The Client has selected \_\_\_\_\_ ("Contractor") to perform the feasibility study ("Study") for the Greater Monrovia Fiber Optic Ring project ("Project") in Liberia ("Host Country"). Notwithstanding any other provisions of this contract, the following USTDA mandatory contract clauses shall govern. All subcontracts entered into by Contractor funded or partially funded with USTDA Grant funds shall include these USTDA mandatory contract clauses, except for clauses B(1), G, H, I, and J. In addition, in the event of any inconsistency between the Grant Agreement and any contract or subcontract thereunder, the Grant Agreement shall be controlling.

#### B. USTDA as Financier

##### (1) USTDA Approval of Contract

All contracts funded under the Grant Agreement, and any amendments thereto, including assignments and changes in the Terms of Reference, must be approved by USTDA in writing in order to be effective with respect to the expenditure of USTDA Grant funds. USTDA will not authorize the disbursement of USTDA Grant funds until the contract has been formally approved by USTDA or until the contract conforms to modifications required by USTDA during the contract review process.

##### (2) USTDA Not a Party to the Contract

It is understood by the parties that USTDA has reserved certain rights such as, but not limited to, the right to approve the terms of this contract and amendments thereto, including assignments, the selection of all contractors, the Terms of Reference, the Final Report, and any and all documents related to any contract funded under the Grant Agreement. The parties hereto further understand and agree that USTDA, in reserving any or all of the foregoing approval rights, has acted solely as a financing entity to assure the proper use of United States Government funds, and that any decision by USTDA to exercise or refrain from exercising these approval rights shall be made as a financier in the course of financing the Study and shall not be construed as making USTDA a party to the contract. The parties hereto understand and agree that USTDA may, from time to time, exercise the foregoing approval rights, or discuss matters related to these rights and the Project with the parties to the contract or any subcontract, jointly or separately, without thereby incurring any responsibility or liability to such parties. Any approval or failure to approve by USTDA shall not

bar the Client or USTDA from asserting any right they might have against the Contractor, or relieve the Contractor of any liability which the Contractor might otherwise have to the Client or USTDA.

### **C. Nationality, Source and Origin**

Except as USTDA may otherwise agree, the following provisions shall govern the delivery of goods and services funded by USTDA under the Grant Agreement: (a) for professional services, the Contractor must be either a U.S. firm or U.S. individual; (b) the Contractor may use U.S. subcontractors without limitation, but the use of subcontractors from Host Country may not exceed twenty percent (20%) of the USTDA Grant amount and may only be used for specific services from the Terms of Reference identified in the subcontract; (c) employees of U.S. Contractor or U.S. subcontractor firms responsible for professional services shall be U.S. citizens or non-U.S. citizens lawfully admitted for permanent residence in the U.S.; (d) goods purchased for performance of the Study and associated delivery services (e.g., international transportation and insurance) must have their nationality, source and origin in the United States; and (e) goods and services incidental to Study support (e.g., local lodging, food, and transportation) in Host Country are not subject to the above restrictions. USTDA will make available further details concerning these provisions upon request.

### **D. Recordkeeping and Audit**

The Contractor and subcontractors funded under the Grant Agreement shall maintain, in accordance with generally accepted accounting procedures, books, records, and other documents, sufficient to reflect properly all transactions under or in connection with the contract. These books, records, and other documents shall clearly identify and track the use and expenditure of USTDA funds, separately from other funding sources. Such books, records, and documents shall be maintained during the contract term and for a period of three (3) years after final disbursement by USTDA. The Contractor and subcontractors shall afford USTDA, or its authorized representatives, the opportunity at reasonable times for inspection and audit of such books, records, and other documentation.

### **E. U.S. Carriers**

#### **(1) Air**

Transportation by air of persons or property funded under the Grant Agreement shall be on U.S. flag carriers in accordance with the Fly America Act, 49 U.S.C. 40118, to the extent service by such carriers is available, as provided under applicable U.S. Government regulations.

**(2) Marine**

Transportation by sea of property funded under the Grant Agreement shall be on U.S. carriers in accordance with U.S. cargo preference law.

**F. Workman's Compensation Insurance**

The Contractor shall provide adequate Workman's Compensation Insurance coverage for work performed under this Contract.

**G. Reporting Requirements**

The Contractor shall advise USTDA by letter as to the status of the Project on March 1st annually for a period of two (2) years after completion of the Study. In addition, if at any time the Contractor receives follow-on work from the Client, the Contractor shall so notify USTDA and designate the Contractor's contact point including name, telephone, and fax number. Since this information may be made publicly available by USTDA, any information which is confidential shall be designated as such by the Contractor and provided separately to USTDA. USTDA will maintain the confidentiality of such information in accordance with applicable law.

**H. Disbursement Procedures**

**(1) USTDA Approval of Contract**

Disbursement of Grant funds will be made only after USTDA approval of this contract. To make this review in a timely fashion, USTDA must receive from either the Client or the Contractor a photocopy of an English language version of a signed contract or a final negotiated draft version to the attention of the General Counsel's office at USTDA's address listed in Clause M below.

**(2) Payment Schedule Requirements**

A payment schedule for disbursement of Grant funds to the Contractor shall be included in this Contract. Such payment schedule must conform to the following USTDA requirements: (1) up to twenty percent (20%) of the total USTDA Grant amount may be used as a mobilization payment; (2) all other payments, with the exception of the final payment, shall be based upon contract performance milestones; and (3) the final payment may be no less than fifteen percent (15%) of the total USTDA Grant amount, payable upon receipt by USTDA of an approved Final Report in accordance with the specifications and quantities set forth in Clause I below. Invoicing procedures for all payments are described below.

### **(3) Contractor Invoice Requirements**

USTDA will make all disbursements of USTDA Grant funds directly to the Contractor. The Contractor must provide USTDA with an ACH Vendor Enrollment Form (available from USTDA) with the first invoice. The Client shall request disbursement of funds by USTDA to the Contractor for performance of the contract by submitting the following to USTDA:

#### **(a) Contractor's Invoice**

The Contractor's invoice shall include reference to an item listed in the Contract payment schedule, the requested payment amount, and an appropriate certification by the Contractor, as follows:

##### **(i) For a mobilization payment (if any):**

"As a condition for this mobilization payment, the Contractor certifies that it will perform all work in accordance with the terms of its Contract with the Client. To the extent that the Contractor does not comply with the terms and conditions of the Contract, including the USTDA mandatory provisions contained therein, it will, upon USTDA's request, make an appropriate refund to USTDA. "

##### **(ii) For contract performance milestone payments:**

"The Contractor has performed the work described in this invoice in accordance with the terms of its contract with the Client and is entitled to payment thereunder. To the extent the Contractor has not complied with the terms and conditions of the Contract, including the USTDA mandatory provisions contained therein, it will, upon USTDA's request, make an appropriate refund to USTDA."

##### **(iii) For final payment:**

"The Contractor has performed the work described in this invoice in accordance with the terms of its contract with the Client and is entitled to payment thereunder. Specifically, the Contractor has submitted the Final Report to the Client, as required by the Contract, and received the Client's approval of the Final Report. To the extent the Contractor has not complied with the terms and conditions of the Contract, including the USTDA mandatory provisions contained therein, it will, upon USTDA's request, make an appropriate refund to USTDA."

#### **(b) Client's Approval of the Contractor's Invoice**

(i) The invoice for a mobilization payment must be approved in writing by the Client.

(ii) For contract performance milestone payments, the following certification by the Client must be provided on the invoice or separately:

"The services for which disbursement is requested by the Contractor have been performed satisfactorily, in accordance with applicable Contract provisions and the terms and conditions of the USTDA Grant Agreement."

(iii) For final payment, the following certification by the Client must be provided on the invoice or separately:

"The services for which disbursement is requested by the Contractor have been performed satisfactorily, in accordance with applicable Contract provisions and terms and conditions of the USTDA Grant Agreement. The Final Report submitted by the Contractor has been reviewed and approved by the Client. "

**(c) USTDA Address for Disbursement Requests**

Requests for disbursement shall be submitted by courier or mail to the attention of the Finance Department at USTDA's address listed in Clause M below.

**(4) Termination**

In the event that the Contract is terminated prior to completion, the Contractor will be eligible, subject to USTDA approval, for reasonable and documented costs which have been incurred in performing the Terms of Reference prior to termination, as well as reasonable wind down expenses. Reimbursement for such costs shall not exceed the total amount of undisbursed Grant funds. Likewise, in the event of such termination, USTDA is entitled to receive from the Contractor all USTDA Grant funds previously disbursed to the Contractor (including but not limited to mobilization payments) which exceed the reasonable and documented costs incurred in performing the Terms of Reference prior to termination.

**I. USTDA Final Report**

**(1) Definition**

"Final Report" shall mean the Final Report described in the attached Annex I Terms of Reference or, if no such "Final Report" is described therein, "Final Report" shall mean a substantive and comprehensive report of work performed in accordance with the attached Annex I Terms of Reference, including any documents delivered to the Client.

**(2) Final Report Submission Requirements**

The Contractor shall provide the following to USTDA:

(a) One (1) complete version of the Final Report for USTDA's records. This version shall have been approved by the Client in writing and must be in the English language. It is the responsibility of the Contractor to ensure that confidential information, if any, contained in this version be clearly marked. USTDA will maintain the confidentiality of such information in accordance with applicable law.

and

(b) One (1) copy of the Final Report suitable for public distribution ("Public Version"). The Public Version shall have been approved by the Client in writing and must be in the English language. As this version will be available for public distribution, it must not contain any confidential information. If the report in (a) above contains no confidential information, it may be used as the Public Version. In any event, the Public Version must be informative and contain sufficient Project detail to be useful to prospective equipment and service providers.

and

(c) Two (2) CD-ROMs, each containing a complete copy of the Public Version of the Final Report. The electronic files on the CD-ROMs shall be submitted in a commonly accessible read-only format. As these CD-ROMs will be available for public distribution, they must not contain any confidential information. It is the responsibility of the Contractor to ensure that no confidential information is contained on the CD-ROMs.

The Contractor shall also provide one (1) copy of the Public Version of the Final Report to the Foreign Commercial Service Officer or the Economic Section of the U.S. Embassy in Host Country for informational purposes.

### **(3) Final Report Presentation**

All Final Reports submitted to USTDA must be paginated and include the following:

(a) The front cover of every Final Report shall contain the name of the Client, the name of the Contractor who prepared the report, a report title, USTDA's logo, USTDA's mailing and delivery addresses. If the complete version of the Final Report contains confidential information, the Contractor shall be responsible for labeling the front cover of that version of the Final Report with the term "Confidential Version." The Contractor shall be responsible for labeling the front cover of the Public Version of the Final Report with the term "Public Version." The front cover of every Final Report shall also contain the following disclaimer:

"This report was funded by the U.S. Trade and Development Agency (USTDA), an agency of the U. S. Government. The opinions, findings, conclusions or recommendations expressed in this document are those of the author(s) and do not necessarily represent the official position or policies of

USTDA. USTDA makes no representation about, nor does it accept responsibility for, the accuracy or completeness of the information contained in this report."

(b) The inside front cover of every Final Report shall contain USTDA's logo, USTDA's mailing and delivery addresses, and USTDA's mission statement. Camera-ready copy of USTDA Final Report specifications will be available from USTDA upon request.

(c) The Contractor shall affix to the front of the CD-ROM a label identifying the Host Country, USTDA Activity Number, the name of the Client, the name of the Contractor who prepared the report, a report title, and the following language:

"The Contractor certifies that this CD-ROM contains the Public Version of the Final Report and that all contents are suitable for public distribution."

(d) The Contractor and any subcontractors that perform work pursuant to the Grant Agreement must be clearly identified in the Final Report. Business name, point of contact, address, telephone and fax numbers shall be included for Contractor and each subcontractor.

(e) The Final Report, while aiming at optimum specifications and characteristics for the Project, shall identify the availability of prospective U.S. sources of supply. Business name, point of contact, address, telephone and fax numbers shall be included for each commercial source.

(f) The Final Report shall be accompanied by a letter or other notation by the Client which states that the Client approves the Final Report. A certification by the Client to this effect provided on or with the invoice for final payment will meet this requirement.

## **J. Modifications**

All changes, modifications, assignments or amendments to this contract, including the appendices, shall be made only by written agreement by the parties hereto, subject to written USTDA approval.

## **K. Study Schedule**

### **(1) Study Completion Date**

The completion date for the Study, which is February 28, 2009, is the date by which the parties estimate that the Study will have been completed.

## **(2) Time Limitation on Disbursement of USTDA Grant Funds**

Except as USTDA may otherwise agree, (a) no USTDA funds may be disbursed under this contract for goods and services which are provided prior to the Effective Date of the Grant Agreement; and (b) all funds made available under the Grant Agreement must be disbursed within four (4) years from the Effective Date of the Grant Agreement.

## **L. Business Practices**

The Contractor agrees not to pay, promise to pay, or authorize the payment of any money or anything of value, directly or indirectly, to any person (whether a governmental official or private individual) for the purpose of illegally or improperly inducing anyone to take any action favorable to any party in connection with the Study. The Client agrees not to receive any such payment. The Contractor and the Client agree that each will require that any agent or representative hired to represent them in connection with the Study will comply with this paragraph and all laws which apply to activities and obligations of each party under this Contract, including but not limited to those laws and obligations dealing with improper payments as described above.

## **M. USTDA Address and Fiscal Data**

Any communication with USTDA regarding this Contract shall be sent to the following address and include the fiscal data listed below:

U.S. Trade and Development Agency  
1000 Wilson Boulevard, Suite 1600  
Arlington, Virginia 22209-3901  
USA

Phone: (703) 875-4357  
Fax: (703) 875-4009

### Fiscal Data:

Appropriation No.:	11 8/9 1001
Activity No.:	2008-11023A
Reservation No.:	2008110042
Grant No.:	GH2008110010

## **N. Definitions**

All capitalized terms not otherwise defined herein shall have the meaning set forth in the Grant Agreement.

## **O. Taxes**

USTDA funds provided under the Grant Agreement shall not be used to pay any taxes, tariffs, duties, fees or other levies imposed under laws in effect in Host Country. Neither the Client nor the Contractor will seek reimbursement from USTDA for such taxes, tariffs, duties, fees or other levies.

**ANNEX 5**

## Annex I

### **Terms of Reference**

#### **Objective**

The Liberia Telecommunications Corporation has determined that there is a need to create a fiber optic backbone network around Monrovia, Liberia (the Host Country) that enables the Liberia Telecommunications Corporation and other network operators to effectively transport voice, data, and video in and around Monrovia, which represents 33% of the population.

The tasks below describe the activities that will take place as part of the Feasibility Study (“Study”) that will review the technical, economic, legal and institutional aspects associated with the successful deployment of a Greater Monrovia Fiber Optic Ring (“Project”) in the Host Country. The Grantee for this Study is the Liberia Telecommunications Corporation (“Grantee”).

#### **Task 1: Background Research**

The Contractor shall conduct background research to thoroughly familiarize itself with the Project and to review similar studies and relevant models for this type of development activity. Particularly:

- 1.1 The Contractor shall familiarize itself with the key stakeholders and ICT environment of the Host Country as it relates to the Project;
- 1.2 The Contractor shall gather reports or background documents, relevant to the Project, from the Grantee and from other local network operators;
- 1.3 The Contractor shall review similar projects or models for metropolitan fiber backbone networks in other countries in sub-Saharan Africa and the lessons learned; and
- 1.4 The Contractor shall host a kick-off meeting with the Grantee to review and agree on the method and approach for completing the Terms of Reference.

#### Deliverables for Task 1:

- a) The Contractor shall prepare a written report summarizing the kick-off meeting proceedings, including key comments and issues raised.
- b) The Contractor shall prepare a work plan for implementing the TOR of the Study, with timelines and major milestones to be achieved. The work plan shall be reviewed by the Grantee.

The deliverables of Task 1 shall be included in the Final Report.

## **Task 2: Requirements Analysis**

The Contractor shall work with the Grantee, and other stakeholders, such as the local network operators (fixed, mobile and Internet), to evaluate the existing infrastructure and to comprehensively define the scope of the Project.

- 2.1 The Contractor shall review and assess any existing studies identified by the Grantee or from private sector operators that examined technical requirements and options for development and construction of the Project, a fiber optic backbone, optimized for the mutual transport of voice, data and video.
- 2.2 The Contractor shall review existing telecom infrastructure within the Host Country and how existing components can be leveraged and integrated into the build-out of the Project. This shall include interviews and visual inspections of the various telecommunication operator networks and communication infrastructure in the Host Country, including:
  - Atlantic Wireless Liberia (Libercell)
  - Cellcom Liberia
  - MTN Liberia (Lonestar Communications)
  - Comiun Liberia
  - Data Technology Solutions
  - EcoTech
- 2.3 The Contractor shall explore and identify existing grids that can be used for laying fiber (i.e. existing microwave networks, power grids, old rail lines, and roads) and identify any gaps in existing grids that will require new construction.
- 2.4 In consultation with the Grantee, the Contractor shall determine the targeted population centers and locations for deploying the Project in the Host Country. Population centers likely to be included are within a five mile radius of the city center of Monrovia, and include an extension to cover the airport, some 40 kilometers away.
- 2.5 In consultation with the Grantee, the Contractor shall determine the most likely routes and linkage points for interconnection to key partners, clients, and other telecommunication licensees. As part of this task, the consultant shall:
  - Visit and assess the telecommunications readiness of the identified key partners and clients; and
  - Identify and define the requirements for building a terrestrial spur or other technologies to link the proposed Project to each identified licensee.
- 2.6 The Contractor shall identify and define major issues and gaps in the current infrastructure, grids, equipment, technical operations, and network coverage necessary to support the build-out of the Project.

2.7 The Contractor shall, based on the information gathered, recommend the best choice of backbone technologies for construction of the Project, a fiber optic backbone, optimized for the mutual transport of voice, data and video.

2.8 The Contractor shall consolidate findings into a draft requirements assessment, which shall be provided to the Grantee for review. The Contractor shall convene a meeting with representatives of the Grantee and other stakeholders to discuss and refine the requirements assessment. The Contractor shall revise the requirements assessment based on the outcome of the stakeholders meeting.

#### Deliverables for Task 2:

- a) The Contractor shall develop a written technical assessment of the current technical capabilities such as infrastructure, grids, equipment, technical operations, and network coverage. The Contractor shall indicate what is in place today that can be used to support the Project.
- b) The Contractor shall develop a written technical assessment of the gaps in the existing technical capabilities and expansion plans with respect to infrastructure, grids, equipment, network coverage, and trans-border interconnection points for the Project.
- c) The Contractor shall develop and provide recommendations for infrastructure development, technology, equipment and materials needed to support build-out of the Project.

The deliverables of Task 2 shall also be included in the Final Report.

#### **Task 3: Technical Network Design, Equipment Specifications, and Project Costs**

The Contractor shall use the input from Task 2 to develop a detailed network design and a list of the necessary products and services required for the implementation of the fiber optic backbone infrastructure, including, but not limited to:

- Ducts, fibers, and chambers;
- Trenching, communications towers or other civil works;
- SDH and other equipment;
- Routers, gateways, and other active equipment; and
- Power and ancillary equipment.

The Contractor shall develop an implementation plan and project costs for deploying the Project in the Host Country. The Contractor shall take into consideration all options to maximize efficiencies for the Project in terms of time, resources, and costs. While preparing the implementation plan, the Contractor shall take into consideration and make a specific recommendation as to whether the Project should be implemented as a single network deployment or implemented in a segmented or phased approach.

- 3.1 The Contractor shall create a high level network architecture schematic focusing on optimizing the use of any existing infrastructure while meeting the stated goals for coverage, capacity, and functionality of the Project. This schematic shall serve as a baseline reference and planning tool for the remainder of the Project efforts.
- 3.2 The Contractor shall develop a Project implementation plan for building the Project based on the recommended rollout schedule of individual network segments.
- 3.3 The Contractor shall develop a detailed budget estimate and major investment expenditures associated with the recommended network design and equipment specifications. These figures should take into account: equipment, survey, network design, transport and installation, network integration and commissioning, and documentation.
- 3.4 The Contractor shall develop a total cost for the Project as well as a breakdown of costs for each phase of the Project implementation plan.

Deliverables for Task 3:

- a) The Contractor shall identify the high level technology architecture, standards and network design for deploying the Project to targeted locations throughout the metropolitan area of Monrovia, Liberia.
- b) The Contractor shall prepare a detailed list of the specific products and services necessary for implementation and rollout of the Project.
- c) For each required product and service, the Contractor shall develop detailed specifications (e.g. functionality, capacity, quality guarantees, and compatibility requirements).
- d) The Contractor shall compile a list of potential U.S. suppliers for each major product and service area.
- e) The Contractor shall develop a detailed Project budget and major investment expenditures.
- f) The Contractor shall develop a schedule of Project costs and projected cash outflows based on the phased Project implementation plan.

The deliverables of Task 3 shall also be included in the Final Report.

#### **Task 4: Business and Operational Management Implementation Alternatives**

The Contractor shall conduct research to determine implementation scenarios for the Project suitable for the Host Country's overall economic, social, and telecommunications sector environment.

- 4.1 The Contractor shall identify and analyze possible scenarios of institutional organization required for the operation, maintenance and development of the proposed infrastructure.
- 4.2 The Contractor shall analyze the conditions under which network operators could share the infrastructure.
- 4.3 The Contractor shall review and assess various business, ownership, and financing models for managing the Project. This review shall include, but not be limited to: public, private, donor, government subsidies or equity stake; cost-based tariffs, non-extortionate pricing and competitive pricing for overall economic and social efficiency; open, non-restrictive or competitive access; and combinations thereof. Potential models that the Contractor shall review include: competitive public-private partnership, cooperative public-private or private partnership, or government-supported build out.
- 4.4 The Contractor shall review and assess approaches supported by industry best practices and lessons learned, such as universal services funds, various financing options, or other incentives that could be engaged to support the build-out of segments on the Project that are not financially attractive on a stand alone basis.

#### **General Factors to Be Taken into Account and Included in the Analysis Above:**

Sources for statistical and other data should always be clearly and precisely identified, to allow fact verification by the Grantee. Assumptions, assertions and inferences should be clearly distinguished and identified, and contrasted with facts.

#### **Deliverables for Task 4:**

- a) The Contractor shall provide a written report recommending optimal business, ownership and financial models that best fit and support the Host Country's and the Grantee's priorities and goals.
- b) The Contractor shall identify and recommend alternative financial models that would minimize the Grantee's debt burden in constructing and managing the Project. The Contractor shall take as a primary objective to seek out financing options which are untied to specific country procurements.
- c) In close consultation with the Grantee, the Contractor shall make presentations to other stakeholders of the various scenarios and participate in discussions that will

assist the stakeholders to reach a consensus on the best scenario to be adopted. In addition, the Contractor shall develop the written business case, ownership structure, and supporting justification for the business and financial model to be used for the Project based on the most likely scenario to be adopted.

The deliverables of Task 4 shall also be included in the Final Report.

### **Task 5: Regulatory and Legal Framework**

The Contractor shall analyze the impact of the current regulatory and legal framework upon the market assessment. Specifically:

- 5.1 The Contractor shall assess whether the licenses obtained or to be obtained by the Grantee adequately cover its intended scope of operations. The contractor will include in this assessment an evaluation of which other permits the Grantee may require, e.g. inter-connection rights and agreements, environmental assessments and/or permits, etc.
- 5.2 The Contractor shall assist the Grantee in reviewing the existing ICT regulatory framework and policies in the Host Country that impact build-out, management and operation of the recommended Project.
- 5.3 The Contractor shall review the Host Country's existing interconnection cost and pricing models, including cost-based, market-based and other models specifically related to interconnection of operators within the Host Country as well as interconnection of neighboring countries to the Project.

#### Deliverable for Task 5:

- a) The Contractor shall prepare a written report that describes, analyzes and explains the regulatory framework, and its impact on the project.

The deliverables of Task 5 shall also be included in the Final Report.

### **Task 6: Environmental Impact Assessment**

The Contractor shall perform a preliminary review of the Project's environmental impacts consistent with local requirements in the Host Country and those of the potential financiers. This review shall identify potential negative impacts, discuss the extent to which they can be mitigated, and develop plans for a full environmental impact assessment if and when the Project moves forward to implementation stage. Specifically, the Contractor shall focus on developing plans for a full environmental impact assessment related to the buildings and sites for communications towers, their emissions, and power requirements, and their location in regards to schools, water sources, hospitals

and other internationally recognized site location restrictions relative to human habitation.

Deliverable for Task 6:

The Contractor shall prepare a report on its preliminary review of the short and long term environmental impacts. The Contractor shall propose measures for environmental control and mitigation, and treatment facilities, including their costs.

The complete findings of Task 6 shall also be included in the Final Report.

**Task 7: Development Impact Assessment**

The Contractor shall report on the potential development impact of the Project in the Host Country. The Contractor shall focus on the potential economic development outcomes if the Project is implemented according to the Study recommendations. While specific focus should be placed on the immediate impact of the Project, the Contractor shall include, where appropriate, any additional developmental benefits of the Project, including spin-off and demonstration effects. The Contractor's analysis of the potential benefits shall be as concrete and detailed as possible. The development impact factors are intended to provide the Project's decision-makers and interested parties with a broader view of the Project's potential effects on the Host Country. The Contractor shall provide estimates of the Project's potential benefits in the following areas:

(A) Infrastructure/Industry - The Contractor shall provide a statement on the infrastructure impact. The contractor shall provide a high level estimate of the economic benefits to the communication industry in the Host Country, in terms of various measures such as the potential of service development and time to market.

(b) Market-Oriented Reforms - The Contractor shall provide a description of any regulation, laws, or institutional changes that are recommended and the effect they would have if implemented.

(c) Human Capacity Building - The Contractor shall address the number and type of positions that would be needed to construct and operate the proposed project, as well as the number of people who will receive training and a brief description of the training program.

(d) Technology Transfer and Productivity Enhancement - The Contractor shall provide a description of any advanced technologies that will be implemented as a result of the Project that includes a quantitative description of any efficiency that would be gained whenever possible.

(e) Other - The Contractor shall identify any other developmental benefits of the Project, including any spin-off or demonstration effects.

Deliverables for Task 7:

The Contractor shall create a report on the developmental impact and the advantages of building a modernized, convergent and shared telecommunication infrastructure in the Host Country.

**Task 8: Final Report**

**The Contractor shall prepare and deliver to the Grantee and USTDA a substantive and comprehensive final report of all work performed under these Terms of Reference (“Final Report”). The Final Report shall be organized according to the above tasks, and shall include an Executive Summary and all deliverables and documents that have been provided to the Grantee. The Final Report shall be prepared in accordance with Clause I of Annex II of the Grant Agreement. Each task of the Terms of Reference shall form a separate chapter of the Final Report.**

The Final Report shall also include a comprehensive list of U.S. suppliers, including potential sources of U.S. equipment and services, relevant to the implementation of each component of the Project as outlined in the Study.

The Contractor shall submit the Final Report in English. The Contractor shall provide, in English, five (5) hard copies and one (1) electronic version of both the confidential and public versions of the Final Report to the Grantee and shall provide copies to USTDA in accordance with Clause I of Annex II of the Grant Agreement.

**Notes:**

- (1) The Contractor is responsible for compliance with U.S. export licensing requirements, if applicable, in the performance of the Terms of Reference.**
- (2) The Contractor and the Grantee shall be careful to ensure that the public version of the Final Report contains no security or confidential information.**
- (3) The Grantee and USTDA shall have an irrevocable, worldwide, royalty-free, non-exclusive right to use and distribute the Final Report and all work product that is developed under these Terms of Reference.**