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LIBERIA ENVIRONMENTAL THREATS AND OPPORTUNITIES ASSESSMENT (LETOA)

QUARTERLY REPORT: JANUARY 1 THROUGH MARCH 31, 2009

April 2009

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JANUARY 1 THROUGH MARCH 31, 2009

Submitted to:

USAID/Liberia, Office of Economic Growth

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The authors' views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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ACRONYMS

CD	Compact disk
CK2C	Capitalizing Knowledge, Connecting Communities
DAI	Development Alternatives Inc.
EPA	Environmental Protection Agency
ETOA	Environmental Threats and Opportunity Assessment
FAA	Foreign Assistance Act
FDA	Forestry Development Authority
GIS	Geographic Information Systems
GOL	Government of Liberia
IQC	Indefinite Quantity Contract
LGCD	Liberia Geospatial Data Committee
LCIP	Liberia Community Infrastructure Program
LISGIS	Liberia Institute of Statistic and Geo-Information Services
LRCFP	Land Rights and Community Forestry Project
LISGIS	Liberia Institute of Statistics and Geo-Information Services
MOP	Ministry of Planning
NGO	Non-governmental organizations
PLACE	People, Livelihoods, and Conserving Ecosystems
PMP	Performance Monitoring Plan
SDI	Spatial data infrastructure
STEWARD	Sustainable Thriving Environments for West Africa Regional Development
USAID	United States Agency for International Development
	USFS United States Forest Service

LIBERIA ENVIRONMENTAL THREATS AND OPPORTUNITIES ASSESSMENT (ETOA)

QUARTERLY REPORT: JANUARY 1 THROUGH MARCH 31, 2009

A. INTRODUCTION

Development Alternatives Inc. (DAI) hereby presents the Quarterly Report for the Liberia Environmental Threats and Opportunities Assessment for the period of October 1 through December 31, 2008. DAI was awarded the LETOA Task Order under the People, Livelihoods, and Conserving Ecosystems (PLACE) indefinite quantity contract (IQC) on May 21, 2008. The implementation period for the LETOA is 480 days, with a programmed Task Order completion date of October 13, 2009.

The objectives of the LETOA are to:

- Identify key environmental threats and their underlying causes across ecosystems - green (forests, agricultural systems), brown (urban, industrial systems) and blue (marine and freshwater systems) - and examine interactions between these ecosystems;
- Identify synergies and other opportunities to integrate environmental issues into existing or planned Mission activities;
- Provide educational tools, maps, and training sessions which can help to inform Mission staff, the Government of Liberia, and others on present trends and recent data on Liberia's tropical forests, biodiversity, and environmental issues.
- Develop and produce an environmental report composed of three distinct sections including: 1) a State of the Environment report; 2) a Tropical Forests and Biodiversity Report (Foreign Assistance Act Sections 118/119); and 3), an environmental data collection, monitoring and adaptive management plan.

The report is based on the FY 2009 work plan and is organized into four sections: 1) accomplishments; 2) project administration; 3) performance monitoring; and 4) issues affecting implementation.

B. ACCOMPLISHMENTS DURING THE REPORTING PERIOD

A summary of progress towards expected results for the quarter is presented below.

B.1 STATE OF THE ENVIRONMENT REPORT/ETOA Follow-Up

Presentation of ETOA results to stakeholders

Benchmarks:

- Power Point presentations for various stakeholder groups prepared by November 30, 2008;
- Presentations completed by December 31, 2008.

Status:

Completed. Although the presentations were originally proposed for December 2008, given travel schedules and workloads, USAID/Liberia and DAI mutually decided to postpone the presentations until mid-January 2009.

During the quarter, the generic ETOA power point presentation was, in collaboration with USAID/Liberia, fine tuned for each stakeholder group, including: i) donor partners; ii) non-governmental organizations (NGO), private sector and educational institutions; iii) USAID implementing partners; iv) Government of Liberia; and v) USAID and the State Department.

Presentations were held at the Liberia Community Infrastructure Project (LCIP) on January 19 (donors and NGOs) and January 20 (implementing partners and Government of Liberia counterparts). The presentation to State and USAID was held at the Embassy on January 21. A list of participants is presented in Annex A. Additionally, a copy of the ETOA Executive Summary was emailed to each participant.

The presentations generated lively discussion, and although scheduled for one and one half hours, most of the sessions ran for an additional hour or more. More importantly, the presentations provided an opportunity for cross sectoral interaction between GOL agencies. GOL participants remarked that it was rare to have representatives from different GOL agencies (Forestry Development Authority, Bureau of National Fisheries, Environmental Protection Agency, Liberia Institute of Statistic and Geo-Information Services (LISGIS) and the Geographic Information Service (GIS) Department of the Ministry of Land, Mines and Energy) sitting around the same table discussing environmental issues and encouraged USAID to support such forums in the future.

Additionally, under the auspices of USAID's Africa Bureau Environmental Advisor, the ETOA Team Leader presented a power point on the ETOA to staff from USAID/AFR/SD, USAID/EGAT/NRM and the U.S. Forest Service (USFS) on February 18, 2009. After the presentation, it was suggested that the ETOA report be featured on USAID's NRM Portal and FRAME. Working through the DAI-implemented Capitalizing Knowledge, Connecting Communities (CK2C) project, the ETOA report is now available on the NRM portal (<http://rmportal.net/library/files/liberia-etoa-fy-2008-workplan-final-version.pdf/view>), FRAME ([Liberia Environmental Threats And Opportunities Assessment \(ETOA\) Final Report](#)), with links planned to the USFS's Sustainable Thriving Environments for West Africa Regional Development (STEWARD) program.

Preparation/distribution of reference CD

Benchmark:

- CDs with reference collection provided to key stakeholders by December 31, 2008.

Status:

Ongoing, to be completed in April 2009. DAI will produce the CDs at no cost to the project. The CDs – with labels appropriately branded – contain MSWord and PDF versions of the full report along with selected references. DAI’s Information Technology Department is currently producing the CDs and they are expected to be ready for distribution via LCIP by mid-April 2009.

B.2 ENVIRONMENTAL DATA COLLECTION, MONITORING AND ADAPTIVE MANAGEMENT

During the quarter (January 19-25), GIS Specialist Bob Bouvier traveled to Liberia to work with the members of the Liberia Geospatial Data Committee (LGCD) on formulating and implementing a Liberian spatial data infrastructure (SDI) aimed at coordinating the acquisition/ procurement, creation, integration, distribution, sharing and exchange of spatial data to support over-arching Liberian national post-conflict development, environment, and biodiversity conservation objectives. A summary of progress towards expected results for the quarter is presented below, and a full trip report of Mr. Bouvier’s TDY – *Towards a Liberia Spatial Data Infrastructure* - is provided in Appendix C.

SDI stakeholder workshop and proceedings

Benchmarks:

- SDI workshop held by the end of January 2009;
- Draft proceedings of this workshop will be incorporated into a LGCD/SDI draft document for GOL review and consideration. Draft proceedings will be distributed to key stakeholders by the end of February 2009.

Status:

On-going. On January 21, a meeting of the Liberia GIS super user group was convened at the LCIP office. This group is composed of senior GIS technical specialists and managers from the government, private and donor communities, whose members will be proposed as core team members of the Liberia Geospatial Data Committee (LGDC). The meeting addressed issues relating to spatial data standards and sharing across government agencies, private sector, NGOs, and academia. There is consensus among the group that a policy that governs spatial data standards and sharing is necessary for Liberia’s coordinated sustainable development processes, but there are several issues that currently constrain spatial data coordination and sharing across agencies.

A major workshop outcome was the preparation of a refined SDI presentation for the Liberian Minister of Planning. Based on the workshop, SDI principles were presented to the Minister on January 22 and achieved the intended outcome of garnering Ministerial level support for the National Level SDI Symposium to be held in June 2009; the Minister agreed to champion the concept the LSDI to his colleagues. Draft proceedings of this workshop (Appendix C) will be incorporated into a LSDI draft

document for GOL review and consideration. Pending USAID review, the draft proceedings will be distributed to key stakeholders during the second quarter reporting period.

Proposed national level symposium

Benchmark:

- A national level presentation intended to justify the creation of a LGDC that will oversee a national level SDI initiative held by the end of June 2009.

On target. Leveraging SDI stakeholder workshop discussion and agreements, during the next quarter, Mr. Bouvier will work with members of the proposed LGDC to prepare a National Level presentation designed to promote awareness among Liberian Ministerial decision-makers related to:

- Under-utilization of existing Liberian spatial data for development planning despite there being a large volume of available information;
- A lack of protocol for spatial data regulation and coordinated exchange/sharing contributes to the general;
- Certain Liberia spatial data are inconsistent, imprecise, or inadequate for intended use, core common principles and technical agreements required for effective sharing of spatial data
- A cultural shift is required by Liberian institutional staff and management to promote proficient sharing data and information methods.

Other activities: National asset and activity mapping

As part of a strategic country-wide development initiative, USAID/Liberia proposes to coordinate an asset mapping activity together with the Ministry of Planning. The aim is to create spatial data and map development activity and existing public service infrastructure (schools, hospitals, health clinics etc) throughout the country. During the quarter, the Mission and DAI worked on developing a series of concept papers to support this initiative under the ETOA, or in conjunction with the Missions Global Development Commons activity. A decision on how to proceed with this activity is pending.

C. PROJECT ADMINISTRATION

A pipeline analysis presented in Appendix B indicates that as of February 28, 2009, there is \$55,236 remaining in the ETOA budget.

The ETOA property inventory was also updated during last quarter and presented to USAID. A draft property distribution plan has been developed which would turn over all property to USAID has also been developed but implementation of the plan has been placed on hold pending a possible amendment to the contract to undertake additional mapping work as discussed in Section B.2 above.

D. PERFORMANCE MONITORING PLAN

D.1 MONITORING CRITICAL ASSUMPTIONS

There were no substantive changes to our critical assumptions during the reporting period as indicated in Table 1 below.

TABLE 1: ETOA —CRITICAL ASSUMPTIONS

INDICATOR	INDICATOR DEFINITION/ UNIT OF MEASURE	STATUS
Political stability/ security	Political and security situation in Liberia remain conducive to program implementation	No substantive change
Environmental stability	Environmental conditions in Liberia remain conducive to program implementation with no significant deterioration in climatic trends/natural disasters and repatriation trends.	No substantive change
Continued Government of Liberia and USAID support for the LETOA	Support for the LETOA from the Government of Liberia and USAID is maintained over the duration of the program.	No substantive change
Continued international support for Liberia environment, conservation and development initiatives	International support for forest conservation and linked rural development remains strong: stable funding, staffing levels, and mandate.	No substantive change

D.2 OVERARCHING “F” INDICATORS

TABLE 2: LETOA F INDICATORS

INDICATOR	TARGET	PROGRESS TOWARDS TARGET
Indicator 5: Number of policies, laws, agreements or regulations promoting sustainable NRM and conservation that are implemented as a result of U.S. Government assistance	DRAFT METADATA POLICY PRODUCED (FY 2009)	Ongoing. We expect to have a metadata policy and service accessible to the Liberia GIS stakeholder community established by the end of August 2009.
Indicator 7: Number of people receiving U.S. Government-supported	PARTICIPANTS FROM GIS TRAINING SESSIONS	No training activities were conducted during the reporting period.

INDICATOR	TARGET	PROGRESS TOWARDS TARGET
training in NRM and/or biodiversity conservation		
Number of women	6 (FY 2009)	No training sessions were conducted during the reporting period
Number of men	6 (FY 2009)	No training sessions were conducted during the reporting period

D.3 IMPACT INDICATORS

TABLE 3: LETOA IMPACT INDICATORS

INDICATOR	INDICATOR DEFINITION/ UNIT OF MEASURE	FY 2009 TARGET	PROGRESS TOWARDS TARGET
Liberian agencies utilize technical findings and technology to identify new areas of interest vis a vis NRM, improving transparency in decision-making	The number of Liberian agencies that provide updates to the visualization tool for monitoring purposes, request the tool for review, and/or use the ETOA report and/or visualization tool to identify locations of environmental interest	3	1 –the Minister of Planning has become a key partner in the LSDI initiative
USAID and other implementing partners requesting additional information in GIS tools and applications	Number	4	We are collaborating with ARD's Land Rights and Community Forestry Project (LRCFP) on mapping of activities in and around East Nimba Nature Reserve as well as on the SDI initiative
USAID implementing partners adopting best practices in environmental/natural resource management	Number	1	Other than LCIP II, no indication that implementing partners have used ETOA info
Active stakeholder participation in workshops	Percent of invited workshop participants who actually attend	90%	A total of 5 ETOA presentations and one SDA workshop were given during the reporting period. For the ETOA workshops, a total of 49 out of 71 invited participants attended (70%); for the SDI workshop, a total of 4 out of 9 invitees attended (44%)/

D.4 MONITORING CUSTOMER SATISFACTION

TABLE 4: MONITORING CUSTOMER SATISFACTION—INDICATORS

INDICATOR	INDICATOR DEFINITION/ UNIT OF MEASURE	FY 2009 TARGET	PROGRESS TOWARDS TARGET
Number of partner organizations and clients receiving requested technical support services for implementation activities and sustainable development practices	Stakeholders rate ETOA information exchange and liaison as good to excellent	20	Customer satisfaction survey scheduled for third quarter 2009
Partners that rate LETOA capacity building and support services as good to excellent	Percentage of stakeholders that rate ETOA information exchange and liaison as good to excellent based on an annual survey	60%	Customer satisfaction survey scheduled for third quarter 2009

E. ISSUES AFFECTING IMPLEMENTATION

There were no major issues affecting implementation for the reporting period

APPENDIX A
LIST OF PARTICIPANTS

APPENDIX A: ETOA PRESENTATION PARTICIPANTS

Donor Partners Group – Monday, January 19, 2009, 10 AM -11:30 PM

1. James Coleman, Environment and Natural Resources Officer, UNMIL
2. Moses Massah, Program Manager Energy and Environment, UNDP
3. Isamu Kikuchi, Development Officer, JICA (Haider Building UNHCR across from Gate #3)
4. Thorvald Boye, Counselor, Royal Norwegian Embassy, Abidjan (can send him an invitation via email at – tbo@mfa.no and if he will be in Monrovia then he can attend
5. Jan Rabantek, Civil Affairs Officer, UNMIL

NGOs, Private Sector and Educational Institutions Group – Monday, January 19, 2009, 2 PM – 3:30 PM

1. Joseph Fully, Acting Executive Director, Society for the Conservation of Nature in Liberia
2. G. Gorbee Logan, Instructor of Biology, Biology Department, University of Liberia

USAID Implementing Partners Group – Tuesday, January 20, 2009, 10 AM -11:30 PM

1. Ian Deshmukh, Chief of Party, ARD-LRCFP
2. Quan Dinh, Chief of Party, ARD-TASMOA
3. Boima Bafaie, ENR Specialist, DAI-LCIP
4. Thomas Pichet, Project Manager, SGS
5. Decontee King-Sackie, Office Manager, Liberia Forest Initiative
6. Sean Gallagher, Country Representative, Catholic Relief Services
7. Alfred Kalaghe, LIAP Coordinator, Africare
8. Albert Bass, Technical Advisor, LCIP
9. Koffa, Samuel N. Senior Community Forestry Specialist Land Rights and Community Forestry Program (USAID-ARD)
10. Murombedzi, James Senior Land Tenure and Property Rights Specialist Land Rights and Community Forestry Program (USAID-ARD)
11. Joseph van de Reep, Head of Programs, CRS
12. Macon Tubman, Technical Ag Advisor, LCIP

Government of Liberia Group – Tuesday, January 20, 2009, 2 PM – 3:30 PM

1. Jerome Nyenka, Deputy Executive Director, Environmental Protection Agency
2. Varney Conneh, EIA Coordinator, EPA
3. Thomas Davis, Director, GIS/Cartography, LISGIS
4. John T Woods, Managing Director, Forestry Development Authority
5. Myer Jargbah, Manager, Strategic Planning Unit, FDA
6. Moses Wogbeh, Manager, Community Forestry Department, FDA
7. Theo Freeman, Manager, Conservation Department, FDA
8. John Gweama, Manager, Law Enforcement, FDA
9. James Kpadahyea, Manager EIA, FDA
10. Wisseh Kay, Deputy Coordinator, Bureau of National Fisheries, MOA
11. Sampson S. Nyema, Commercial Officer, FDA
12. Sheck A. Sherif, Deputy Coordinator, Technical, Bureau of National Fisheries
13. Debbie Garpon, Assistant Director for Environmental Statistics, LISGIS
14. Carlton Miller, Director GIS Office, MLME

15. Zlenyonohs Tartue, Commercial Officer, FDA

State Department and USAID, January 21, 2009

1. Pam White, Mission Director, USAID
2. 2) Rick Scott, Deputy Mission Director, USAID
3. 3) Modupe Broderick, Project Development Officer, USAID
4. 4) McDonald Homer, Economic Growth Office, USAID
5. 5) Anthony Carvalho, Economic Growth Office, USAID
6. 6) Phakatip Chungbhivat, Program Office, USAID
7. 7) Nena Terrell, Development Outreach Communications Specialist, USAID
8. 8) George Brown, Education Office, USAID
9. 9) Brian Cohen, USFS, Economic Growth Office, USAID
10. 10) Doug Carey, State Department Pol/Econ Office
11. 11) Lucy Abbott, State Department Pol/Econ Office
12. 12) Winston Noel, State Department Facilities/Maintenance Office
13. 13) Thomas Gonkerwon, State Department Facilities/Maintenance Office
14. 14) Gillian Dare, UK Representative to Liberia
15. 15) Jimmy Kyanwapolu, Peace Corps Liberia

APPENDIX B
PIPELINE ANALYSIS

APPENDIX C
TOWARDS A LIBERIA SPATIAL DATA INFRASTRUCTURE (LSDI)

APPENDIX C

TOWARDS A LIBERIA SPATIAL DATA INFRASTRUCTURE (LSDI)

A new wave of technological innovation is allowing us to capture, store, process and display an unprecedented amount of information about our planet and a wide variety of environmental and cultural phenomena. Much of this information will be "geo-referenced" - that is, it will refer to some specific place on the Earth's surface.

Al Gore (1998) "The Digital Earth"

This evocative and meaningful statement reflects current reality with respects to spatially referenced information. Following his introduction, Al Gore goes on to state that *"The hard part of taking advantage of this flood of geospatial information will be making sense of it. - turning raw data into understandable information"*. Rapidly emerging geospatial technologies and scientific advancement offer exciting tools and methods for the collection, management analysis and reporting of spatially referenced data. Across the globe, governments are adopting the use of geospatial data and related technologies for public and private sector decision support. As early as 1992, The United Nations Conference on Environment and Development in Rio de Janeiro underscored the importance of geospatial technologies for assessment of environmental degradation and managing the impact.

Use of spatial data is becoming increasingly affordable due to reduced costs associated with rapidly maturing open source software and lower commercial software licenses. Spatial data are vital to activity planning and monitoring across public, private and non-government sectors is valuable resource. Increasingly managers use spatial information to justify program management decisions. However, in many corners of the developing world the value of spatial data is limited due to undefined geospatial data management policies required. Successful utilization of geo-referenced information requires a spatial data guidelines and policies that govern the harmonization of spatially referenced State data sets typically used by planners such as administrative boundaries, populated places, protected areas, transportation networks. This is a matter of national security for many countries.

Liberia Spatial Data Infrastructure

Spatial information is an indispensable to the reconstitution of Liberia's national infrastructure, used effectively it can increase efficiency in all sectors of public administration decision support. Utilizing spatial data the private sector can become greater integrated with the national development agenda. Geographic information is used to inform planning decisions at the local, regional and global scale. Analyzing this information over time provides an indicator of project progress. Examples of development sector topics that incorporate spatial data for decision support:

- Environmental assessment and protection,
- Land management and spatial planning
- Flood mitigation/disaster recovery,

- Health monitoring and disease control
- Transportation infrastructure
- Crime monitoring/management,
- Business sector development,
- Community land use assessment/decisions

Coordinated post-conflict and related environmental protection activities in Liberia are critical for insuring a comprehensive and sustainable development processes. Reliable and consistent Information is at the heart of the development coordination process. Post-conflict initiatives aimed at promoting socio-economic development are based on spatial information that characterize and show where socio-economic “hotspots” are located to help ease the transition from conflict to sustainable peace. Effective post conflict reconstruction and natural resource conservation require a coordinated inter-agency approach for creating and sharing accurate spatial data. This helps to insure that finite financial resources are invested in places where probability for successful implementation is highest. Mapping technology helps to fosters understanding across agencies; in turn this can create synergies aimed as leveraging limited financial and human resources on inter-disciplinary development initiatives.

Coordinated spatial data development, management and distribution helps post-conflict sector agencies to implement coordinated initiatives aimed at economic revitalization through equitable distribution of resources. Use of spatial data and related maps products fosters transparency and promote an inclusive process. Simple to complex reconstruction information can be summarized in a map through use of points, lines, and polygons and associated color ramps. Using this “symbolology” convention maps help to insure that all stakeholders have access to planning information including those without the benefit of education – this is central for successful participatory development processes. Fair, transparent and equitable planning afforded through use of mapping technologies helps to promote confidence in organizational capacity and social capital.

Specific to ongoing Liberian reconstruction spatial data is used to plan vital physical infrastructure projects such as key transportation, utility, and communication networks. Maps help planners to target assistance to those affected by war through:

- Identifying and quantifying land and physical assets required for the reintegration of displaced populations;
- Spatial analysis for optimizing commodity value chain strategies and increasing stakeholder revenue; and,
- Determining where local communities most disrupted by conflict are with relation to credit lines to support subsistence agriculture and viable micro-enterprise to stimulate a cash economy.

Spatial data and their representation in a map document enable civil society institutions to work more effectively. Liberia is currently reconstituting its spatial data on an agency by agency basis. Unfortunately, this is done largely independently void of a defined set of spatial data standards and conventions. Lack of coordination can result in map documents that are confusing, unreliable and can contribute to frustration. This is especially true where there is no shared agreement regarding critical boundaries such as forestry concessions, administrative boundaries, populated places etc. Agreement regarding a single spatial data set that represents boundaries and infrastructure better insures a

coordinated approach to reconstruction planning. Rapidly evolving desktop and web-based mapping technologies can help agencies to effectively respond to the needs of stakeholders who are potentially threatened by, in or emerging from conflict through enabling/reinforcing incipient peace processes, preventing a resurgence of violence. Maps can help identify where there are needs, gaps and priorities strengthening the foundation for sustainable development through donor/aid coordination, infrastructure rehabilitation, and equitable distribution of resources.

Liberia Spatial Data Coordination

During this short term technical assistance (STTA) a meeting of the Liberia GIS super user group was convened at the LCIP office. This group is composed of senior GIS technical specialists and managers from the government, private and donor communities. As a confidence in geospatial technology increases as a decision support tool the Super User anticipates further growth in membership. The Jan 2009 meeting addressed issues relating to spatial data standards and sharing across government agencies, private sector, NGOs and academia. There is consensus that a policy that governs spatial data standards and sharing is necessary for Liberia's coordinated sustainable development processes. The following concerns listed by the group members identify key areas that currently constrain spatial data coordination and sharing across agencies:

1. Absence of a defined standard used by those who create spatial data. Specified parameters to be used for creation, procurement and management of National Spatial Data or not established.
2. Digital maps / GIS technology not widely understood or commonly used.
3. Geographic data coverage not sufficient
4. Data interoperability deficiencies
5. Spatial data is of poor quality and/or out of date
6. Data ownership and pricing policies for distributed data not defined.
7. No culture of data sharing between agencies. This is typically a result of competition between agencies for limited operating resources.
8. Lack of official digital baseline maps
9. Field data is not catalogued / managed. Many of the investments made into field data collection across agencies in the public sector and private sector
10. Accountability: Personnel who create/collect spatial data for a given ministry/institution sometimes construe this as personal property.
11. Data security / backups
12. Lack of a champion at high government level

In general the Liberia GIS super user group agreed that the lack of coordination between ministries, institutions, and agencies lends to poor or non-existent data management protocol and policies. Therefore, key spatial data development initiatives are often not communicated across agencies this can lead to duplication of effort, this deficiency contributes to loss of important data/information typically funded by public resources.

Recommendation: Selected GIS super user group members should be organized / formally recognized as a core Liberia Spatial Data Steering Committee tasked with defining, drafting and submitting spatial and related data management policies that clearly articulate government sponsored spatial data creation, cataloging and ownership.

Steps towards a Liberia Spatial Data Infrastructure

Overarching vision for a LSDI foresees a national infrastructure allowing access to and utilization of spatially referenced information for project management decision support at the local, regional and national levels. An LSDI will help optimize investments made into the creation of spatial data through actively promoting its utilization for cross-sector planning and monitoring.

LSDI components:

1. Framework or “Core’ Data: Fundamental data that can be used for reference. Provides a base on which other data themes can be compiled, such as a digital topographic database or national geodetic control network.
2. Thematic Spatial data: Georeferenced data and related attributes that addresses a sector specific planning/monitoring objective such as forested areas, wetlands, urban zones etc.
3. Metadata: Documentation that describes the data including who authored the data, data creation data, for what purpose it was created, spatial parameters utilized, author/data holder contact etc. Ideally these metadata will be stored using a metadata ‘clearinghouse (see below).
4. Clearinghouse: An intuitive web-based application that allows users to search the stored data for specific core data and/or thematic information, not unlike a library card catalogue.
5. Standards: Data standards and methods that insure spatial data compatibility and interoperability
6. Partnerships: Forging viable partnerships with public, private, academic and non-government sectors is critical to insuring SDI stakeholders. These entities provide a data developer and user base for which to justify the existence of an SDI.

Successful LSDI implementation is highly dependent upon *political will*. Endorsement at the highest Government level better assures a data quality standard that can be leveraged across agencies and the private sector in support of the public good. Quality assurance is central to confidence building in the use of spatial data across government institutions and private sectors as a central decision support component.

Creation of a Liberian Geospatial Data Committee (LGDC) to establish bylaws and related processes for the collection, distribution, integration, utilization and sharing of spatially referenced data and related

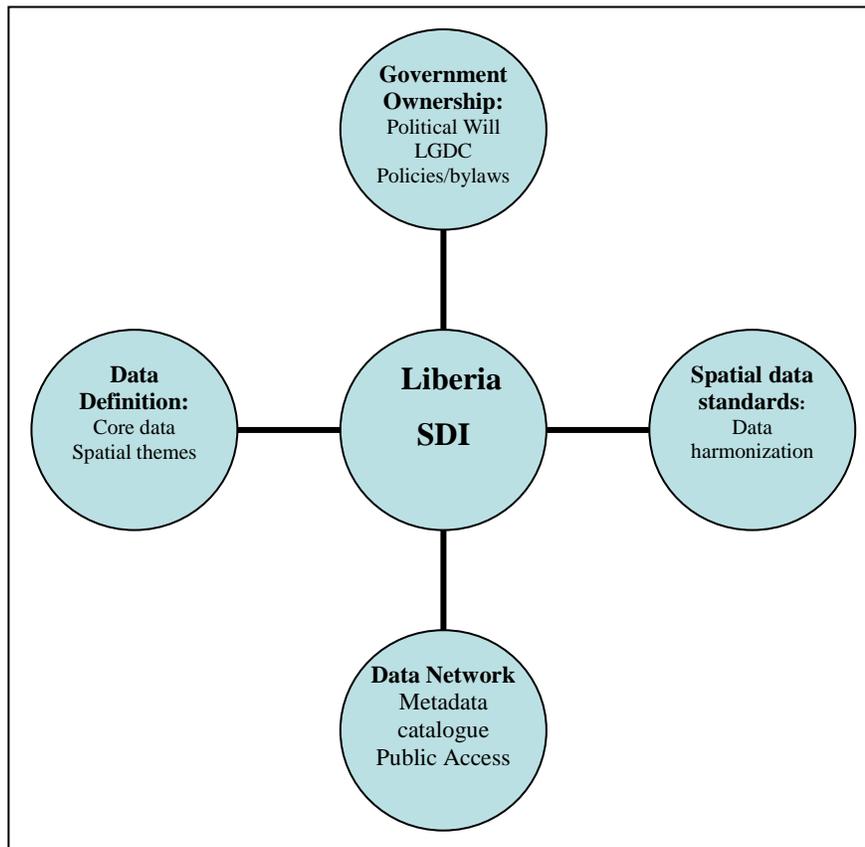


Figure 1. Liberia Spatial Data Infrastructure (SDI) diagrammatic.

services across public, private and civil society institutions. The LGDC coordinating body will define data standards and practices that govern spatial data development and management. This group should initially be comprised of local geospatial technology specialist across government sectors, universities, private sectors and non-governmental organizations. Stakeholders who utilize spatial data in day-to-day planning, monitoring and evaluation activities should be encouraged to participate in public LGDC forums and seminars to insure end-user feedback in the functional aspects of the LSDI. The LGDC will prepare the foundation for a LSDI, initial tasks include:

1. Institutional arrangements – the LSDI must be positioned within the government framework to insure authority to insure defined standards are adhered to.
2. Formulating policies/regulation that governs use of standardized data across government agencies to support national development directives.
3. Promoting awareness of spatial data as a civil society asset.

4. Identifying partnerships at all levels of government, private sector, non-government institutions and the academia for coordinated data development and sharing.
5. Establishing standards aimed at spatial data harmonization across the public and private sectors
6. Determining where the LSDI is to be located and financing mechanisms.
7. Providing training for spatial data developers in LSDI endorsed standards
8. Work with the private sector to assure spatial data standards as an approach to creating more efficient synergies with government initiatives.
9. Planning for a cost recovery approach through providing data creation and spatial analytical services. Data paid for by the public fund or international aid should be considered a resource placed in the public domain.
10. Designing a metadata standard (data documentation)
11. Creating a data cataloguing system (metadata server)
12. Providing a facility allowing any spatial data user to inventory existing core data sets for availability

Through comprehensive discussion with the Liberia GIS Super-User group and the meeting with the Liberia Minister of Planning the following suggestions have been made regarding successful installment of a national data standard.

- Institutional framework must be supportive the LGDC coordinating body must be given authority to exercise policies.
- An SDI must operate as an independent unit, although it can be housed in a ministry/institution.
- Promotion campaign must be carefully implemented to insure awareness among spatial data developers and users.
- SDI vision and roadmap must involve stakeholders
- Policy documents must be supported by appropriate legislative framework.
- SDI stakeholders must be active participants
- SDI must be allocated appropriate funding a government commitment for insuring sustainable approach.
- Human resources and institutional infrastructure that comprise the core SDI must be evaluated and supported
- Politicians must clearly understand the purpose of the SDI and be willing to support it as a public good.

Proposed National Public Sector Infrastructure Database

Rationale: Infrastructure and associated support programs are needed to restore the vitality of Liberia's community support sectors including schools, hospitals, health centers, markets etc. A national inventory

describing where current community service infrastructure exists, its condition and usage is can support planned decentralized social services development supported through initiatives such as the UN Support for Strengthening the capacity of local administrations. The LSDI provides the framework for creating this spatially referenced database. Integration of these county data support internal and external planning and monitoring initiatives such as trans-county activities that require coordination such as transport, market development, citing hospital facilities, etc. Appropriate database development and information exchange are critical to promoting sustainable development activities. Spatial data has implications for a majority of development initiatives this necessitates clear and concise description of the data its purpose, author, limitations etc. Additionally, there is a need for an easy to use approach for the distribution of spatial data and its documentation, this can be achieved through incorporating the description of these asset / activity data in a metadata service.

Political will must drive the process. The need for having a spatially referenced inventory of national assets should be established by high level administrative officials. Mapping these assets for public review and comment promotes transparency and stakeholder confidence in activities aimed at delivery of public services and improving livelihoods. Transparency can help to foster participation through restoration of public confidence in government planning decisions. Asset inventory mapping opens the discussion to public regarding strategic national, regional and local development initiatives. The current global economic downturn is limiting the financial resources available for development projects, hence greater donor coordination will become increasing important to leveraging diminishing financial support. Maps communicate where investments are being made allowing the donor community to determine how additional resources can be leveraged for the greater public good.

National Asset and Activity Mapping

As part of a strategic country-wide development initiative, the USAID Liberia Mission proposes to coordinate an asset mapping activity together with the Ministry of Planning. The aim is to create spatial data and map development activity and existing public service infrastructure (schools, hospitals, health clinics etc) throughout the country. National asset and activity maps will help government and donor agencies to determine where there are gaps, additional needs, and priorities related to allocation of financial resources and indentifying possible synergies with the donor community to optimize investments made in local capacity building and infrastructure support. The implementation of an LSDI and metadata service is not a requisite for the proposed USAID activity. The USAID mapping activity can help to highlight the important role of data standards and services that make spatial data available to all development actors. LSDI implementation can be further justified through implementing the asset /activity mapping initiative.

Design and field testing the mapping instruments insures a process that produces relevant and reliable results for local, regional and national level planning and monitoring. Initially, defining and building the approach should be centered within a single Liberian Ministry where the probability for success is highest, such as the Ministry of Agriculture.

Asset/Activity Mapping Process

Understanding requirements and engaging key government institution regarding overall asset /activity mapping objectives is central for garnering high level support for the initiative. Optimization of an asset survey initiative requires an initial exhaustive inventory of databases that describe where national assets are located is required to reduce potential duplication of effort. This requires meeting with individual government agencies, private sectors agencies, NGO's and academic institutions. The meeting should be review the need for a national asset inventory and encouraging local expert participation in the database and field survey instrument design to promote local ownership.

To support Liberia's decentralization process, LISGIS has established offices in each of the 15 counties. Monitoring and evaluation support staff will be based at each of the county level LISGIS offices, these staff can be trained in basic GPS operations to create geo-referenced information documenting the location of existing social service infrastructure. If endorsed and implemented by the government, the LSDI will insure a spatial and related tabular data standard is applied to insure seamless integration of data at the county level. When coordinated through an SDI, place name codes are standardized allowing for ancillary information such as census survey data integration with the map themes (such as administrative boundaries, transportation networks etc.). Accuracy and consistency of these field data can be assessed by overlaying the GPS data on the Google Earth platform. Where resolution is high, technical specialists can photo-interpret features on the ground such as the presence of certain facilities (schools, hospitals). Quality of decisions is directly correlated with the quality of information available. Quality assurance will help boost confidence in the over-arching LSDI objective supporting/justifying project management decisions across the Liberia development community.

The asset / activity mapping initiative can complement the United Nations support for strengthening the capacity of Liberia's local administration. Specifically working within the County Support Team (CST) framework additional resources can be leveraged to support the activities of the LISGIS managed M&E effort, including a comprehensive data collection effort identifying the location of key infrastructure.

A national workshop is needed to address the needs of a growing stakeholder base including the producers and users of spatial data and representatives of the Liberian Government agencies/ministries that will benefit from the use of spatial data. High level government participation is required to allow the conversion of a LSDI policy document into a Government Directive.

National Level Presentation:

1. Promote awareness among Liberian Ministerial decision-makers
 - a. Under-utilization of existing Liberian spatial data for development planning despite there being a large volume of available information
 - b. A lack of protocol for spatial data regulation and coordinated exchange/sharing contributes to the general.
2. Focus on technical data users:
 - a. Certain Liberia spatial data are inconsistent, imprecise, or inadequate for intended use, core common principles and technical agreements required for effective sharing of spatial data
 - b. A cultural shift is required by Liberian institutional staff and management to promote proficient sharing data and information methods.

LSDI Summary

Draft and adoption of a Liberia National policy document that provides the basis for a Government Directive that stipulates LSDI guiding principles to facilitate spatial data standardization for State development activity planning and monitoring.

The basis for success lies in the quality of the information collected and managed for development activity investment purposes. Liberian asset / activity mapping will lend support to an LSDI that will insure a process for defining and maintaining spatial data standards, quality assurance, training support and a service for sharing these data is maintained. Formulating and implementing a plan aimed at coordinating the acquisition/ procurement, creation, integration, distribution, sharing and exchange of spatial data to support over-arching Liberian national post-conflict development and biodiversity conservation objectives.

STTA Bob Bouvier) Work Schedule

Jan 19: Meet with Jim Seller (ETOA/COP) and Dan Whiner (USAID/CTO) regarding weekly meetings. Emphasis on meeting with higher level government officials to promote the SDI concept across Government Agencies.

Jan 20: Prepare presentation materials for Meeting with Minister of Planning and the GIS super user group

Jan 21: Meeting/presentation with GIS Super User group – Meeting objective: Tasks: Review the SDI concept, identify limitations associated with current management of spatial data, discuss an Official GIS/Spatial Data Steering Committee, review/edit presentation for Minister Conneh.

- Thomas Davies – LISGIS
- Varney Conneh – EPA
- Augustine Johnson – FDA
- Boima Bafaie – LCIP

Meeting outcome: The group understands the importance of data standards and sharing information across sectors. The team is committed to supporting a spatial data infrastructure but insists that this cannot exist independently of high level ministerial support.

Jan 22 SDI Presentation for Minister Conneh (Ministry of Planning):

Presentation / meeting outcome: The Minister was pleased with the presentation. Minister Conneh comes from an IT background and fully appreciates the importance of data standards and coordinated usage across all development planning sectors. A suggestion was made for a very non-technical presentation for the benefit of other Ministers in an attempt to garner additional support. He stated that he will champion the concept the LSDI.

Jan 23 Meeting with USAID (Dan Whyner and Mac Homer) / SDI Presentation for the Deputy Director.

Jan 24 Meeting with USAID Mission Director

Jan 25 Meeting with Ian Desmukh (Land Rights and Community Forestry Project) to discuss coordination of SDI initiative.