



# SERVIR PROGRAM DEMAND ACTIVITY

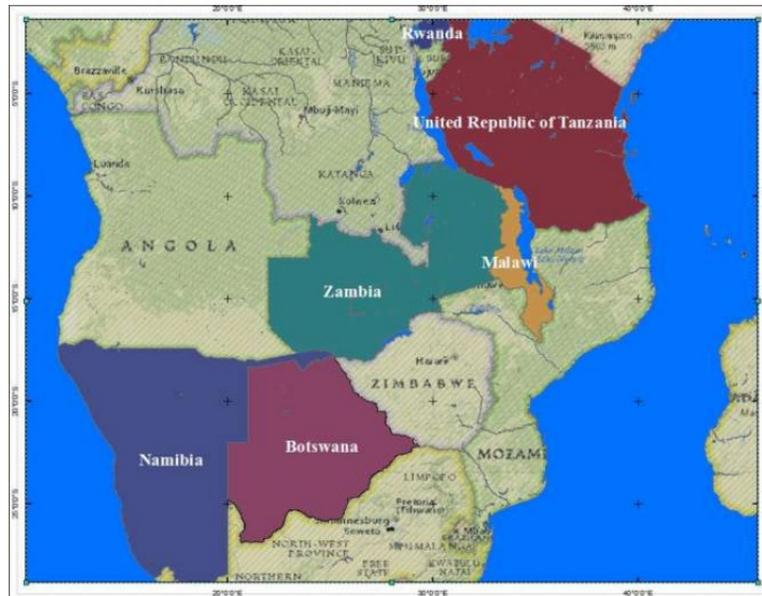
## GHG CASE STUDY INCEPTION REPORT

### Project Countries

SERVIR

Countries  
participating in the  
project

1. *Malawi*
2. *Rwanda*
3. *Tanzania*
4. *Zambia*
5. *Namibia*
6. *Botswana*



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[GHG CASE STUDY INCEPTION REPORT]

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## INTRODUCTION

A key objective of the DAI SERVIR Program Demand Activity is to increase demand for SERVIR products, tools and services. In order to accomplish this objective, the breadth and depth of current demand for SERVIR products and services must be well understood by all stakeholders and appropriately documented. To achieve this objective, the Demand team will conduct an in-depth “case study” of the Greenhouse Gas Inventory (GHG) project, one of the flagship projects of SERVIR-Africa.

Currently the SERVIR-Africa hub in Nairobi, hosted by Regional Center for Mapping of Resources for Development (RCMRD), is responsible for producing national Landsat-derived Land Use Land Cover (LULC) maps for the years 1990, 2000 and 2010 under the GHG project. The GHG project in its entirety covers eight Eastern and Southern African countries, of which RCMRD is providing technical support in landcover mapping to Tanzania, Malawi, Rwanda, Zambia, Botswana and Namibia. The LULC mapping activity is part of a larger partnership project, called the Capacity Building for National Greenhouse Gas (GHG) Inventory Systems in Developing Countries, between the EPA, USAID and the UNFCCC and works with developing countries to build capacity to estimate and track GHG emissions.

The purpose of this inception report<sup>1</sup> is to provide an overview of the case study approach and to provide initial background information gathered on the current mapping activities and dissemination procedures. In order to establish an initial “baseline” of information, the DAI team reviewed existing documents previously provided by NASA to the SERVIR Team, gathered information from the RCMRD website, and collected some additional, albeit limited, documentation provided by RCMRD via email. Further information will be gathered in two site visits: the first, to be conducted over two weeks in late June/July, will be focused on background information gathering through document collection, interviews, and participation in an upcoming LULC workshop; the second site visit, proposed for August 2013, will involve visits to several LULC countries where mapping is being completed to better understand user perspectives.

## LAND COVER/LAND USE CASE STUDY INTENT AND LOGISTICS

A primary goal of this case study is to learn about stakeholder engagement in the product development process, data sharing, preliminary impacts of the project, as well as to increase the awareness and utilization of the LULC data produced by RCMRD. This requires a full understanding of the data sets and the current procedures to inform and disseminate that data. The case study is intended to better inform USAID and their partners, particularly NASA, on the process in which a Hub develops and disseminates SERVIR products, how users are engaged and benefit from the product, and some of the impacts these tools may have on decision-makers. Recommendations will also be provided to better assist USAID and Hubs based on the outcomes of the case study.

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<sup>1</sup> This inception report was prepared at the request of John Boos, who served as Alternate COR in May 2013.

The case study will provide a detailed description of the LULC product and will include the history of how SERVIR-Africa became involved in the GHG project; the different roles of the partner organizations on the project; users of the projects' products; how the landcover classification methodology was developed; the capacity building approach of RCMRD for future landcover mapping efforts in the countries; and potential future applications of the GHG landcover dataset. The report will also help to answer a number of key questions such as:

- What problem or challenge does the product address?
- Who currently has access to the product?
- How was the product developed, and how were users engaged in its development?
- Who is currently using it and under which ministries, and other organizations?
- How are they using it? What are the results (or intended results)?
- What are the opportunities for and constraints to expanding the use of the landcover product?
- What are the opportunities for and constraints to developing new landcover products in the future?
- Can it be used to potentially identify drivers of landcover change?

## RCMRD ASSESSMENT PROTOCOLS

During the initial visit to RCMRD in June 2013, the DAI team will conduct interviews with members of the GHG team to gain insight into the history and methodology of the project, the current user groups, and any background documentation that has produced that was unavailable to the team previously. A second protocol will be developed for the follow-on field trip based on the findings from the initial visit. A conceptual framework for the case study is laid out as follows:

### **I. History/Background**

- a) How did it originate? When and why did RCMRD accept this mapping task? What problem or challenge does the project address?
- b) Who are the intended users and beneficiaries of the products generated by the project?
- c) Who funded it?
- d) What organizations or partnerships are involved, including NGOs, research institutes, donors, etc? (What are the roles of NASA Coordination Office, EPA, RCMRD, and others?)
- e) Who does training/capacity building? What activities have been held?
- f) How did the project leverage SERVIR?
- g) What workshops/activities/meetings have been held? Country specific and regional?

### **II. Methods (LULC Mapping Procedures)<sup>2</sup>**

- a) What procedures are being employed by RCMRD for the LULC mapping and what by methodological documents are being accessed/developed for this?

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<sup>2</sup> While these questions are highly technical, the answers will give the Demand team a better understanding of the products being developed and ways to work with RCMRD to market them in the future.

- b) What is the role of users in the project at various stages? (e.g., scoping, data acquisition, methodology development, “requirements” setting, etc.) What tools (e.g., workshops, exchanges, meetings, etc.) have been used to engage users? (similar to I(g) above, but specific to user-analyst interactions)
  - c) How are data being classified and is it consistent across all dates and countries? What is the hierarchical structure? (Note: Will look at data sources, Landsat MSS and TM, relative balance. Specific date/anniversary or multigate).
  - d) Was there any inclusion of any ancillary data such as DEMs, etc.
  - e) How have the following been performed: Image preprocessing, mosaicking, rectification, resampling, atmospheric correction or compensation.
  - f) What classification procedures have been used? (pixel or object based, calibration signature extraction methods, decision rule, data mining?)
  - g) What was the minimum mapping unit?
  - h) What validation/accuracy assessment methods were used and what were the results?
- III. Current Users**
- a) Who has access?
  - b) Who is using it? (Obtain lists and contact information for the project partners in each of the six countries.)
  - c) In what department or unit do these users work, and under which Ministries or agencies?
  - d) How are they using it? What for? Are there users beyond the GHG teams? If so, how are they using it? Impacts resulting from use of the products? (again, maybe too early, in which case, desired impacts)
  - e) Have any user profiles been developed?<sup>3</sup>
- IV. Product(s) Description**
- a) What does the Hub consider to be the “products”?
  - b) What are the services coming out of this?
  - c) What are the “tools”?
  - d) What is the data/product format? (map? raw data? etc.)
- V. Distribution**
- a) How is the product being distributed?
  - b) Is it being tracked?
  - c) Is the distribution active or passive?
  - d) Will the imagery and LULC maps as well as documentation be available for all maps and data from the RCMRD website? When? Will there be search mechanisms such as Landsat path/rows, administrative units or watersheds? For how long and under what arrangements will this be maintained?
  - e) What data will be provided to each country and in what format? Will this include imagery, maps, statistics, reports, metadata? What is the process/media of delivery?
  - f) How might other organizations utilize the SERVIR data in each country? Discuss a process of involvement and/or dissemination.
  - g) Other data applications?
- VI. Opportunities**
- a) What opportunities and constraints do they envision for the future of the project/product?
    - i) Expanding upon existing

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<sup>3</sup> This will also be an output of the case study as part of the final report.

- ii) Developing new
- b) Identify new users? New ministries to make the data available based on identified applications.

**VII. Status**

- a) What is the timeline?
- b) Where are they right now? (Status by country of mapping completion and data delivery)
- c) What's next? End date?
- d) Staffing changes?

**VIII. Future Activities**

- a) Is it (the product) sustainable?<sup>4</sup>
- b) Any new plans on the horizon?
- c) What additional capacity building and technical assistance will RCMRD conduct in the future and under what time frame? Web support, software dissemination, etc.

**IX. Recommendations**

- c) Data distribution and data sharing policies

*Note: Most of this section will come out of the data gathered, so there are not specific questions to be asked.*

## **STATUS OF LULC INFORMATION IN COUNTRIES OF INTEREST**

As part of the inception report, an initial survey of historical, current or planned similar projects was conducted for the six countries of interest. The primary items of interest were previous national land use/land cover maps and other forest carbon mapping activities such as via REDD, USGS Silvacarbon or GEO Forest Carbon Tracking task (GEO FCT).

1. Botswana
  - Vegetation Map of Southeast Botswana, 1980, J. Timberlake
  - FAO Land Cover map, 25 classes
  - The Botswana Department of Local Government and Lands periodically compiles a national land use map at 1:1M scale
2. Malawi
  - Land Cover Map based on Landsat 1990/1991, 1:250,000 scale
  - FAO Land Cover map, 25 classes
3. Namibia
  - SPOT and Landsat based National Land Cover map 1995
  - FAO Land Cover map, 25 classes
  - National eight class land use map

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<sup>4</sup> This is a broader question the Demand Team will be looking into based on information received from the case study based on staffing, methodology, capacity, etc.

4. Rwanda
  - Swedesurvey assisted the National Land Center (NLC) to provide Rwanda with its first National Land Use and Development Master Plan together with national coverage of high resolution orthophotos and base maps. The project started in 2008.
  
5. Tanzania
  - GEO-FCT country
  - National Reconnaissance Level Land Use and Natural Resources Mapping Project from Landsat completed ~1996
  - UN-REDD country
  
6. Zambia
  - UN-REDD country.
  - FAO Land Cover map, 25 classes

## **MATERIALS OBTAINED AND/OR REVIEWED**

Agriculture and Land Use (ALU )National Greenhouse Gas Inventory (Colorado State). Approximately twenty different materials including documents, spreadsheets, questionnaires and power point presentations, various dates.

Bickel, K. et al. 2006. IPCC Guidelines for National Greenhouse Gas Inventories, Volume 4: Agriculture, Forestry and Other Land Use, Chapter 3: Consistent Representation of Lands, 3.1-3.42.

Global SERVIR website (<https://www.servirglobal.net>)

Haack, B. 1995. National Land Cover Mapping in Southern Africa, 32 pgs.

Haack, B., and R. English, 1996. National Land Cover Mapping by Remote Sensing. World Development, 24 (5): 845-855.

International Symposium on Land Cover Mapping for the African Continent, Workshop, June 2013, Nairobi, Draft Programme.

Land Cover Mapping for Greenhouse Gas Inventories, Botswana Workshop, 2013, Programme.

Land Cover Mapping for Greenhouse Gas Inventory Development in East and South Africa (ESA) Region Ancillary Data Collection Workshop announcement.

Rasch, H. and J. Attebring, 1994. A Project for Forest Resources Mapping and Biomass Assessment for Malawi, Remote Sensing, 25:16-19.

Regional Capacity Building Project for Sustainable National Greenhouse Gas Inventory Management Systems in Eastern and Southern Africa, Provisional Agenda, Swakopmund, Namibia, March 2013.

Regional Center for Mapping of Resources for Development (RCMRD) Website (<http://www.rcmrd.org>)

United Nations Collaborative Program on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (UN-REDD) website (<http://www.un-redd.org>)

United Nations Group on Earth Observations (GEO) Forest Carbon Tracking (FCT) website (<http://www.geo-fct.org/>)

United States Geological Survey Silvacarbon website (<http://swp.gmu.edu/silvacarbon/node/30>)