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# SILVACARBON PERFORMANCE EVALUATION FINAL REPORT

Evaluating Current Results and Future Opportunities for the SilvaCarbon Program in Supporting Capacity Development for Forest and Terrestrial Carbon Monitoring and Management

March 13, 2015

This publication was produced for review by the United States Agency for International Development. It was prepared by Josh Brann, Nils Junge, Svetlana Negroustoueva, Claudia Rossel, and Marc Shapiro of Development & Training Services, Inc. (dTS).

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# SILVACARBON PERFORMANCE EVALUATION:

EVALUATING CURRENT RESULTS AND FUTURE OPPORTUNITIES FOR THE  
SILVACARBON PROGRAM IN SUPPORTING CAPACITY DEVELOPMENT FOR FOREST AND  
TERRESTRIAL CARBON MONITORING AND MANAGEMENT

March 13, 2015

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# ACRONYMS

ADS	USAID Automated Directives System
CARPE	Central Africa Regional Program for the Environment
CEOS	Committee on Earth Observation Satellites
COVE	CEOS Visualization Environment tool
DOS	United States Department of State
DOS/OES/EGC	Department of State Bureau of Oceans and International Environmental and Scientific Affairs/Office of Global Change
DRC	Democratic Republic of Congo
dTS	Development and Training Services, Inc.
DOI	Department of Interior
DTIM	Design Tool for Inventory Monitoring
E3	United States Agency for International Development, Bureau for Economic Growth, Education, and Environment
EC-LEDS	Enhancing Capacity for Low-Emissions Development (USG effort)
EPA	United States Environmental Protection Agency
EVI	Enhanced Vegetation Index
GIS	Geographic information system
GIZ	German Agency for International Cooperation
FAO	Food and Agriculture Organization of the United Nations
FCMC	USAID's Forest Carbon, Markets and Communities project
FCPF	Forest Carbon Partnership Facility
FCT	Forest Carbon Tracking
FIPI	Forest Inventory and Planning Institute (Vietnam)
FY	Fiscal Year
GCC M&E	Global Climate Change Monitoring and Evaluation Task Order
GEO	Group on Earth Observations
GFOI	GEO Global Forest Observation Initiative
GHG	Greenhouse gas
GIS	Geographic information systems
GOFC-GOLD	Global Observations of Forest and Land Cover Dynamics
IDEAM	Institute of Hydrology, Meteorology and Environmental Studies (Colombia)
IPCC	Intergovernmental Panel on Climate Change
JICA	Japan International Cooperation Agency
KII	Key informant interview
LANDSAT	Name indicating Land + Satellite (data/imagery)
Lao PDR	Lao People's Democratic Republic
LEAD	Low Emissions Asian Development
LEAF	Lowering Emissions in Asian Forests
LIDAR	Light Detection and Ranging (remote sensing technology)
LULUCF	Land use, land-use change and forestry
NOAA	United States National Oceanic and Atmospheric Administration (Department of Commerce)
MGD	Methods and guidance document

MINAM	Ministerio del Ambiente (Peru)
MODIS	Moderate Resolution Imaging Spectroradiometer
MRV	Measurement, reporting, and verification
MOU	Memorandum of Understanding
NASA	United States National Aeronautics and Space Administration
NFI	National forest inventory
NFMS	National forest monitoring system
ODA	Official development assistance
PPL	Bureau of Policy Planning and Learning
R&D	Research and development
RDMA	USAID Regional Development Mission for Asia
REDD+	Reducing Emissions from Deforestation and Forest Degradation (+ restoration, rehabilitation, sustained management, and enhancement of forest carbon stocks)
ROC	Republic of the Congo
SDCG	CEOS Satellite Data Coordination Group
SI	Smithsonian Institution
SOW	Statement of Work
SPOT	Satellite Pour l'Observation de la Terre, "Satellite for Earth observation"
SWAMP	USFS & USAID's Sustainable Wetlands Adaptation and Mitigation Program
TA	Technical assistance
UAV	Unmanned aerial vehicle
UN-REDD	United Nation's Reducing Emissions from Deforestation and Forest Degradation Programme
REDD+	Reduce emissions from deforestation and forest degradation, and foster conservation, sustainable management of forests, and enhancement of forest carbon stocks
USAID/E3	United States Agency for International Development, Bureau for Economic Growth, Education, and Environment
USAID/GCC	United States Agency for International Development, Bureau for Economic Growth, Education, and Environment, Office of Global Climate Change
USD	United States Dollar
USFS	United States Forest Service (Department of Agriculture)
USG	United States Government
USGS	United States Geological Survey (Department of Interior)
UNFCCC	United Nations Framework Convention on Climate Change
UNFCCC COP15	UNFCCC Conference of the Parties
VCF	Vegetation Continuous Fields
WWF	World Wildlife Fund

# EXECUTIVE SUMMARY

## EVALUATION PURPOSE AND EVALUATION QUESTIONS

The purpose of the SilvaCarbon Performance Evaluation is to assess the program's effectiveness, relevance, utility, efficiency, results, and sustainability. The evaluation team assessed SilvaCarbon's work from inception through the third quarter of 2014, including a review of the program's operational structure, network of relationships, portfolio of activities, and monitoring and reporting systems. This report also considers the program's challenges and obstacles, and recommends areas for improvement.

The SilvaCarbon Performance Evaluation's objectives are threefold:

1. Determine the extent to which SilvaCarbon is achieving Program Objectives 1–4;
2. Assess SilvaCarbon's model for interagency coordination (Objective 5); and
3. Recommend ways to increase overall program effectiveness, efficiency, and sustainability.

Three multi-part evaluation questions were developed to address the purpose and objectives of the evaluation. The evaluation questions are further discussed in Section 2, in the main report body.

## PROGRAM BACKGROUND

SilvaCarbon is a US Government (USG) interagency initiative bringing together technical expertise in forest and terrestrial carbon monitoring and management. SilvaCarbon's main USG funding agencies are United States Agency for International Development (USAID) and Department of State (DOS). USG partners responsible for technical assistance (TA) coordination and delivery are the US Geological Survey (USGS), US Forest Service (USFS), Environmental Protection Agency (EPA), National Aeronautics and Space Administration (NASA), and National Oceanic and Atmospheric Administration (NOAA). Smithsonian Institution (SI) plays an institutional coordination role. The first SilvaCarbon activities were carried out in Fiscal Year (FY) 2011; and USG financial support through the program totals more than \$23 million USD.

SilvaCarbon uses targeted, demand-driven TA to build the capacity of partner governments to develop comprehensive and transparent systems for measuring and monitoring carbon stocks in forests and other lands. SilvaCarbon's five program objectives are indicated in Figure 1. Geographically, SilvaCarbon has focused on three priority regions where the most significant tropical forests in the world are found: Andean-Amazon, Congo Basin, and Southeast Asia. In these regions, SilvaCarbon has supported regional-level activities, such as regional workshops, and is working with nine countries on a direct bilateral basis.

FIGURE 1. SILVACARBON'S FIVE PROGRAM OBJECTIVES

1. Demonstrate and compare forest and terrestrial carbon measurement and monitoring methodologies.
2. Build capacity of selected developing countries to use forest and terrestrial carbon monitoring and management methodologies and technologies.
3. Facilitate, in cooperation with Committee on Earth Observation Satellites (CEOS) and Group on Earth Observations (GEO) Global Forest Observation Initiative (GFOI), the coordinated collection and dissemination of Earth observation data related to forest and terrestrial carbon monitoring and management.
4. Strengthen the community of forest and terrestrial carbon technical experts.
5. Interagency cooperation and collaboration.

## EVALUATION APPROACH: DESIGN, METHODS AND LIMITATIONS

The SilvaCarbon Performance Evaluation employs a cross-sectional study design and a mixed-methods approach. The major data collection methods used are a literature review, key informant interviews (KIIs), and an online survey.

Evaluation limitations include SilvaCarbon's lack of a results framework and of a systematic monitoring and reporting framework. The absence of these fundamentals for tracking and documenting program results creates major challenges to assessing the program's progress in meeting its own objectives. Also, the evaluation team was only able to visit three of nine bilateral partner countries, and these were in the Andean-Amazon and Southeast Asia regions; thus data collection from the Congo Basin was more limited.

## MAIN FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

A distillation of the SilvaCarbon Performance Evaluation's major findings, conclusions, and recommendations are presented below. The evaluation's major findings and conclusions fall within two umbrella categories, of program results and sustainability and of results-based management and program coordination.

### Program Results and Sustainability

As discussed later in greater detail, the evaluation cannot directly measure the extent to which program objectives are being met; however, it is clear that SilvaCarbon has generated important results under each of its five program objectives, with notable contributions to partner countries' capacity for assessment and monitoring of forest and terrestrial carbon. The program is found to be effective. It exhibits excellent interagency cooperation and proactive coordination with other donors and related initiatives, such as other USAID programs and United Nation's Reducing Emissions from Deforestation and Forest Degradation Programme (UN-REDD) partners like the Food and Agriculture Organization of the United Nations (FAO). Both internal and external stakeholders consider SilvaCarbon a valuable program.

SilvaCarbon TA is demand-driven and appears responsive to countries' technical needs and priorities. SilvaCarbon is found to successfully support the demonstration, review, and comparison of forest and terrestrial carbon assessment methodologies. The program leverages specialized US technical expertise to make valuable contributions on technical aspects of forest and terrestrial carbon measurement and monitoring systems, an area addressed by few other donors. SilvaCarbon draws on experts within USG SilvaCarbon agencies and university partners to provide access to world-class expertise. Partner country stakeholders indicate they greatly value this uncommon access to high-level TA and consider SilvaCarbon's support critical to achieving their forest and terrestrial carbon measurement and monitoring goals.

Evidence collected indicates that significant contributions have been made to develop partner countries' capacity related to national forest inventories (NFI) and greenhouse gas (GHG) inventories. Program result highlights include contributions to Colombia's documentation of and reporting on change in forest cover from 2000–2012, with ability to report annually in the future. Another is the program's key contributions to the development of Gabon's national forest monitoring system (NFMS). The most substantial contributions have been in the four countries where SilvaCarbon has been working the longest: Colombia, Ecuador, Peru, and Gabon. In Southeast Asia and in other Congo Basin countries, where SilvaCarbon activity is more recent, results are more limited but show promise assuming further time and resources.

The provision, analysis, and processing of remote sensing Earth observation data has been a significant focus of SilvaCarbon's work. The program has supported access to, and in many cases directly provides remote sensing data from a variety of data streams. SilvaCarbon has also played an important role in assisting partner countries in defining their data needs and working with the CEOS Space Data Coordination Group

(SDCG) to address those data needs. SilvaCarbon has supported access to Earth observation data, but equally if not more valuable has been SilvaCarbon's support for data analysis and processing on behalf of partner countries. It would take years for partner countries to develop this type of capacity on their own, and additional support is needed in data management and data sharing to secure recent progress in increasing use of Earth observation data for forest and terrestrial carbon measurement and monitoring.

Other noteworthy activities include the extensive series of knowledge exchange workshops involving the three Andes-Amazon bilateral partner countries, as well as other Latin American countries. These workshop have been a key contribution to the development of a network of forest and terrestrial carbon experts in the region who now collaborate independently of SilvaCarbon. SilvaCarbon's support for South-South technical exchanges has been an important element to overall capacity-development activities.

Though SilvaCarbon has strengthened the capacity of partner countries, there are opportunities for enhancing the relevance and sustainability of results. These opportunities primarily relate to focusing on institutional capacity development through efforts like increasing attention to things like carbon measurement tool and method selection processes, the technical knowledge gap, and knowledge and capacity retention. This can include the development of materials and systems that can be integrated into partner country institutions, and which can contribute beyond the life of the SilvaCarbon program.

Capacity development is a long-term process, and four years is generally considered too short to build and sustain capacity related to the highly technical fields of forest and terrestrial carbon measurement and monitoring. SilvaCarbon is currently funded as a five-year program, through FY2016; at this point the length of SilvaCarbon's bilateral engagements would span two to four years. If SilvaCarbon TA were concluded without the country having completed the key steps to set up its NFMS, it is possible that SilvaCarbon's contributions could be lost. Any disengagement of SilvaCarbon in a bilateral partner country without a well-defined exit strategy could result in the loss of prior progress. At present, results are more likely to be sustained in the Andean-Amazon countries and Gabon (thanks to longer engagement) than in other SilvaCarbon countries and regions.

### **Results-based Management and Program Coordination**

While this evaluation finds that SilvaCarbon is contributing to the program objectives, the program has not established a results framework or defined the specific desired outcome results (e.g., ability of a country to report annually on forest cover change with a certain degree of precision). National partner country baseline capacity information has not been systematically documented. Program results have not been reported or aggregated in a systematic manner with respect to global climate change (GCC) or other indicators at either the output or outcome levels. Therefore the evaluation cannot fully assess the degree to which the objectives are being met. Though capacity is being built, without systematic baselines, expected outcomes, or systematic monitoring and reporting systems, it is impossible to say how much capacity has been built, or how much progress has been made toward achieving the program objectives. Improved monitoring and reporting would improve the ability for the program to externally communicate achievements.

Coordination with other donors and TA development partners is among SilvaCarbon's strengths. Beginning with wide stakeholder consultation during the national start-up scoping missions, SilvaCarbon has established good communication and coordination with other partners to ensure the program is addressing the relevant technical needs of partner countries. Regional and country coordinators play a vital role in successfully coordinating TA with other donors and key national institutional partners. Following start-up in a partner country, the maintenance of communication with national-level stakeholders other than the primary national

institutional partner has sometimes been inconsistent. This is due to the fact that SilvaCarbon maintains direct communication only with a primary partner institution and does not solicit wide stakeholder feedback on work plans after the first year of engagement in a country.

Overall, SilvaCarbon USG interagency cooperation and collaboration is effective and significantly better than other interagency initiatives key informants have been involved in. Almost all agency interviewees spoke highly of this aspect of the program. Agencies feel that the interagency collaboration successfully plays off of the strengths of the individual agencies in such a way that they are able to fulfill their mandates while uniting behind a common goal. The central coordination and communication function of SilvaCarbon is critical to the program's success in cohesively bringing partner countries together and providing them expertise on forest and terrestrial carbon measurement and monitoring.

Attention to gender equality within SilvaCarbon has been weak. The program inconsistently collects gender disaggregated data regarding TA and training participation, which would serve as a starting off point to identify weak areas. SilvaCarbon needs to improve actively promoting equal access to and inclusion of both women and men in capacity development activities, particularly in regions where there is exceptionally unequal gender representation in the technical communities.

### **Key Recommendations**

The SilvaCarbon program should pursue a system for results-based management. It should include an explicitly defined overall strategy, which is currently implicit. The program should create a logic model or theory of change that links program inputs, to expected outputs, to targeted long-term outcomes. Major result areas for capacity building (NFI field work, remote sensing support, data analysis, data integration, etc.) should be clearly identified and defined and ties directly to the stated program objectives.

To improve tracking of GCC results, SilvaCarbon will need to commit additional human and financial resources to develop and implement a basic program monitoring and reporting framework and corresponding reporting tools for systematic reporting. A structured monitoring and reporting framework would include GCC indicators and would be applied systematically in all regions where SilvaCarbon is active. Indicator data should be aggregated at the global level to the extent possible, and should include systematic collection of basic information at the input/output level (e.g., number of workshops, participants, persons trained) to document, track, and share data on SilvaCarbon results. The number of indicators tracked must remain practical and feasible. The ability to deploy at least some quantitative evidence to demonstrate progress would help provide a clear picture of the overall value of the program.

Though SilvaCarbon's needs assessments do a good job of diagnosing country needs in order to target capacity building efforts, they do not sufficiently establish country baselines, which is critical to successful monitoring and reporting systems. The program needs to apply standardized methods for establishing baselines and develop capacity assessment tools in order to be able to measure the success of SilvaCarbon's capacity building efforts over time.

To enhance the likelihood of program sustainability in the near term, SilvaCarbon should improve its external communication of SilvaCarbon's long-term strategy and goals. This is especially critical with the donor groups and beneficiaries governments whose buy-in is necessary in order to build successful, long-term partnerships towards SilvaCarbon goals.

Though SilvaCarbon has been very successful in integrating its TA into existing forest carbon monitoring systems, beneficiaries from across regions are requesting increased assistance in adapting and implementing methods and tools. Beneficiaries report a desire for increased attention to adapting TA to countries"

political, ecological, and practical contexts. Some would like this to occur through longer trainings, others request more follow-up after training or access to technical experts for consultation during the initial implementation stages to help them problem solve and navigate obstacles to implementation.

Recommended areas for further support in TA include effective data management and data sharing at the national and regional levels. This is based on respondents reporting that, by and large, there is more TA available on the basics of NFIs than in the processing and analyzing of data and that there appears to be a greater demand for the program to assist countries to process and analyze satellite data than in helping them acquire it. Some examples of SilvaCarbon TA in high demand include radar and optical data processing, remote sensing and field data integration, carbon calculations, and establishing reference levels.

Along with the review of methods and technologies, SilvaCarbon should also offer partner countries high-level decision-support guidance in selecting tools and methods for adoption and application. This was a frequently cited issue/need in Southeast Asia.

SilvaCarbon should target the length of its engagement an assessed amount of time needed to achieve sustainable results in each partner country. SilvaCarbon should communicate the timeframe and scope of available technical and financial resources to partner countries and define an exit strategy prior to the wrap-up of program activities in a partner country.

SilvaCarbon should also promote equal participation by men and women and marginalized groups in capacity-development TA for forest and terrestrial carbon assessment. Data on gender representation at SilvaCarbon trainings should also be consistently collected and reported for all training and workshop activities, and key program planning documents should be subject to review by USG gender advisors.

# 1 EVALUATION PURPOSE AND RESEARCH QUESTIONS

## 1.1 EVALUATION PURPOSE AND OBJECTIVES

The purpose of the SilvaCarbon Performance Evaluation is to assess the effectiveness, relevance, utility, efficiency, results, and sustainability of the program. The SilvaCarbon Performance Evaluation took place while the program was ongoing. The evaluation report assesses the current status of the SilvaCarbon program and provides information for future programmatic and policy-related decision making, as well as contextual learning for USAID and other involved partners and stakeholders. The evaluation's recommendations may be used to modify the program's design or implementation. The evaluation's three objectives are as follows:

First, USAID Bureau for Economic Growth, Education, and Environment's Office of Global Climate Change (USAID/E3/GCC) would like to determine the extent to which SilvaCarbon is achieving the first four of its five core objectives, outlined in Section 3.3.1. An assessment of SilvaCarbon's progress in meeting its objectives will highlight elements of the program and operating structure that have been most successful, factors that positively or negatively affect the achievement of results, and aspects that could be modified to increase program effectiveness.

Second, this evaluation considers the functioning of the SilvaCarbon structure and recommends ways to increase overall program effectiveness, efficiency, and sustainability. These recommendations may be used to modify the program's design, implementation, monitoring framework, funding sources, or institutional partnership structure in the future.

Third, the performance evaluation assesses SilvaCarbon's model for interagency coordination, which addresses the fifth SilvaCarbon programmatic objective. The SilvaCarbon "umbrella" covers many disparate but related activities carried out by a range of partner organizations, including the implementation of a series of international working groups, interagency agreements, and leveraged supporting activities.

## 1.2 EVALUATION QUESTIONS

The evaluation questions presented in this section reflect the purpose of the evaluation as defined in the previous section. As such, these questions guided the evaluation design, and are addressed and answered within the methodological parameters of a performance evaluation.

The evaluation aims to help SilvaCarbon participants better understand the program's progress towards its objectives and improve the program's effectiveness and sustainability. The USAID/GCC team identified evaluation questions in preliminary discussions and revised them in consultation with the dTS evaluation team, USAID/GCC, and the DOS Bureau of Oceans and International Environmental and Scientific Affairs' Office of Global Change (DOS/OES/EGC). The questions were refined according to information gathered from key evaluation stakeholders.

There are three key evaluation questions, broken into multipart sub-questions. Questions 1 and 2 address the first four of SilvaCarbon's five program objectives. The fifth objective is addressed in Question 3. The sub-questions are intended to further clarify the questions' key learning points. The evaluation questions follow.

1. Are the stated SilvaCarbon Program Objectives being met?
  - a. Have forest and terrestrial carbon measurement and monitoring methodologies been demonstrated, reviewed, and compared?
  - b. Has the technical assistance provided by SilvaCarbon built the capacity of key stakeholders in participating developing countries to use forest and terrestrial carbon monitoring and management methodologies and technologies?
  - c. Has cooperation with CEOS and other partners in GFOI facilitated collection and dissemination of Earth observation data related to forest and terrestrial carbon monitoring and management?
  - d. Has the community of forest and terrestrial carbon technical experts been strengthened?
2. What factors have facilitated or impeded meeting SilvaCarbon objectives and why?
  - a. In what ways can SilvaCarbon improve its approach?
  - b. In what ways can SilvaCarbon improve its approach in order to promote
  - c. In what ways can SilvaCarbon promote equality in program activities and program benefits?
3. How can the existing interagency cooperation and collaboration be improved in order to:
  - a. Enhance meeting SilvaCarbon objectives?
  - b. Enhance sustainable and stable management of the SilvaCarbon program?
  - c. Achieve consistent and thorough monitoring of USAID/GCC (standard or custom) results?

SilvaCarbon's approach to gender is covered in Section 4.4 of the report. The gender considerations incorporated into the SilvaCarbon evaluation include: a) the role of women in SilvaCarbon program design and implementation; b) distinguishing opinions and perceptions of SilvaCarbon program female beneficiaries; and c) collection and use of gender-disaggregated data. The evaluation design matrix in Appendix 1<sup>1</sup> provides detail on how gender is incorporated into the evaluation design.

## 2 EVALUATION METHODS AND LIMITATIONS

### 2.1 EVALUATION DATA COLLECTION METHODS

The evaluation used a mixed-methods, cross-sectional study design that elicits from respondents any changes in capacity, understanding, perceptions, levels of coordination, and other factors through retrospective questions. The data collection methods selected were those best suited to gather the evidence necessary to answer the evaluation questions. The methods, which are detailed below, were selected to collect both qualitative and quantitative data from the full range of stakeholder types with which SilvaCarbon works. The main data collection methods applied were:

- **Document review:** The dTS evaluation team reviewed relevant project documentation provided by SilvaCarbon staff and stakeholders in addition to materials that are publicly available. Documents reviewed include: post-workshop assessments, SilvaCarbon Steering Committee and Technical Team meeting notes; interagency and bilateral agreements; regional and bilateral work plans and activity reports; reports on workshops, technical assistance, and other support provided to participating countries; research, manuals, and tools produced under the auspices of SilvaCarbon; and other information deemed necessary to the evaluation.

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<sup>1</sup> Report appendices are provided as a separate attachment.

- **Semi-structured key informant interviews (KIIs):** dTS conducted a total of 69 KIIs in person and by telephone. KIIs targeted USG partner agencies, non-governmental technical partners (e.g., US universities and research organizations), government and non-government country beneficiaries, development partners, and other relevant stakeholders. The full list of individuals interviewed is included in Appendix 3. Table 1 below provides a summary breakdown of the KIIs. KIIs were targeted based on their level of engagement with the SilvaCarbon program and offer a broad representation of the types of stakeholders, organizations, and regions with which SilvaCarbon is actively engaged. In-person interviews were conducted in Washington D.C. and during in-country site visits. The former mostly targeted Steering Committee and Technical Team Members. To collect data on SilvaCarbon's in-country TA and capacity-building efforts, the evaluation team conducted country visits to Colombia and Peru (September 2014), and Thailand and Vietnam (November 2014). These countries were strategically selected in consultation with USAID/E3 and SilvaCarbon partners. The goal of the visits was to provide in-depth contextual understanding of SilvaCarbon activities in the regions through the collection of qualitative data. Data was collected through in-person meetings with individuals who have had extensive interaction with SilvaCarbon, either as implementers or beneficiaries.

TABLE 1. BREAKDOWN OF KEY INFORMANT INTERVIEWS

Category	Breakdown
Regional Affiliation	29 Southeast Asia 22 Other 16 Andes-Amazon 2 Congo
Stakeholder Type	28 Beneficiaries 21 USG SilvaCarbon participants 11 Donors (USG) 6 Donors (Non-USG) 3 Research/Academic Organizations
Gender	45 Male (65%) 24 Female (35%)

- **Online survey:** dTS conducted an online survey to capture quantitative data from a large pool of SilvaCarbon capacity building and TA beneficiaries and other KIIs. The online survey was administered in three languages (English, French, and Spanish) to capture maximum information from SilvaCarbon participants in various regions of the world. A total of 479 SilvaCarbon stakeholders (beneficiaries, service providers, and development partners) were invited to take the online survey.<sup>2</sup> Of these, 113 responded and 97 answered at least one question, for a response rate of approximately 20 percent.

The evaluation design matrix provided in Appendix 1 aligns evaluation questions with indicators and measures, data sources, and data collection methods. Data sources are identified for specific data needs (i.e., measures or indicators) to address each evaluation question.

## 2.2 EVALUATION LIMITATIONS

The SilvaCarbon Performance Evaluation, like all evaluations, faced certain limitations with respect to time, resources, and technical practicalities. These are described below. On the whole, these limitations were not substantial, and the authors believe the evaluation represents a fair and accurate assessment of the program.

<sup>2</sup> A total of 503 unique invitations were sent out; of these, 24 were duplicate or non-functioning email addresses.

SilvaCarbon's network structure and existence as an interagency initiative rather than a single cohesive official development assistance (ODA) project or program provides a variety of benefits. It also presents challenges in documenting results in an aggregated manner, as the SilvaCarbon has not developed a single, unified SilvaCarbon monitoring and reporting system. This is particularly the case with financial aspects; the evaluation team was not able to refer to one single set of financial records or books. In addition, as discussed further throughout the report, SilvaCarbon does not have a results framework with indicator baseline data and targets, which presents a variety of challenges to evaluating many aspects of the program.

In terms of regional coverage, the evaluation team was only able to carry out country visits in Latin America and Southeast Asia, but not in the Congo Basin countries. Consequently fewer KIs were conducted with people working on SilvaCarbon in the Congo Basin relative to the other regions.

The online survey response rate of 20 percent is within the normal range for response rates.<sup>3</sup> However, the small sample size (97 respondents) limits the statistical power and level of analysis. Also, because the respondents represent a diversity of stakeholder types and countries at different stages of engagement, the statistical analysis of subgroups was problematic. For these reasons, the survey results should be treated as indicative and not conclusive. However, the results of the online survey provide useful insights into the program, and capturing the views of the broad array of stakeholders was valuable for the evaluation.

In terms of language, there were some minor language barriers in Southeast Asia with respect to the fact that potentially relevant documents from Vietnam (the bilateral SilvaCarbon partner country in the region) and other countries in the region were only in local languages. This was not an issue in the Andean-Amazon or Congo Basin regions, as the evaluation team included experts with Spanish and French language skills.

That the evaluation was conducted mid-stream while the program is ongoing, rather than as a terminal evaluation, presented some minor challenges. For example, during the evaluation, SilvaCarbon generated a communications strategy, a draft FY2015–2016 work plan, and other internal documents, including one that defines SilvaCarbon's role within GFOI. These and other outputs are expected to continue strengthening the program, and they may already begin to address some of the recommendations identified in this report.

## 3 PROGRAM BACKGROUND

### 3.1 SILVACARBON INITIATIVE OVERVIEW

SilvaCarbon is a USG interagency initiative bringing together US technical expertise in forest and terrestrial carbon monitoring and management. SilvaCarbon builds the capacity of partner beneficiary governments to create and sustain national forest and terrestrial carbon assessment and monitoring systems and GHG inventory systems.

From FY2011 through FY2014, the program has provided more than \$23 million USD in TA. Funding for SilvaCarbon is included within the \$1.11 billion USD the USG contributed towards climate finance under the sustainable landscapes pillar from 2010–2013.<sup>4</sup> DOS and USAID contribute the majority of funding for

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<sup>3</sup> See Resnick, 2012; Nulty, 2008; and Penwarden, 2014.

<sup>4</sup> SilvaCarbon is part of a USG climate-finance programs group, including: Lowering Emissions in Asia's Forests (LEAF); Low Emissions Asian Development (LEAD); Central Africa Regional Program for the Environment (CARPE); Forest Carbon, Markets and Communities (FCMC); Sustainable Wetlands Adaptation and Mitigation Program (SWAMP); and Enhancing Capacity for Low

SilvaCarbon, though the other USG agencies involved have also made additional in-kind contributions in terms of staff time and resources. Beyond this, SilvaCarbon has also leveraged additional partner resources, for example through the co-sponsorship of events and workshops with other projects and programs. However, in-kind and leveraged resources have not been systematically tracked.

The SilvaCarbon USG agency partners responsible for TA delivery are USGS, USFS, EPA, NASA, and NOAA. SI plays a central coordination role.

## 3.2 INTERNATIONAL CONTEXT

In addition to being an interagency initiative, SilvaCarbon is also part of a larger intergovernmental effort. SilvaCarbon was created as result of increasing intergovernmental and international activity related to climate finance and forest and terrestrial carbon monitoring. According to SilvaCarbon stakeholders, around 2009 there were ongoing discussions among USG agencies and international partners about how the US could contribute to the Forest Carbon Tracking (FCT) task under the GEO.<sup>5</sup> During 2009–2011 the FCT task became more formally structured as the GFOI (see Figure 2 below), which included capacity development as one of its five components.

SilvaCarbon was conceptualized in 2011 as a means for USG to contribute to this international effort through a bottom-up approach, building the capacity of beneficiary governments via direct partnerships. SilvaCarbon became the *de facto* primary capacity development initiative of GFOI, though USG has contributed to the other components of GFOI (e.g., methods and guidance, satellite data, research and development (R&D)) through SilvaCarbon.

FIGURE 2. WHAT IS GFOI?

The Global Forest Observations Initiative (GFOI) is led by Australia, Norway, USA, FAO, and CEOS. In 2008, GEO developed the FCT program to support countries develop national systems for forest carbon tracking, monitoring, and reporting through international coordination and cooperation. In 2009, stakeholders recognized that the coordination of satellite data providers and pre-processing centers, along with provision of methodological guidance and advice for using the data, would be necessary for a consistent and sustained system. The GFOI Task Force was formally created by the 2010 GEO Plenary. The GFOI Implementation Plan was approved in November 2011, and in January 2012 a governance structure and overall work plan for 2012–2013 were developed. In 2013, more permanent and sustainable governance arrangements were established; GFOI is led by the GFOI Lead Team (FAO, CEOS, Australia, Norway, and the USA) and is steered by an advisory committee. The GFOI office was established in 2013 to improve coordination among the various components of GFOI and to support the Lead Team. There are five components to GFOI work: Methods & Guidance, Coordination of Satellite Data Supply, Capacity Building, Research & Development, and Administration & Coordination.

Source: <http://www.gfoi.org/about-gfoi>.

In addition, during the United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties (COP15) in December 2009 in Copenhagen, developed countries pledged to provide new

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Emission Development Strategies (EC-LEDS). These programs are separate from USG climate finance contributions to multilateral climate funds. See <http://www.state.gov/climatefinance> for additional information.

<sup>5</sup>GEO is a voluntary partnership of governments and international organizations, established as an outcome of the World Summit on Sustainable Development (2002). GEO's members include 96 governments and the European Commission. 89 intergovernmental, international, and regional organizations with a mandate in Earth observation or related issues have been recognized as Participating Organizations. For more information on GEO see <http://www.earthobservations.org/>.

and additional resources to address climate change. From 2010–2012, the collective investment towards “fast-start financing” approached USD 30 billion.<sup>6</sup> SilvaCarbon served as one of many USG channels for the disbursement of fast-start finance related to climate change, and has continued beyond the fast-start period.

### 3.3 SILVACARBON STRUCTURE

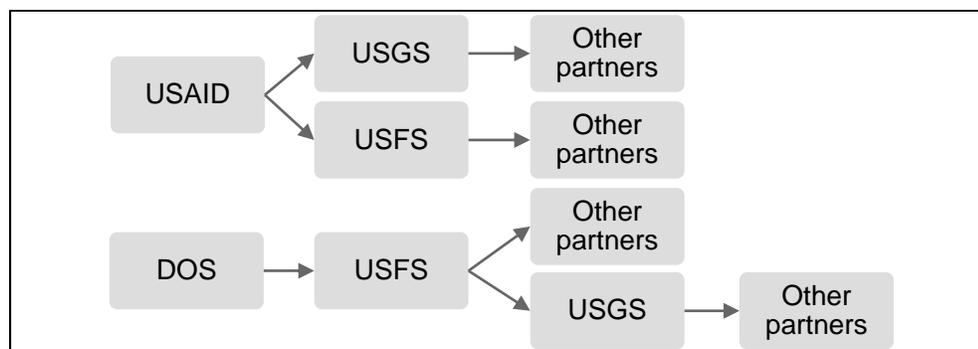
SilvaCarbon operates without a stand-alone management body, but with regular input and contributions from all involved USG agencies. Program coordination and planning is carried out both through the SilvaCarbon Steering Committee and the Technical Team. The Steering Committee consists of representatives from the involved USG agencies; external partners are represented by the University of Virginia. The Steering Committee conducts monthly meetings to discuss SilvaCarbon strategic issues, coordination aspects, and long-term planning. Decisions are made by consensus, though USAID and DOS, as the primary sources of SilvaCarbon funding, have final approval over SilvaCarbon strategic decisions.

The SilvaCarbon Technical Team is made up of technical specialists from the involved USG agencies and holds teleconference meetings on a monthly basis to discuss specific technical issues, provide regular updates on SilvaCarbon activities, and coordinate short-term planning on SilvaCarbon TA activities. SilvaCarbon has previously held multi-day planning meetings on an annual basis. Neither the SilvaCarbon Steering Committee nor Technical Team have formally defined Terms of Reference.

In the countries where SilvaCarbon is working on a bilateral basis, SilvaCarbon engages with the primary government institution responsible for forest and terrestrial carbon measurement and monitoring. However, it does not generally establish a Memorandum of Understanding (MOU) or other formal agreement with the partner institutions. Communication, planning, and organization are coordinated through a “focal point” individual in the respective national institution. In addition, in a number of bilateral partner countries SilvaCarbon has contracted a country coordinator. To support regional activities SilvaCarbon has also employed regional coordinators in the Andean-Amazon region (based in Lima, Peru), and in Southeast Asia (based at USAID Low Emissions Asian Development (LEAD) in Bangkok, Thailand).

Due to various bureaucratic restrictions, SilvaCarbon primarily operates through interagency agreements between USAID and USFS, USAID and USGS, and between DOS and USFS. Under DOS support, USFS has a secondary interagency agreement with USGS. USFS and USGS also conduct SilvaCarbon work through secondary agreements with NASA and non-USG technical partners, like the Woods Hole Research Center, the University of Maryland, and Boston University. Funding flows are diagrammed in Figure 3.

FIGURE 3. SILVACARBON FUNDING FLOWS



<sup>6</sup> Report of the Conference of the Parties December 2009. UNFCCC, March 20, 2010. <http://unfccc.int/resource/docs/2009/cop15/eng/11a01.pdf>

### 3.3.1 SILVACARBON PROGRAM OBJECTIVES

SilvaCarbon has five officially stated program objectives, as summarized in Figure 4 below. The evaluation completed an assessment of the SilvaCarbon program objectives, which can be found in Annex 10.

FIGURE 4. SILVACARBON PROGRAM OBJECTIVES

**1. Demonstrate and compare forest and terrestrial carbon measurement and monitoring methodologies.**

Achieving this objective includes critically reviewing methodologies and technologies for accuracy, uncertainty, and cost to provide countries with a range of options for adoption and implementation; supporting an assessment and integration function for methodologies currently being deployed in GFOI countries; and developing scientific designs for comparing methodologies in selected sites in GFOI countries.

**2. Build capacity of selected developing countries to use forest and terrestrial carbon monitoring and management methodologies and technologies.**

Achieving this objective includes developing and delivering good practice guides, manuals, trainings, and tools; facilitating learning exchanges, regional forums, and networks to enhance sharing among countries; providing technical advice and assistance to governments, including GFOI countries; and partnering with other donors and with International Organizations to multiply impact and reach.

**3. Facilitate, in cooperation with CEOS and GFOI, the coordinated collection and dissemination of Earth observation data related to forest and terrestrial carbon monitoring and management.**

Achieving this objective includes supporting efforts to enhance interoperability, coordination, and transparency of data collection systems; participating in the design of global sampling schemes of continuous satellite observations aligned with *in situ* data collection; and enhancing access to, and facilitating the processing of, Earth observation data for developing countries.

**4. Strengthen the community of forest and terrestrial carbon technical experts.**

Achieving this objective includes maintaining a web presence with knowledge management and social networking capabilities; convening meetings and workshops to build collaboration and greater consistency in technical understanding and in the recommendations provided to developing countries; and producing publicly available technical documents that summarize and critique the latest methodologies and approaches.

**5. Interagency cooperation and collaboration.**

SilvaCarbon's technical scope is not formally defined, but according to SilvaCarbon's own communication materials, SilvaCarbon addresses forest and terrestrial carbon assessment activities related to:

- Sampling protocols and design
- Data capture, processing, archiving, and distribution
- Collection and analysis of *in situ* data
- Integration of remotely sensed and *in situ* data
- Classification and mapping of forest cover
- Carbon stock and flow estimation

- Design of monitoring systems for multiple uses

### 3.3.2 SILVACARBON APPROACH TO CAPACITY DEVELOPMENT

SilvaCarbon has not yet developed a theory of change or logic chain that ties its capacity development inputs to outputs and expected outcomes. However, the program has defined its approach to capacity development; it operates through four main avenues, or areas of work.

1. National Capacity Development: National-level support, primarily to bilateral partner countries
2. Regional Capacity Development: Regional-level support to bilateral and non-bilateral partner countries
3. Knowledge Generation: R&D, forest and terrestrial carbon monitoring method, and technology development
4. Global Community Support: Global level contributions, such as inputs to other GFOI initiatives

SilvaCarbon supports national and regional capacity development through a range of technical assistance activities. These have included, but are not limited to, the following:

- Regional workshops (both formally linked to GFOI and in collaboration with other partners);
- National workshops and training sessions in bilateral partner countries (conducted by national experts and by experts from SilvaCarbon USG agencies);
- Long-term in-country assignments of USG experts to work in country partner agencies;
- Informal remote technical support through phone and email;
- South–South “peer-to-peer” knowledge exchanges;
- North–South study tours (where developing country participants travel to the US for training and other capacity-development activities);
- Provision of data and data products (remote sensing data and analyzed data such as maps); and
- Provision of equipment (including computers and personal data recorders for NFI field operations).

### 3.3.3 GEOGRAPHIC COVERAGE

Geographically, SilvaCarbon has focused on three priority regions where the most significant tropical forest in the world is found: the Andean-Amazon, the Congo Basin, and Southeast Asia. In 2014, SilvaCarbon officially expand into the Central American region (some country activities had been previously carried out in the region). Because the Central America regional workplan was still in development while the evaluation was underway, the report focuses on the other three regions. SilvaCarbon has supported regional activities, such as workshops, while also supporting a limited number of countries on a direct bilateral basis. Regional level activities in the three target regions have also engaged participants from countries outside of the main target regions, such as Costa Rica and Mexico in Latin America, Tanzania and Zambia in Africa, and Nepal in Asia. Table 2 below provides a summary of SilvaCarbon partner countries.

TABLE 2. SILVACARBON GEOGRAPHIC COVERAGE

Beneficiary Type	Andean-Amazon	Congo Basin	Southeast Asia
<b>Bilateral Partners</b>	Colombia, Ecuador, Peru	Cameroon, Democratic Republic of Congo (DRC), Gabon, Republic of Congo (ROC)	Bangladesh, Vietnam
<b>Other Regional Participants</b>	Brazil, Guyana		Cambodia, Indonesia, Lao People’s Democratic Republic (PDR), Philippines, Thailand

Beneficiary Type	Andean-Amazon	Congo Basin	Southeast Asia
Bilateral Partners	Colombia, Ecuador, Peru	Cameroon, Democratic Republic of Congo (DRC), Gabon, Republic of Congo (ROC)	Bangladesh, Vietnam
Additional and Peripheral Countries ( <i>outside the target region</i> )	Costa Rica, Honduras, Mexico, Panama (expanded to Central America during 2014)	Ghana, Kenya, Tanzania, Zambia	Nepal

### 3.3.4 SILVACARBON ACTIVITY TIMELINE

SilvaCarbon activities started in 2011. A complete table listing the timing of the initiation of SilvaCarbon engagement for each bilateral country partner can be found in Annex 8. The longest engagement has been in the Andean-Amazon region. The first SilvaCarbon scoping mission to a potential bilateral partner country was conducted in Ecuador in July 2011, and scoping missions to Colombia and Peru followed in October 2011. SilvaCarbon activities in Gabon also started in October 2011. The scoping mission for Vietnam was carried out in April 2012.

These five countries represent the first generation of SilvaCarbon bilateral partners and are the countries in which the most extensive SilvaCarbon activities have been carried out to date. A second generation of bilateral partners was initiated in September 2013, with scoping missions to Cameroon, DRC, and ROC. A scoping workshop in Bangladesh was completed in July 2014.

In terms of regional activities, the first SilvaCarbon GFOI regional capacity development workshop was held for the Latin America region in Lima, Peru, in August 2011. The regional series of SilvaCarbon GFOI workshops in Latin America has reached 11 workshops. The first SilvaCarbon GFOI workshop in the Southeast Asia region was in Chiang Mai, Thailand, in January 2014. The first Congo Basin SilvaCarbon GFOI workshop was in Doula, Cameroon, in June 2014.

### 3.3.5 KEY SILVACARBON STAKEHOLDERS

SilvaCarbon's role as an international development initiative that is both interagency in structure and part of a larger intergovernmental effort means that it must maintain an extensive network of relationships. The five main types of SilvaCarbon stakeholders are described in the table below.

TABLE 3. KEY STAKEHOLDER TYPES

Stakeholder Types	Example Stakeholders
USG Partner Agencies	DOS, USAID, USFS, USGS, EPA, NASA, NOAA, SI
Non-USG Technical Partners	Boston University, University of Maryland, Wageningen University
International Development Partners	FAO, German Agency for International Cooperation (GIZ), Japan International Cooperation Agency (JICA)
National Government Beneficiaries	Institute of Hydrology, Meteorology and Environmental Studies (IDEAM) in Colombia, Forest Inventory and Planning Institute (FIPI) in Vietnam
Non-government Country Beneficiaries	Government institutions other than the primary SilvaCarbon partners (universities, civil society)

At the **national level**, in the bilateral partner countries SilvaCarbon works with the primary government institutions responsible for forest and terrestrial carbon measurement and monitoring, and for GHG

inventory in the land use, land-use change, and forestry (LULUCF) sector. The full list of these bilateral government beneficiary partners is included in Annex 7. In addition, SilvaCarbon also engages with other relevant national institutions and stakeholders, though often in a much more limited manner.

National and global stakeholders are also those engaging at the **regional level** within SilvaCarbon. However, other relevant regional initiatives can also be considered regional stakeholders, such as the USAID initiative Lowering Emissions in Asian Forests (LEAF) in Southeast Asia, and the Central Africa Regional Program for the Environment (CARPE) in the Congo Basin.

At the **international level**, SilvaCarbon supports national efforts related to UNFCCC Reducing Emissions from Deforestation and Forest Degradation (REDD+) and other related initiatives, which have innumerable stakeholders. However, SilvaCarbon is focusing specifically on capacity development for technical issues related to NFMS, including forest and terrestrial carbon measurement, reporting, and verification (MRV) systems. This is a narrower realm, and the key international stakeholders working on these issues are multi-lateral organizations such as FAO, which is responsible for MRV aspects in the context of UN-REDD, the World Bank's Forest Carbon Partnership Facility (FCPF), and bilateral aid organizations such as JICA and GIZ. GFOI is also considered an international stakeholder.

## 4 FINDINGS, CONCLUSIONS, & RECOMMENDATIONS

The following section of the evaluation report presents the key conclusions of the evaluation, supported by qualitative and quantitative data, and related findings. This section follows the order and structure of the evaluation questions. Section 4.1 below provides an assessment at the program level. Section 4.2 answers Evaluation Question 1, and its four sub-questions address program objectives 1-4. The assessment of the achievement of SilvaCarbon objective 5 is addressed later in Section 0 of this report.

### 4.1 OVERALL PROGRAM ASSESSMENT

**Conclusion 1:** SilvaCarbon has been a highly valuable vehicle for United States fast-start financing for climate change mitigation, with notable contributions to partner countries' capacity for assessment and monitoring of forest and terrestrial carbon. The program has multiple strengths, including excellent inter-agency cooperation, proactive and appropriate coordination with other donors and related initiatives, and high relevance to partner country needs and international priorities.

SilvaCarbon is an important initiative within the USG's contribution to climate change mitigation financing, and the program continues to provide high-quality TA beyond the "fast-start period." SilvaCarbon has supported capacity development for forest and terrestrial carbon assessment and monitoring systems in three regions: the Andean-Amazon, South/Southeast Asia, and the Congo Basin. The five countries with the longest-standing bilateral relations are Colombia, Ecuador, Peru, Gabon, and Vietnam. SilvaCarbon has initiated support to at least four more bilateral partner countries (Bangladesh, Cameroon, Democratic Republic of Congo, Republic of Congo), has provided assistance to multiple other non-bilateral partner countries. SilvaCarbon has also begun collaboration with a fourth region, Central America.

SilvaCarbon has a narrow demand-driven focus, addressing specific technical needs identified by countries. It

focuses on issues such as the analysis of remote sensing data, design of forest inventory methodologies, and calculation of greenhouse gas (GHG) inventories in the LULUCF sector. These technical fields are well suited to the USG agencies involved in the SilvaCarbon initiative (e.g., USGS, USFS, NASA, EPA) and key technical partners (e.g., Boston University, University of Maryland, Wageningen University), which employ some of the world's leading authorities on these issues.

### **Strategic Logic Model, Results Framework, and Baselines**

**Conclusion 2:** Objectively assessing progress toward desired outcomes of the SilvaCarbon program is challenging, given that the program does not have a clearly defined logic model or results framework, and did not systematically define and document the baseline situation in partner countries. This also makes it more difficult for the program to communicate a story of what has been achieved.

As further discussed throughout this report, qualitative data collected strongly suggests that SilvaCarbon is regarded as a highly valuable and important program, both by partners providing TA and by beneficiary partners. However, aggregating the sum achievements of the program is a challenge, particularly at the outcome level, as the program does not have: a) an explicit logic model; b) a results framework with defined results areas and metrics; nor c) systematically documented baseline data.

According to USG SilvaCarbon participants, SilvaCarbon has intentionally avoided tying its results chain to REDD+ or any other mechanism as the means to leveraging GHG mitigation. The particular pathways by which countries will work to reduce their emissions are rightly considered a matter best left to partner countries. There are multiple logical pathways through which SilvaCarbon's capacity development work can support partner countries reduce emissions.

Although multiple potential results chains exist, SilvaCarbon has not explicitly articulated a logic model that indicates how the activities supported under the program will achieve outcome level results. SilvaCarbon has five main objectives, but these objectives indicate the activities SilvaCarbon is pursuing without justifying them nor explicitly linking these activities to the long-term overall objective of reducing carbon emissions. Some of the program's technical support areas are identified in program public outreach materials, but the desired outcomes in each of these areas are not defined. These areas are listed in Section 3.3.2 above.

SilvaCarbon's long-term overall objective is to meet country-specific needs for developing comprehensive and transparent systems for measuring and monitoring carbon stocks in forests and other lands, so that countries can use these systems to: a) make informed decisions that lead to reduced deforestation and sustainable low-emission development in the land use sectors; and b) accurately report on emissions from land use for country-specific applications, which may include participation in REDD+ programs. Formal adoption of this objective by the SilvaCarbon Steering Committee would be an excellent positive step toward strengthening the clarity and explicitness of the strategic approach of the program.

Once a specific results chain is articulated, developing a detailed results framework with specific indicators and targets may be a challenge for this global program given the differing levels of capacity and priority needs in the countries and regions where SilvaCarbon is working. However, it would still be helpful for the program to identify key results areas with outcome-level goals.

Further, SilvaCarbon has also not tracked baseline information in a systematic manner. One of the program's strengths is employing a scoping mission at program start-up in a bilateral country to identify priority areas for SilvaCarbon support. However, across the SilvaCarbon scoping reports, the baselines of capacity level and overall situation in each country have not been systematically documented. Some baseline information is included in scoping mission reports, but it is not documented in a comprehensive or systematic way

across countries. For example, Ecuador's scoping report contains informative statements like the following: "They are missing 30% of the country due to clouds, so they are looking at RADAR and LIDAR (active sensors)," and "In terms of imagery, they have Landsat data from '90, '00, and '08 Aster imagery from '08 wall to wall, and they have acquired RapidEye and Quickbird for specific projects." But this information is not recorded in a structured way so as to create records that can be compared across countries.

Part of the challenge for SilvaCarbon is that an internationally agreed-upon tool or approach does not exist to systematically measure countries' capacity levels related to national forest and terrestrial carbon monitoring and MRV systems, including NFMS. Some SilvaCarbon partners are working to fill this gap, but this is a work in progress.

Without the strategic elements discussed above, it is a challenge to describe the achievements and value of the SilvaCarbon program and to document the results as something more than a broad palette of information-sharing and training activities related to national forest and carbon inventories.

**Recommendation 1:** The SilvaCarbon program should develop an explicit logic model that linking stated program objectives and technical areas of work with the targeted key outcome results, which are necessary to contribute to the long-term impact goal of climate change mitigation. This work, and the systematic collection of baseline data, could be supported with development of a standardized country-level capacity assessment tool. An example results chain was created for this evaluation; it can be found in Annex 11.

### Strategic Geographic Coverage

SilvaCarbon's long-term impact goal is the reduction or avoidance of GHG emissions. Considering this goal, SilvaCarbon's focus on the Andean-Amazon region, the Congo Basin, and South/Southeast Asia is appropriate. Through regional engagement (i.e., through countries' participation in regional workshops) SilvaCarbon is working with eight of the 15 developing countries with the largest amount of total forest area. Annex 8 includes a table that lists all the countries in the three SilvaCarbon target regions, by forest area.

Although SilvaCarbon targets some of the most forested regions of the world, the selection of individual countries for bilateral SilvaCarbon partnerships does not have transparent criteria. Criteria mentioned by SilvaCarbon participants include regional forest biome, focus for synergy, countries with large forest areas, degree of threat, and USG priorities in relation to bilateral political and economic situations.

SilvaCarbon participants also noted that SilvaCarbon's bilateral partnerships were often the result of political and practical considerations. This is somewhat understandable, as these are important factors for achieving results. However, SilvaCarbon is consequently working in bilateral partnerships with only six of the top 15 countries by forest area in the three SilvaCarbon target regions. The ten countries in these regions that SilvaCarbon is not working with, ordered from largest to smallest forest area, are China, South Sudan, India, Angola, Bolivia, Venezuela, Mozambique, Myanmar, Argentina, and Papua New Guinea. However, given political considerations (e.g., in Bolivia, Myanmar, Venezuela), and the fact that some large countries already have significant capacity for forest carbon monitoring (e.g., Brazil, India) or already have significant other donor support (e.g., Indonesia, Guyana), the most notable gaps in SilvaCarbon's bilateral portfolio in the regions where it is working are Angola, Papua New Guinea, Central African Republic, Thailand, Lao PDR, Suriname, and Cambodia (in order of forest area). If SilvaCarbon seeks to expand its portfolio of bilateral partner countries in the future, working with countries from this group would likely be the most strategic approach in terms of potential impact, though other factors, such as threat level, would also need to be considered.

## 4.2 EVALUATION QUESTION 1: ARE THE STATED SILVACARBON OBJECTIVES BEING MET?

### 4.2.1 EVALUATION QUESTION 1.A. HAVE FOREST AND TERRESTRIAL CARBON MEASUREMENT AND MONITORING METHODOLOGIES BEEN DEMONSTRATED, REVIEWED, AND COMPARED?

This section assesses SilvaCarbon's delivery of TA, as well as the SilvaCarbon research grant program.

**Conclusion 3:** SilvaCarbon successfully demonstrates, reviews, and compares forest and terrestrial carbon assessment methodologies. SilvaCarbon uses regional and national workshops and study tours to educate bilateral and non-bilateral partners alike on the menu of tools and methods available and to identify those most suited to their needs. The results of these efforts have been focused in the five initial SilvaCarbon bilateral partner countries, but other countries in the three target regions have also benefited. There remains a need to focus on practical in-country application of technologies and methodologies in the specific contexts of beneficiary countries.

According to some SilvaCarbon USG participants, the original concept behind this SilvaCarbon objective was to pursue a scientific approach, field-testing the same handful of tools and methodologies in the various SilvaCarbon partner countries to compare results. However, SilvaCarbon has instead pursued a more pragmatic approach in which it responds to the particular needs and contexts of the partner countries. There is not a consistent one-size-fits all international standard approach for forest carbon monitoring, and stakeholders in SilvaCarbon bilateral countries have indicated that it has been helpful for SilvaCarbon to assist in providing information to compare and contrast different methodologies and technologies.

In the bilateral partner countries where SilvaCarbon is working, the program has specifically supported USG, non-governmental, and other international experts to conduct TA missions to demonstrate, review, and compare forest carbon assessment methodologies to assist countries in identifying methodologies that may be useful for their needs and circumstances. Examples of these activities are highlighted in

Table 4 below.

TABLE 4. SILVACARBON EXAMPLES OF REVIEWING, DEMONSTRATING, AND COMPARING METHODS

Country	Activity
Colombia	July 2013: Two experts from the USFS traveled to Colombia for a NFI pilot discussion with the Ecosystems group and REDD+ group from IDEAM. Colombia has begun using the Design Tool for Inventory Monitoring (DTIM), developed by USFS and FAO, in its forest inventory design, and has continued to work closely with USG experts on inventory design and database through follow-up visits.
Ecuador	November 2013: A Boston University expert conducted a training in Quito with the Ministry of Environment to design validation methodology for a forest cover change map
Peru	2013: SilvaCarbon supported the investigation and implementation of three change detection methodologies for protected areas in Peru: (1) Supervised Enhanced Vegetation Index Classification, (2) Moderate Resolution Imaging Spectroradiometer (MODIS) Vegetation Continuous Fields Cluster-aided Forest/Non Forest Masking, and (3) Supervised Pre-processing Forest/Non Forest Masking.
Gabon	During its engagement in Gabon SilvaCarbon supported the government in establishing a countrywide NFI plot sample of more than 100 one-hectare plots. Six teams of forest technicians collected field data, which is helping estimate forest carbon stocks and will be used to ground-truth future LIDAR data collection (for more, see Annex 9).

Country	Activity
Vietnam	April 2014: A USFS expert conducted an Optimal Sampling and Plot Design for NFIs training

At the regional level, SilvaCarbon has primarily supported regional capacity-development workshops, most of which have been within the framework of GFOI's capacity-development pillar. Approximately 14 regional GFOI technical workshops have been conducted (as of September 2014): 11 conducted for countries in Latin America, one conducted for the Congo Basin, and two conducted for South/Southeast Asia. These workshops have served as a platform specifically for SilvaCarbon experts, other international experts, and the countries themselves to demonstrate, review, and compare forest and terrestrial carbon assessment methodologies. Technical topics of the workshops have included:

- Developing consistent GEO forest information products from time-series mid-resolution optical data (2<sup>nd</sup> Latin America workshop)
- Integration of forest inventories, remote sensing data, and carbon models (3<sup>rd</sup> Latin America workshop)
- Use and processing of radar imagery for forest monitoring (4<sup>th</sup> Latin America workshop)
- Biomass mapping estimation and forest cover mapping in the Tropics (9<sup>th</sup> Latin America workshop)
- Data interoperability for forest monitoring (1<sup>st</sup> Congo Basin workshop)
- Integration of remote sensing data, forest inventory data, and carbon models (2<sup>nd</sup> Asia workshop)

SilvaCarbon has also contributed to the review of methodologies at the global level, through inputs to the methods and guidance document (MGD) developed under the methods and guidance pillar of GFOI. SilvaCarbon is not the lead GFOI partner on this pillar, but SilvaCarbon has been the main channel through which the USG has provided input and support to the three pillars of GFOI other than capacity development. The MGD was published by GFOI in January 2014.

There are technical issues for which countries require decision-support. In Vietnam, for example, methodological approaches demonstrated by US experts have varied compared to those demonstrated by FAO under the UN-REDD program in three key areas: sample plot design for national forest inventory, software for analyzing data (OpenForis vs. SIPB2), and the particular use of different types of remote sensing data (LANDSAT vs. SPOT<sup>7</sup>). In other cases, SilvaCarbon (as well as other development partners) may be demonstrating methodologies and technologies that are beyond the immediate needs and priorities of developing countries for national forest and terrestrial carbon assessment and monitoring. For example, the 1<sup>st</sup> SilvaCarbon GFOI regional workshop in Asia (in Thailand in January 2014) included the field demonstration of unmanned aerial vehicles (UAVs, also known as drones) for aerial imagery, which is a technology typically beyond the financial and technical capacity of countries in the region and is not necessary to meet Intergovernmental Panel on Climate Change (IPCC) guidelines. This is not considered a widespread issue within the SilvaCarbon approach, but highlights the need for SilvaCarbon to both ensure capacity-development efforts are focused on priority outcomes in key results areas, and also to provide decision-support guidance as part of the approach of demonstration, review, and comparison of technologies.

**Recommendation 2:** Along with demonstrating, reviewing, and comparing forest carbon assessment methodologies and technologies, SilvaCarbon should also provide decision-support guidance and criteria to

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<sup>7</sup> SPOT: Satellite Pour l'Observation de la Terre, "Satellite for Earth observation"

assist partner countries in determining if these technologies and methods are appropriate for their adoption and application, and under what circumstances.

### **The SilvaCarbon Research Grant Program**

Another means by which SilvaCarbon is contributing to the review, demonstration, and comparison of methodologies is through its research program. Two rounds of research have been funded in 2013 and 2014, for a total of 11 projects. A summary of the research projects is included in Annex 12 of this report.

**Conclusion 4:** Given that the 2013 round of research projects is ongoing and the 2014 round has just started, it is not yet possible to assess the results of the research program. Yet it is clear that the research program fills a valuable international need, with a focus on addressing critical practical issues related to forest and terrestrial carbon monitoring and the needs of beneficiary country stakeholders.

However, though it may not always be appropriate, there may be opportunities to generate synergies between the research program and the rest of SilvaCarbon's capacity development work.

SilvaCarbon funded four of the projects from its first request for proposals, in 2013, which focused on issues related to LIDAR. In 2014, the request for proposals process was less thematically specific (though still focused on forest degradation issues) but more structured, and the call for proposals was widely disseminated. As a result, 2014 demand was unexpectedly high for the second round of funding, with 75 proposals being submitted. SilvaCarbon was able to fund seven grants. The research projects are expected to take between 12 and 24 months; the research is ongoing. Grantees submitted progress updates on the first round of grants in December 2014. Proposals could be funded for up to \$250,000, though the actual average grant is \$123,545 USD, with total research funding of \$1,359,000.

SilvaCarbon's practical focus and linkages with in-country individuals and institutions are strengths of the program. According to interviewees, the research program's emphasis on the issue of forest degradation was useful and relevant. One respondent noted that "clear objectives are defined," although it was not clear "how that prioritization was done." Another stated the RFP was "very targeted and relevant," and "the things that got funded are relevant to the program and the overall effort of the program." Eight of the 11 research projects include work in SilvaCarbon bilateral countries. Three of the 11 projects do not specify or do not include work in a SilvaCarbon bilateral partner country. Nine of the 11 research projects include researchers from institutional partners that are already involved in SilvaCarbon activities such as USFS, USGS, Boston University, and University of Maryland.

According to SilvaCarbon USG partners, collaboration with in-country researchers and institutions was made mandatory in the second year of the research program. However, the summary information about the research projects available for this evaluation did not identify the country partner institutions involved other than for the research project in the Republic of Congo, where the University of Marien Ngouabi is an identified research partner.

While the technical focus of the research program was strong, participants felt that SilvaCarbon could improve in its solicitation of proposals. According to participants, similar programs run by NASA have a two-step proposal process, with short-listed applicants invited to submit a more detailed second-step proposal. However, in the SilvaCarbon program, the detailed second-step proposals were only requested after funding decisions had been made. In addition, the participants felt the "review process was not very well known, but at the end the decision was made somehow." A participant acknowledged that from an external point of view, "some people may find that the process may not be as transparent and clear." Participants noted there was a trade-off between a simple application process (chosen by SilvaCarbon)

relative to more common intensive processes; researchers are the clear beneficiaries of a simple, straightforward process that did not require a heavy investment in proposal preparation.

SilvaCarbon requests that grantees report annually with a brief summary of activities carried out, funds spent, and any expected changes to the research proposal or planned expenditure of funding. According to both grantees and program staff, the specific expected formal outputs from the research program have not been explicitly defined in terms of the products and practical results expected. A USG SilvaCarbon stakeholder indicated that the RFP did not include “any requirement for reporting” on publication of research results, or practical implementation of research results, though it was “suspected” that the supported research projects were likely to do both. Accordingly, the same interviewee stated “it would be ideal” if research projects “published at least once or twice in US peer-reviewed journals” and reported on “training and adoption rates within the participant country.” But SilvaCarbon “didn’t require it outright” and “it is an unstated assumption.” However, this was not formally established in funding agreements after funding decisions were made or in other research program documentation.

**Recommendation 3:** SilvaCarbon should confirm through written agreements with grantees concerning the expected research program outputs, such as peer-reviewed publications, number of people trained, or other practical results.

#### 4.2.2 EVALUATION QUESTION I.B. HAS TA PROVIDED BY SILVACARBON BUILT THE CAPACITY OF KEY STAKEHOLDERS IN PARTICIPATING DEVELOPING COUNTRIES TO USE FOREST AND TERRESTRIAL CARBON MONITORING & MANAGEMENT METHODOLOGIES & TECHNOLOGIES?

This subsection addresses SilvaCarbon objective 2 regarding the building of stakeholder capacity to use tools and methods. The section is organized in two parts, with the first section examines issues and results at the program level. The second section assesses results of capacity building efforts in each of the three major regions of SilvaCarbon involvement: the Andean-Amazon, the Congo Basin, and South/Southeast Asia.<sup>8</sup>

##### Program-level Assessment of Capacity Development Results

**Conclusion 5:** SilvaCarbon is an important and useful program that is developing capacities for NFMS and MRV systems, making valuable contributions in the countries where it works. SilvaCarbon focuses on a set of globally pressing technical issues and marshals leading technical expertise that is not often accessible to developing countries. In this respect, SilvaCarbon fills a critical niche in the international effort related to forest and terrestrial carbon assessment and monitoring.

There are significant differences in initial level of capacity among the countries and regions in which SilvaCarbon is working. As previously mentioned, there is no agreed upon standard measuring stick or set of metrics for assessing a country’s level of capacity with regard to carbon assessment and monitoring. Given the varied initial capacity in each region and country, SilvaCarbon uses a demand-driven approach to identify the areas to work in and responds directly to the TA requests received from beneficiary partners.

The partner country beneficiaries and external SilvaCarbon partners all highlighted the excellent quality of the technical support provided by SilvaCarbon experts. For example, 69 percent of survey respondents indicated they were mostly or totally satisfied with the technical guidance and methodologies shared by SilvaCarbon (online survey, question C122). A SilvaCarbon stakeholder stated, SilvaCarbon “is very important for my country because [we are] committed to the REDD+ mechanism, and we always need

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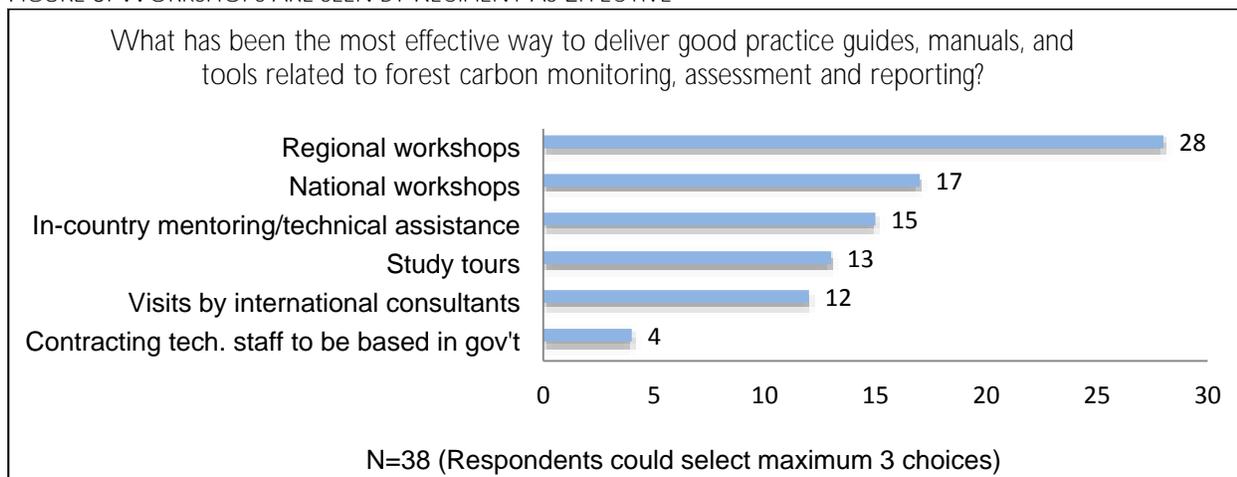
<sup>8</sup> The work undertaken in the regional Central American program started too recently to be assessed. The Central America regional program is not covered in this report.

international expertise to improve our knowledge of the areas of remote sensing.” Others noted that SilvaCarbon provides “excellent technical quality” and “a high quality team of experts.”

SilvaCarbon delivers a great deal of capacity development through regional workshops. In KIIs, program participants noted that there are pros and cons to the regional workshop approach. For example, workshop series across a set of topics can result in increased individual capacity that can be applied into daily professional use. On the negative side, SilvaCarbon participants report that it is unlikely to build substantial and sustainable capacity throughout an institution through single multi-day workshops without additional support, particularly because at these events space is limited. Further, workshops are time-intensive exercises that require participants to be away from the office for significant periods of time, and often out of their own country. In most developing countries the individuals who would be participating in such workshops are key individuals related to REDD+ in their countries, and their frequent absences have negative externalities in-country. Capacity development activities at the individual level also face challenges related to personnel turnover, which is discussed further in Section 4.3. On the positive side, participants consider that the development of a knowledge exchange network between Andean-Amazon countries to be a major success story to come out of the regional workshops.

While regional workshops have pros and cons, participants generally review them favorably. The post-workshop surveys distributed by SilvaCarbon have indicated a majority of positive feedback, and in the survey conducted for this evaluation regional workshops were highly rated (**Error! Reference source not found.**). Regional workshops were considered the most effective way of delivering good practice and tools, with 28 out of 38 respondents most in favor of this approach. National workshops came in second, with 17 respondents rating them as most effective. This feedback contrasts slightly with the more nuanced qualitative feedback received during interviews, which touched on the pros and cons indicated above.

FIGURE 5. WORKSHOPS ARE SEEN BY RECIPIENT AS EFFECTIVE



Source: Online survey, Question C113

**Conclusion 6:** Capacity development is most effective through a sustained engagement, and making a significant contribution to capacity for NFMS and GHG inventories is estimated to require a minimum of five years, depending on a variety of country-specific factors. Therefore, SilvaCarbon would need to continue efforts in the countries where it is working for additional years to generate significant outcome-level results. Based on the initial progress made in the target countries to date, a continued engagement is likely to be a worthwhile investment.

Capacity development in international development is recognized as a long-term process. Significant contributions to capacity development can take years. One SilvaCarbon expert noted that he had spent many years studying **geographic information systems (GIS)** and remote sensing technology, and it is not possible to convey very much to workshop participants in a few days. Another interviewee noted that it can take two years of training to teach someone to create land cover maps from raw data. So it is not surprising that qualitative feedback indicates that the capacity development approaches considered most effective are small group, weeks-long, in-person trainings and months-long study tours. Another method of building capacity would be to finance individuals to obtain advanced degrees or certificates, but this is not an approach that SilvaCarbon has pursued. Ultimately SilvaCarbon has to make strategic decisions about the capacity development modalities it employs based on cost-effectiveness and other factors. One USG participant and a country beneficiary noted that it may be best for SilvaCarbon to target a “higher” level of TA by providing already processed data products (e.g. maps, etc.) that can be put to immediate use in-country, rather than invest significant resources in developing countries’ capacity to do more technically intensive tasks themselves.

Given the long-term nature of the capacity development process, the strongest results from the SilvaCarbon program are seen in the countries where SilvaCarbon has been working the longest: Colombia, Ecuador, Peru, and Gabon. Results in Vietnam and Southeast Asia are more limited, but there still have been notable contributions in the approximately 18 months the program has been operating in Vietnam. Results in the most recent bilateral partner countries (Cameroon, DRC, ROC, and Bangladesh) are limited as of this evaluation. A more in-depth summary of capacity results by region are further discussed in Annex 9.

**Potential to Influence Policy:** SilvaCarbon has had most success in affecting policy change in the countries in which it has the longest history. In South America, respondents tied participation in SilvaCarbon to indirect policy change like an increased focus on and investment in scientific research in forest carbon management. In other cases, participation in the program directly affected policy change, as it did when SilvaCarbon assisted Colombia in the development of its REDD+ carbon monitoring and management strategy, which was subsequently incorporated into the national MRV policy and national policy to reduce deforestation. In Southeast Asia, SilvaCarbon’s involvement was commonly considered too short to have yet affected policy, though many participants expected it to. One respondent cited a specific goal to increase their office’s capacity to produce “validated data” and measure carbon sequestration in order to inform land use policymaking.

**Recommendation 4:** Policy change is one of the DOS indicators being pursued by the SilvaCarbon program, yet as of 2013 it had not yet collected any data on policy change. This is an area in which SilvaCarbon can improve its monitoring and reporting.

#### **4.2.3 EVALUATION QUESTION I.C. HAS COOPERATION WITH CEOS AND OTHER PARTNERS IN GEO GFOI FACILITATED COLLECTION AND DISSEMINATION OF EARTH OBSERVATION DATA RELATED TO FOREST AND TERRESTRIAL CARBON MONITORING AND MANAGEMENT?**

This subsection addresses SilvaCarbon Objective 3 regarding the collection and dissemination of Earth observation data related to forest and terrestrial carbon monitoring and management.

**Conclusion 7:** SilvaCarbon has contributed to beneficiary country access to Earth observation data, but it appears that the program’s more valuable role has been in assisting countries to process and analyze data. Areas identified for further support include effective data management and data sharing.

Beginning in 2008, USGS publicly released free Landsat program data dating back to the 1970s. Under the European Space Agency's Copernicus programme, Sentinel-1 has followed suit, with Sentinel-2 data<sup>9</sup> to become available to the public in 2015. Other development partner initiatives including GFOI, FAO, Global Observations of Forest and Land Cover Dynamics (GOFC-GOLD), Finland, NASA, SI, and France (SPOT) provide Earth observation data, although in some cases the data must be purchased.

SilvaCarbon has directly facilitated Earth observation data access and analysis. Although Landsat data is freely available online for download, developing countries often do not have the capacity to download large data sets. SilvaCarbon has provided the following data: Landsat Thematic Mapper 4 and 5, Landsat 7 Enhanced Thematic Mapper Plus, Landsat 8 Operational Land Imager and Thermal Infrared Sensor, Shuttle Radar Topography Mission, and Global Land Survey 1975, 1990, 2000, 2005, and 2010. SilvaCarbon has provided more than 3,800 gigabytes of remote sensing data to bilateral and regional partner countries, and has also provided data to other countries such as Guyana and Guatemala. SilvaCarbon experts have traveled with hard-drives to deliver to country counterparts because of the accessibility challenges. **Error! Reference source not found.** provides examples of SilvaCarbon's support for collection and dissemination of Earth observation data.

TABLE 5. EXAMPLES OF EARTH OBSERVATION DATA DISSEMINATION ACTIVITIES

Country	Data Dissemination Activities
Colombia	Implementing a prototype time-series system using optical and radar data
Colombia, Peru, Ecuador	USGS downloaded and packed the Global Digital Elevation Model over Colombia, Ecuador, and Peru, and delivered to the three countries
Costa Rica	Classification methods using multispectral satellite imagery to obtain cover types or land use maps
Guatemala	Integration of field and remote sensing data; statistical methods for generating national estimates (e.g., of biomass or carbon) using remote sensing monitoring data
Peru	Forest cover loss analysis (2000–2013)
Central America	Workshops for training on preprocessing and classification methods using multispectral satellite imagery to obtain cover types or land-use maps; generation of biomass estimations using satellite data; carbon measurements.
Nepal	GFOI initiative on integrating remote sensing and field data and carbon models
DRC	Workshop on remote sensing; GIS and remote sensing

The online survey suggests that beneficiaries are mostly satisfied with the effectiveness of earth observation data support and capacity building assistance, and somewhat less satisfied with their levels of access, as indicated in Figure 6, Figure 7, and Figure 8 below.

<sup>9</sup> Sentinel-1 provides C-band synthetic aperture radar imaging, while Sentinel-2 will provide multi-spectral optical imagery at high spatial resolution.

FIGURE 6. EFFECTIVENESS PERCEPTIONS OF SILVACARBON ACCESS TO EARTH OBSERVATION DATA

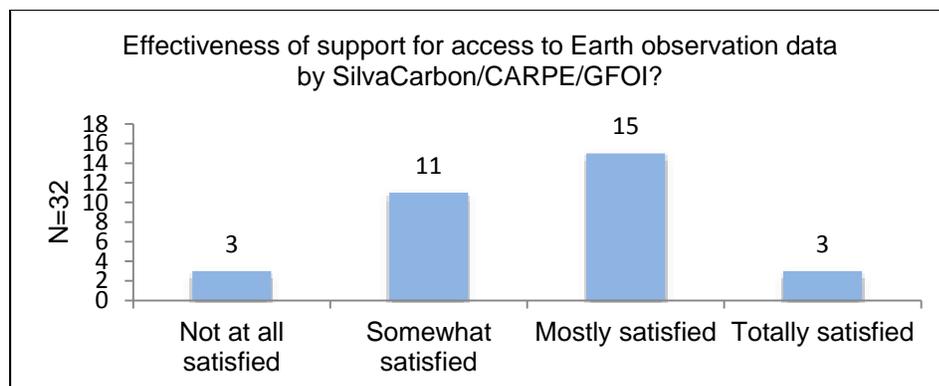


FIGURE 7. SATISFACTION WITH SILVACARBON'S EARTH OBSERVATION DATA CAPACITY BUILDING & TA

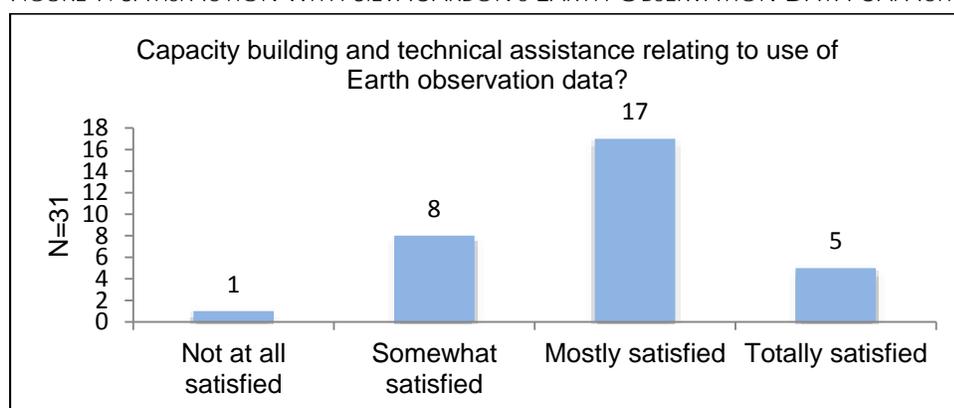
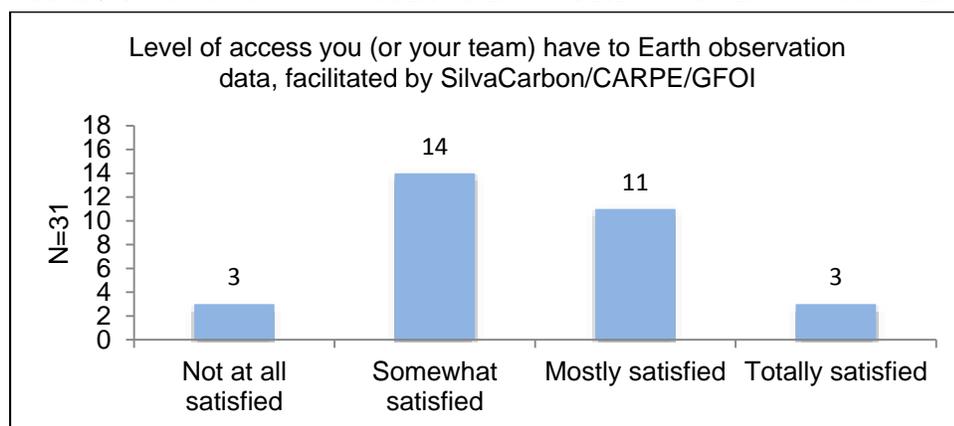


FIGURE 8. SATISFACTION WITH ACCESS TO EARTH OBSERVATION DATA FACILITATED BY SILVACARBON



In addition to providing actual data, SilvaCarbon has greatly helped partner countries define and articulate their data acquisition plans and needs for submission to the CEOS Spatial Data Coordination Group (SDCG). In September 2013, SilvaCarbon facilitated a meeting between the CEOS SDCG and the Andean-Amazon partner countries at which delegates from Colombia, Ecuador, and Peru presented their data acquisition plan for the development of their biannually reporting MRV systems. SilvaCarbon also helped partner countries in the Congo Basin and Southeast Asia develop similar data acquisition plans.

Also under this objective SilvaCarbon experts have worked with CEOS to provide inputs on the development of the CEOS Visualization Environment (COVE) tool. During the above-mentioned

September 2013 meeting, NASA provided training on the COVE tool. USGS SilvaCarbon provided funding towards the COVE tool for enhancements that add useful capabilities for the users.

While SilvaCarbon has delivered significant amounts of data, the value of this data in contributing to desired outcome-level results has not been specified, with a few exceptions. For example, the value of data contributions in Colombia to generate the first annual forest cover change estimates were noted, but similar expected results from the provision of data in other countries have not been made explicit. At present, SilvaCarbon is providing significant amounts of data as requested by countries, but the specific outcomes (such as data uses) are as yet undefined. Data needs vary by country, but, as an example, SilvaCarbon could specify that a goal is to support the generation of wall-to-wall land-use maps of a certain resolution for specific time periods, and indicate how such maps would be used in managing forests and land-use and mitigating GHG emissions. A side benefit to articulating these results chains is the improved ability to communicate beyond the key outcomes the program is contributing to, and the value of its work.

Country beneficiary and USG SilvaCarbon stakeholders also identified data management (not just access) as a significant capacity building issue that needs support. Even when data can be accessed for free, the downloading, storage, and use of large remote sensing data sets requires high technical capacity. Efficiently managing this data is a challenge to many partner countries. They need good systems and institutional mechanisms to store and manage data in a way that all key individuals and government institutions who might need to use the data know about it and can securely access it. SilvaCarbon may be already partially addressing this issue, but this need was identified by a variety of stakeholders during this evaluation.

**Recommendation 5:** For activities that attempt to increase access to Earth observation data, SilvaCarbon should identify and define the key outcomes that directly link to climate change mitigation impacts, such as improved forest management and implementation of REDD+ initiatives.

**Recommendation 6:** SilvaCarbon should focus on assisting countries in developing their institutional capacity to manage forest remote sensing and Earth observation data at the national level to ensure that the data access, which SilvaCarbon has supported, is sustained. Supporting effective data management would also ensure that data provided by SilvaCarbon is accessible to all relevant national stakeholders.

#### **4.2.4 EVALUATION QUESTION I.D. HAS THE COMMUNITY OF FOREST AND TERRESTRIAL CARBON TECHNICAL EXPERTS BEEN STRENGTHENED?**

This subsection addresses SilvaCarbon Objective 4 regarding the strengthening of the community of forest and terrestrial carbon technical experts. The aims of the fourth SilvaCarbon objective include:

- Maintaining a web presence with knowledge management and social networking capabilities;
- Convening meetings and workshops to build collaboration and greater consistency in technical understanding and in the recommendations provided to developing countries; and
- Producing publicly-available technical documents that summarize and critique the latest methodologies and approaches.

**Conclusion 8:** SilvaCarbon's body of work has contributed to a strengthening of the community of forest and terrestrial carbon experts, but this has been primarily within SilvaCarbon's bilateral beneficiary partner countries by building the capacity of individuals and supporting networking and in-person information sharing. At the global level, there have not been significant contributions other than SilvaCarbon inputs to the GFOI Methods and Guidance Document. The results of SilvaCarbon's research program are expected to contribute to the broader community once they are completed and published.

The objective does not clearly define “the community,” leaving a question as to whether it refers to the broader international community or the “community” of forest carbon experts within the regions and partner countries where SilvaCarbon is working. If the latter is the case, it can be said that SilvaCarbon has fulfilled this objective simply through addressing the program’s second objective of strengthening capacity. Organizing regional workshops and conducting bilateral TA activities have contributed to capacity development, and by strengthening the capacity of individuals and institutions working on the assessment of forest and terrestrial carbon, this community within each of the bilateral partner countries has been strengthened. Assessing this objective through specific indicators is challenging, as little or no data appears to have been collected on possible metrics, such as the number of forest carbon experts from SilvaCarbon bilateral countries participating in international fora, or the number of international publications produced.

Based on the online survey, the view of government institutional stakeholders is highly positive, with 35 out of 40 respondents believing that SilvaCarbon meetings and workshops have contributed to increasing collaboration (and technical understanding) within the community of experts.

**Conclusion 9:** Any strengthening of the community of forest and terrestrial carbon experts has been primarily through in-person networking at workshops and through person-to-person contact, rather than through use of online tools. SilvaCarbon’s online presence has been a notable weakness.

This SilvaCarbon objective also discusses maintaining a web page with knowledge management and social networking capabilities. SilvaCarbon has a website, but it is not highly dynamic and is not a notable repository of knowledge documents related to forest and terrestrial carbon assessment. The SilvaCarbon website does have a “library” link, but few of the documents linked therein have specific relevance to forest and terrestrial carbon assessment methodologies, and almost none of the documents are produced under SilvaCarbon. The website also does not have social networking capabilities, such as fora, participant directories, or other services. Until mid-2014 the website was hosted through a URL by a US university, and did not contain updated information about SilvaCarbon activities or the countries SilvaCarbon is working in.

In terms of the production of publicly available technical documents, the most significant output has been the GFOI MGD, as previously discussed. Some publications have been supported at the national level in bilateral countries such as the production of field manuals in the Andean-Amazon region; this is also within the work plan for SilvaCarbon in Vietnam in 2015.

One notable SilvaCarbon contribution under this objective has been support for “South-South” learning opportunities and professional exchanges. This has occurred within regions, and between SilvaCarbon regions. For example, SilvaCarbon supported experts from Peru and Colombia to visit Mexico. In addition, experts from Southeast Asia have participated in regional workshops in the Andean-Amazon.

**Recommendation 7:** For the SilvaCarbon website to serve as a valuable community-building and external communications tool, significant additional investment and resources are required. The SilvaCarbon website could be used to build a community of forest and terrestrial carbon experts as well as serve as a valuable knowledge bank. Whether the resources required for the website should be invested depends on the anticipated future of SilvaCarbon.

**Recommendation 8:** The achievement of this objective appears to be more of a side-benefit of SilvaCarbon’s primary capacity-development work through regional workshops and bilateral technical assistance. If one capacity development activity is held, SilvaCarbon has technically contributed to a strengthening of the community. It would be more insightful if the objective specified the purpose of strengthening activities and defined levels of community strength. The SilvaCarbon objective of building a

community of forest and terrestrial carbon technical experts should be more clearly defined and justified and potentially re-structured to narrow the focus.

### 4.3 EVALUATION QUESTION 2: WHAT FACTORS HAVE FACILITATED OR IMPEDED MEETING SILVACARBON OBJECTIVES AND WHY? EVALUATION QUESTION 2.A. IN WHAT WAYS CAN SILVACARBON IMPROVE ITS APPROACH?

Like Section 4.2, Section 4.3 focuses on Program Objectives 1–4, identifying the factors that have facilitated or impeded meeting these objectives and recommending ways to improve SilvaCarbon’s approach. The findings from this section repeat themes from other sections because the evaluation question is a reframing of other evaluation questions. The first subsection covers the program-level factors affecting meeting of the objectives, while the next four address each objective individually.

There is not an objectively measurable means of assessing SilvaCarbon’s success in meeting its objectives; however, the evaluation team collected the contextual information available to identify the most relevant factors that have facilitated or impeded the meeting of SilvaCarbon’s objectives and generated recommendations on methods for improving SilvaCarbon’s approach. These are included where the recommendations do not repeat those found elsewhere in the report.

#### 4.3.1 PROGRAM-LEVEL FACTORS

**Program Flexibility:** The flexibility, agility, and demand-driven nature of the SilvaCarbon program is frequently cited as one of its strengths. This is related to the malleability of the SilvaCarbon initiative, as compared to a firmly structured and long-planned ODA project. SilvaCarbon’s interagency and international relationships have allowed the program to adapt to changing diplomatic relationships and changing beneficiary needs. SilvaCarbon has successfully used the flexible nature of its interagency and intergovernmental structure to its advantage in establishing and maintaining relationships with beneficiary governments in the face of diplomatic challenges. As one example, following the Thai military coup in May 2014, USG’s official diplomatic ties were diminished, but the SilvaCarbon regional coordinator was able to maintain communication with Thai partners even though work in and funding to the country was paused.

**Regional and National Coordinators:** Evidence from multiple sources indicates that country and regional coordinators are effective and are in constant contact with their beneficiary counterparts, monitoring the status of activities, and adjusting to changing needs. Country beneficiaries, missions, donors, and SilvaCarbon staff alike spoke of the benefits of deploying in-country coordinators. All said that it should be pursued wherever and whenever possible, and demand was high for more country coordinators in both South/Southeast Asia and the Andean-Amazon. Some donors specifically mentioned their desire to increase in-country coordination. SilvaCarbon already deploys regional coordinators in the Andean-Amazon, Southeast Asia, and the Congo Basin. The response to their work and the value that they provide to all levels of SilvaCarbon work and interaction has also been overwhelmingly positive to reduce duplication of efforts and improve overall coordination. For example, one donor in Southeast Asia noted that “SilvaCarbon was always just parachuting in experts from the US for one-off workshops until [the regional coordinator] came. With [the regional coordinator] being brought on, we really improved the overall coordination, making sure we were not duplicating efforts on the very same workshops.”

**GFOI Cooperation and Coordination:** As noted above, within the GEO-GFOI structure, SilvaCarbon is the USG contribution to GFOI (according to USG SilvaCarbon stakeholders, its involvement was suggested by the US Presidential Administration) and is responsible for GFOI’s capacity building arm. SilvaCarbon’s five

objectives are closely aligned with GFOI's five objectives and thus there are significant intentional synergies between SilvaCarbon and GFOI. SilvaCarbon takes the lead role in supporting some countries in line with GFOI objectives, while other GFOI members, such as FAO and Australia, do so in other countries. SilvaCarbon and GFOI have collaborated in the Andean-Amazon region through the series of GFOI Regional Capacity Building workshops that SilvaCarbon supported.

**Other Donor Coordination and Leveraged Funding:** Despite the complexity of the context and large number of organizations with which to coordinate, SilvaCarbon has had good coordination with other donors and organizations working on capacity development related to NFMS, which has helped avoid inefficiencies, with a few exceptions. This has been partially facilitated by SilvaCarbon's narrow technical focus, resulting in minimal overlap with other donors' activities.

Other donor stakeholders provided positive feedback on coordination efforts by SilvaCarbon, and just three out of 39 online survey respondents reported being aware of any overlap between SilvaCarbon and other programs or donors, suggesting SilvaCarbon has avoided this potential problem. There was high praise for the fact that SilvaCarbon engaged all major donors prior to their entry into the region, which was considered critical to establishing good working relationships and avoiding overlaps and redundancy. All donor stakeholders interviewed expressed satisfaction with SilvaCarbon's interest in coordination and in collaboration for trainings and workshops. This has helped to ease the large burden from donors that is regularly placed on the same small group of beneficiary country technical experts, an oft-cited challenge for capacity-building efforts. Appendix 9 provides greater detail on SilvaCarbon's generally strong coordination with FAO, FCPF, UN-REDD, and other USAID programs as well as its successes in leveraging funding.

The key international partner working on issues similar to SilvaCarbon in many of the same countries is FAO (responsible for monitoring global forests and forestry activity), which is the primary technical partner of the UN-REDD program working on MRV systems. The FCPF, operating through the World Bank, also provides extensive financial support for the development of REDD+-related MRV systems. However, the work on development of MRV systems through FCPF support is primarily conducted by the national institutions responsible for forest carbon assessment and monitoring, or by individually contracted experts and organizations. Thus coordination with SilvaCarbon is not through a single organization.

UN-REDD is operating in all of the SilvaCarbon bilateral partner countries except Gabon and Peru. SilvaCarbon's positive coordination with FAO was particularly mentioned in the Andean-Amazon region, in DRC, and in Vietnam. In addition, the Bangladesh SilvaCarbon program is directly funding FAO to carry out work on Bangladesh's REDD+ MRV system. Also within FAO's REDD+ work is the Finland-FAO Program, which is specifically working in five pilot countries: Ecuador, Peru, Tanzania, Zambia, and Vietnam. Three of the five Finland-FAO program pilot countries are also SilvaCarbon bilateral partner countries, but despite this potential overlap, SilvaCarbon has worked in a coordinated way with the Finland-FAO program. Partner countries have also highlighted the potential benefit of having multiple donors (i.e., SilvaCarbon and FAO) working on some similar issues in their countries. Country beneficiaries stated that they appreciate having information from different sources about various technical issues, such as forest sampling design for forest inventories or remote sensing data analysis. It was noted that this allows beneficiary countries to compare and contrast different approaches and technologies to find the method that best suits their needs. In cases where SilvaCarbon is working on similar issues to other donors, this can be considered "positive redundancy."

SilvaCarbon has also had good coordination with other relevant USAID supported programs, such as Forest Carbon, Markets and Communities (FCMC), LEAF, Enhancing Capacity for Low-Emissions Development

(EC-LEDS), Sustainable Wetlands Adaptation and Mitigation Program (SWAMP), and CARPE. For example, FCMC and SilvaCarbon worked with the University of Maryland for over 20 months to aid Peru's Ministerio del Ambiente (MINAM). The two USAID programs jointly funded the work and collaborated in the organization and facilitation of the associated efforts, which included:

- Creating a data time series, mining the entire Landsat archive, from 2000 through 2011, including temporal metrics used in classification and change detection;
- Installing the classification processing system in MINAM and training on use of the system;
- Providing continuous guidance through multiple iterations of classifications by MINAM;
- Partnering on generating forest cover and change estimates for 2000 through 2011, and then updates for 2011–2012 and 2012–2013;
- Providing guidance in validation of cover and change, including advising on sampling schemes and methods;
- Contributing to training materials to be used for regional training;
- Training and support to ministries of environment teams in the development of a Land Use and Land Cover map covering the six broad IPCC land-use categories;
- Developing tools and methodologies to support forest cover and carbon mapping and monitoring;
- Identifying and overcoming scientific and operational challenges

In Southeast Asia, SilvaCarbon has held joint workshops with the LEAF program in Vietnam and with the SWAMP program in Cambodia in assessing carbon in mangrove forests. USAID's LEAF program is working to develop university curricula, degrees, and certifications through direct engagement with universities in Asia. SilvaCarbon should consider partnering with LEAF to contribute knowledge, tools, and methodologies, and also to leverage curriculum materials in SilvaCarbon's work.

SilvaCarbon has also leveraged funding from other donors to contribute to the program. For example, SilvaCarbon has leveraged \$72,000 from various partners in support of the regional GFOI series of workshops. In addition, the Norwegian Space Center has supported SilvaCarbon with \$98,000 to develop training materials to train beneficiaries in accuracy assessment methods using the global forest cover change map to estimate nation-specific rates of forest cover change. The training modules were developed from country examples from Colombia, Ecuador, Indonesia and others. The plan is for the modules to be made available online through GFOI, FAO, and SilvaCarbon websites and to be able to be accessed from different cooperation platforms perhaps including Global Forest Watch and COVE tool web mapping applications.

**Institutional Coordination in Beneficiary Countries:** SilvaCarbon is not addressing the commonplace institutional capacity barriers to implementation such as those posed by a lack of interagency collaboration among beneficiary stakeholders. There is a minimum of inter-ministerial collaboration that is required in order to successfully apply the tools and methodologies being promoted by the SilvaCarbon program. This is because, in most governments, the many activities required to meet UNFCCC guidelines (e.g., land use, forest monitoring, remote sensing, carbon stock estimation) are distributed among different offices or agencies. In many ways, the success of SilvaCarbon efforts hinge on inter-ministerial collaboration. Those doing forest inventory work must collaborate with those involved in remote sensing and carbon monitoring; they must share data and apply compatible tools and methodologies. However, some countries, like Vietnam, face challenges regarding data and knowledge sharing between agencies. Also, in the Andean-Amazon countries, there were problems with a lack of communication resulting in the duplication of roles and efforts; in one example, two institutions unknowingly produced incompatible forest maps using different methodologies in spite of being part of a joint working group.

**Technical-Policy Gap:** The evaluation team received repeated feedback regarding the technical gap between technical staff and policy and decision makers, another commonplace institutional capacity barrier to implementation. There are widespread problems with technical staff being unable to reach out to and communicate effectively with decision-makers. Many technical staff commented that they have no access and no lines of communication to policy-makers whatsoever.

**Internal Communication:** As discussed further in later Section 0, communication within SilvaCarbon has been one of the program's strengths. There have been regular Steering Committee and Technical Team meetings held, with good attendance. Informal oral updates on program activities are regularly provided for the countries in the respective target regions. This strong internal communication has greatly assisted with program coordination at the central level.

In addition, program participants responding to the evaluation online survey rated the communication levels mostly positively, with 26 out of 38 either mostly or extremely satisfied (see below), underscoring SilvaCarbon's positive performance in this area.

FIGURE 9. LEVEL OF SATISFACTION WITH SILVACARBON COMMUNICATION



Source: Online survey, Question IA4

requesting increased access to and direct communication with the program. Further, the program website has historically had little information about program activities, or other dynamic content. A communications strategy was developed in 2014 and small steps have been taken to enhance external communications, but much more progress is required.

**Languages:** Language has been both a positive and negative influence in SilvaCarbon's work, depending on the region and the context. The countries within both the Andean-Amazon region and the Congo Basin share common languages: Spanish and French, respectively. This naturally makes regional communication and collaboration much more straightforward. In Southeast Asia there is no common tongue, and English is the common working language, by default. However, relatively few government staff in Southeast Asia speak English fluently, which makes regional collaboration more challenging. In addition, print materials cannot be easily passed between countries to be widely disseminated. It was also noted that generally speaking, within USG Spanish language capacity is greater than French capacity, and there is very limited capacity in any Southeast Asian language.

**External Communication:** In contrast to SilvaCarbon's internal communication, external communication has been one of the weaker areas. While SilvaCarbon's collaboration with donor groups and country beneficiaries is considered a strong suit, most donor partners interviewed did not understand the full scope of what SilvaCarbon does or what it hopes to achieve long-term. In Vietnam, potential beneficiaries not working directly with SilvaCarbon were unfamiliar with the program's services and were unaware that they could partner with SilvaCarbon. In the Andean Amazon, most indirect beneficiaries were

#### 4.3.2 FACTORS RELATED TO OBJECTIVE 1: DEMONSTRATE AND COMPARE FOREST AND TERRESTRIAL CARBON MEASUREMENT AND MONITORING METHODOLOGIES

**Training Workshops as a Capacity Delivery Modality:** Participants place high value on their access to SilvaCarbon's workshops and trainings, and there is a high demand on acquiring the skills and knowledge being offered by the SilvaCarbon program. Requests included having more in-country trainings, expanding seats available at trainings so that more staff could attend, and expanding the quantity of organizations given access to trainings.

**Staying Focused on Practical Needs:** SilvaCarbon staff and other donors noted that it is sometimes difficult to maintain focus on countries' practical needs. As one key informant stated, "Countries don't always need the newest data or more data, they often are okay with what they have and need help using what is already available and also what they can afford into the future." However, when leading international experts are providing TA to developing countries there can be a tendency from both sides to focus on cutting edge methods or technologies, when a more basic approach will suffice.

**Beneficiary Country Internal Coordination and Decision-making Processes:** In the words of a donor respondent: "Top management does not understand much of the directives that come, and those [staff members] who do, don't talk to top management. So the right decisions don't get made in spite of their being the right capacity in the country at some place in the government." Though not directly under the purview of the program, the technical knowledge gap presents real and frequent obstacles to the achievement and sustainability of SilvaCarbon's goals. Helping to bridge the technical knowledge gap is an area in which SilvaCarbon could increase their assistance.

#### 4.3.3 FACTORS RELATED TO OBJECTIVE 2: BUILD CAPACITY OF COUNTRIES TO USE FOREST AND TERRESTRIAL CARBON MONITORING AND MANAGEMENT METHODOLOGIES & TECHNOLOGIES

**Demand-driven Approach:** Among bilateral partner countries, SilvaCarbon's demand-driven approach to changing country needs is considered a strong suit. According to responses gathered during site-visit KIs, SilvaCarbon engagement is responsive and well-tailored to beneficiary's technical needs. At the outset of its engagement with bilateral partners, SilvaCarbon conducted scoping trips to bilateral countries to conduct needs assessments. Beneficiary needs are revisited annually during the development of SilvaCarbon work plans that occurs with some bilateral partners.

**Knowledge and Capacity Retention:** As will be discussed in greater detail in Section 4.5.2, SilvaCarbon countries face problems in knowledge and capacity retention. Sources of the problem include limited access to trainings, high staff turnover rates, and dependence on outside contractors. One knowledge-capture approach cited by both USG and beneficiary country partners was a "training of trainers" (TOT) approach, which must be done in a systematic manner to be effective. An effective TOT approach must provide instruction on how to train others, materials for training, and support for organizing additional trainings.

**Recommendation 10:** During the development of annual work plans, countries should be encouraged to develop country capacity and knowledge retention plans. This should include the development of a systematized and structured TOT approach to enhance sustainability of capacity-development activities.

**Capacity Delivery Modalities: Workshops, Training, Technical Assistance Missions, and Others:** Each method of delivering TA has its pros and cons. Many beneficiary country individuals noted that extended trainings of multiple weeks or more (either in-country or on study tours) are most useful for applying newly learned techniques and skills. However, the limited availability of both the trainers and trainees must be balanced. Intensive one-on-one or small-group trainings were also considered to be effective but susceptible

to staff turnover. Week-long workshops are convenient because they are shorter, but are considered less effective at building capacity to put trainings to practical use.

**Limited Scope for Regional Capacity Development:** There are limits to the potential utility and effectiveness of regional capacity-development modalities. Events that bring together a small number of people from each of the countries in the region (e.g., regional workshops) can be useful for building professional networks and information sharing, but they have limited effectiveness as a training method. Attendance of key technical individuals at workshops may not be consistent, and space is often limited relative to the need at the national level.

**Political Barriers:** According to USG SilvaCarbon participants, some of the challenges SilvaCarbon has faced relate to areas in which political and technical issues intersect. For example, in some countries the term “forest” has not been specifically defined through legislation. Because there is a wide range of land cover types with various degrees of forestation, clearly defining what is and what is not considered forestland has significant implications for landholders and resource-users.

**Institutional Structure: Single Institutional Point of National Contact:** Another issue identified by SilvaCarbon stakeholders is SilvaCarbon’s official partnership with one singular government office or agency as the focal point. This approach allows SilvaCarbon to focus on the key partner’s needs, but there are likely multiple organizations with a link to MRV and NFI processes that would benefit from direct communication about SilvaCarbon activities. Universities in particular were highlighted as potential key partners that have only been engaged peripherally. Through KIIs, the majority of government and non-government beneficiaries in Latin America indicated that they wanted increased access to SilvaCarbon. In Southeast Asia, a majority of stakeholders were uneducated on the TA that SilvaCarbon could provide them.

**Recommendation 11:** Although it may be challenging for SilvaCarbon to engage directly with multiple stakeholders in a country, SilvaCarbon might hold more multi-stakeholder meetings or encourage the primary partner institution to increase multi-stakeholder engagement.

**Recommendation 12:** Invite more relevant players to planning meetings, particularly during annual work planning. Although including more collaboration in this manner will not fix the jurisdictional issues or guarantee successful teamwork, it can at least help eliminate duplication of efforts and ensure that the tools, methods, and data that are being pursued across the relevant agencies are compatible with one another.

**Recommendation 13:** SilvaCarbon should consider increasing the engagement of academic stakeholders. SilvaCarbon has had minimal engagement with universities and other third-party beneficiary groups. Academic institutions can be helpful to retain built capacity within a country. Training the trainers and the development and constant maintenance of staff training programs is expensive and time-intensive; outsourcing this task to academic forestry programs could be an attractive alternative for agencies. Pulling in the academic sector could create a growing pool of highly trained staff from which to hire and replenish its workforce and expand the country technical expert community.

**No Systematic Means to Track Progress:** At the regional-level, needs assessments are conducted at workshops during which country representatives provide individual summaries of their current statuses and then agree as a group upon topics of interest to be covered in the next year or phase of involvement. Over the course of the year workshop participants fill out evaluation forms, which provide some insight into country progress during each workshop. Otherwise, however, country progress and shifting needs are gauged informally by noting the kinds and levels of additional TA countries request throughout the year. According to one respondent, “How we try to monitor things is based on their request for further topics,

so we can see that they are moving toward more specific technical issues.” There is much room for improvement in SilvaCarbon’s approach to tracking progress, especially with non-bilateral partners.

**Recommendation 14:** While SilvaCarbon has sometimes provided follow-up trainings and periodic check-ins after major hands-on trainings, many respondents requested that follow-up be made standard practice, particularly during the early stages of implementation such as data use and analysis training. Follow-up would help monitor outcome level results by assessing the stakeholders’ absorption of the trainings and allow trainers to troubleshoot any impediments to full and successful implementation. SilvaCarbon regional and country coordinators may be well-positioned to monitor follow-up.

**Access to Technical Experts:** Participants and other donor groups cite the access that SilvaCarbon provides partner countries to world-class technical expertise as a major success of the SilvaCarbon program. The level of expertise in developing methodologies and tools on the cutting edge of the forest and carbon inventory fields is very high in the US, and there are few other donor groups delivering trainings at such a high level. One donor mentioned that “You can’t get this level of experts from other bilaterals; this comes around only very infrequently and is certainly very valuable.”

**Technical Experts Familiarity with Regional and Country Context:** Although SilvaCarbon provides access to world-class experts, some may not have extensive regional, country, and ecological context to make their trainings applicable to their target audiences. There is little opportunity to work these problems out during regional, multi-country, or multi-agency trainings, which decreases the trainings’ utility. Even during in-country TA, some beneficiaries noted that it can take a long time for external technical experts to grasp the contextual and political realities within which the technical team must operate.

**Recommendation 15:** A regional or country expert present at trainings could help streamline the process of tailoring trainings to a region’s or country’s specific needs. Another option would be to pair the trainer with a regional or country expert prior to his or her arrival to help make adjustments to the curriculum in advance.

#### 4.3.4 FACTORS RELATED TO OBJECTIVE 3: FACILITATE, IN COOPERATION WITH CEOS AND GEO GFOI, THE COORDINATED COLLECTION AND DISSEMINATION OF EARTH OBSERVATION DATA RELATED TO FOREST AND TERRESTRIAL CARBON MONITORING AND MANAGEMENT

The evaluation team approached this evaluation question with respect to objective 3 in two parts. The team investigated first the level of cooperation with GFOI (cooperation with CEOS is limited) and second, the collection and dissemination of Earth observation data, which does not always occur in direct collaboration with GFOI.

**Defined Role within GFOI:** SilvaCarbon has ramped up its collaboration with GFOI over the course of FY2014. Before then the role of SilvaCarbon within GFOI and even its relationship with GFOI was not clear to all USG SilvaCarbon individuals. But SilvaCarbon’s representatives to GFOI have made great strides in improving this situation, including a coordination meeting in July 2014 in Washington, D.C., and the GFOI Capacity Building Summit in Armenia, Colombia, in September 2014. SilvaCarbon team members feel that the draft internal document on SilvaCarbon’s Role in GFOI (November 3, 2014) has successfully defined and communicated SilvaCarbon’s role and purpose within the GFOI context.

**Data Resources:** SilvaCarbon is limited in its ability to provide access to high-frequency, high-resolution data. SilvaCarbon’s country partners’ level of access to Earth observation data is varied. SilvaCarbon provides Landsat data to countries that request it (both bilateral and non-bilateral), so most at least have access to Landsat data. However, Landsat imaging is low-resolution and limited in its usefulness. The

evaluation team did find countries that hesitated in increasing access to data due to limited capacity to use and analyze it. However, by and large countries were unsatisfied with their lack of access to high-quality, high-resolution satellite imaging or data. Many beneficiaries did say that they had gone to SilvaCarbon to request assistance in increasing access in the past, and most reported that they would like SilvaCarbon to provide them with more assistance in this area in the future. It is unclear whether SilvaCarbon intends or is able to take on a bigger role in this area.

#### 4.3.5 FACTORS RELATED TO OBJECTIVE 4: STRENGTHEN THE COMMUNITY OF FOREST AND TERRESTRIAL CARBON TECHNICAL EXPERTS

**Capacity-building in Related Areas and at the Subnational Level:** One possibly necessary limitation of the SilvaCarbon program is that it is targeted in its efforts. In some aspects this might be a reason for the success of the program, but for the country beneficiaries it can be very frustrating to gain so much advancement in one area but not in related or supporting areas. For example, SilvaCarbon works in carbon monitoring in forest ecosystems only, with very few exceptions. However countries are interested in measuring carbon stocks and developing GHG emission inventories in the LULUCF sector as well.

Within forest carbon monitoring, SilvaCarbon is limited in its engagement with countries. There is a need for countries to develop the capacity of staff at the subnational level to conduct proper fieldwork and use advanced methodologies in line with the work being conducted at the national level. If SilvaCarbon can prompt federal agencies to develop TOT programs, these agencies could institute subnational training programs themselves and further pass along the gained skills and knowledge, as needed.

**Andean-Amazon Region Peer-to-Peer Exchanges:** As Latin America is the only region in the implementation stage, it is unsurprising that the most progress in fomenting regional collaboration had been made there. The effort is a clear achievement for the program. It was one of the most cited successes of the SilvaCarbon program during the site-visit KIIs to South America. Comments from KIIs follow.

- Peru: “The tool developed by MINAM, Colombia, and Carbon Decisions International (Costa Rican company): we have been helping toward the creation of methodologies to collect basic data, they are helping that these data are included in data analysis exchange between countries. [We have] technical and practical discussion in the field on different ways to establish a system of MRV.”
- Colombia: “[We have] not completed the national forest inventory, so the ability to exchange ideas lets us identify that the plan had to be revised, and identify needed adjustments.”
- Ecuador: “Globally SilvaCarbon has helped us understand the global situation and helped us see where Ecuador stands on the global stage. [...] It lets us position ourselves at a global level because we know what is happening in Southeast Asia and Africa, etc. [...] Through trainings we have been able to position ourselves in comparison to other countries.”

#### 4.4 EVALUATION QUESTION 2.B. IN WHAT WAYS CAN SILVACARBON IMPROVE ITS APPROACH TO PROMOTE GENDER EQUALITY IN PARTICIPATION IN AND BENEFITS FROM SILVACARBON?

Attention to gender equality is required of SilvaCarbon as a USG development assistance program. Most USG operating units are required to gather evidence, monitor, and use findings to close gender gaps relating to the needs, opportunities, and gains of people impacted by USG programs and projects. According to USAID Gender Equality and Female Empowerment Policy, USG programming with heavy USAID funding is expected to integrate “approaches and actions to advance gender equality and female empowerment

throughout". If applied, SilvaCarbon would work to reduce gender disparities in access to, control over, and benefit from resources, wealth, opportunities, and services - economic, social, political, and cultural.<sup>10</sup>

As discussed previously in Section 1.2, the evaluation team attempted to assess the extent to which gender considerations were addressed in SilvaCarbon by looking at: a) the role of women in SilvaCarbon program design and implementation; b) distinguishing opinions and perceptions of SilvaCarbon program female beneficiaries and implementers; and c) the extent of collecting and use of gender-disaggregated data, where relevant and possible.

**Conclusion 10:** Gender considerations were not integrated into SilvaCarbon design and implementation, and relevant data was not gathered to assess gender-related outcomes thoroughly. The SilvaCarbon Steering Committee and Technical Team are relatively gender balanced,<sup>11</sup> however, gender representation is not balanced at the country level.

Few qualitative interviewees and only 13.5% of survey respondents note involvement of a representative of gender issues among advisors, ministries, or women's groups in any work planning, none indicated a perception that groups representing women should have been involved, and only one indicated that indigenous groups should have been included. Headquarter- and country-level project documents did not reveal reference to gender considerations, as required by USAID, with the exception of sex-disaggregated data on trainings on selected occasions.

At the regional and country levels, the gender balance among the key informant participants (who were identified by headquarters, regional teams, and through document review) was more of an issue in South/Southeast Asia than in Latin America. There was a stark contrast in female representation, at all levels, from technical to management, between the two regions. The divergence was evident in the gender representation numbers from the KIIs (see Table 6 below) and supported by participants' responses.

TABLE 6. SEX-DISAGGREGATION OF BENEFICIARY KEY INFORMANTS AND SURVEY RESPONDENTS

Region	Male (%)	Female (%)	Total (%)
Steering Committee, Technical Team, & other KIIs	24 (57%)	18 (43%)	42 (100%)
South/Southeast Asia KIIs	15 (88%)	2 (12%)	17 (100%)
Latin America KIIs	6 (60%)	4 (40%)	10 (100%)
Online Survey	59 (69%)	26 (31%)	85* (100%)
<b>Total</b>	<b>104 (68%)</b>	<b>50 (32%)</b>	<b>154 (100%)</b>

\*Of the 97 total online survey respondents, only 85 chose to identify their sex

Gender-disaggregated data on SilvaCarbon activity participation, especially for its capacity building and training activities, is not consistently or systematically collected. With an exception of data reported on the DOS-funded portion of SilvaCarbon, it does not appear that gender-disaggregated data were reported for workshops supported by SilvaCarbon. Where data were available, the breakdown is relatively balanced. For

<sup>10</sup> USAID Evaluation Policy and Gender Equality and Female Empowerment Policy; USAID Automated Directives System (ADS) chapters ADS 203: Assessing and Learning and ADS 205: Integrating Gender Equality and Female Empowerment in USAID's Program Cycle.

<sup>11</sup> Gender representation data for the Steering Committee and Technical Team were drawn from program documentation and from an informal inventory of email listservs for Steering Committee and Technical Team meeting invitations. As the numbers are unofficial, findings should be considered indicative rather than conclusive.

example, data was reported by USGS for eight training activities in the Andean-Amazon region for FY2013, which indicated that the activities included participation by 42 men and 24 women (64%, 36%). Also for the same time period, USFS reported data for 20 training activities, which indicated that 134 men and 136 women participated (50%). For FY2014, reporting from USFS in the Andean-Amazon region for 17 events held indicated that 114 men and 83 women participated (58%, 42%). For FY2013 the Gabon SilvaCarbon program reported that women received 400 (or 25%) of the 1,600 hours of training that were provided. The USFS CARPE program report for FY2014 includes some gender disaggregated data, but it is not totaled, and it is not clear which activities included in the report are SilvaCarbon activities.

Where gender disaggregated data are presented in monitoring reports, there was no evidence of use of the sex-disaggregated data through discussion of implications and actions to balance the trainee and beneficiary numbers. In the online survey, slightly more than half of survey respondents indicated that the balance was in favor of men in terms of participation in TA for the community of forest and terrestrial carbon technical experts, although slightly less than half perceived the balance to be equal.

**Recommendation 16:** Attention to gender equality in SilvaCarbon should be strengthened through ensuring that steps are taken to promote equal access to both women and men to the benefits of this initiative. As SilvaCarbon serves as the capacity building arm of GFOI, it could play an active role in increasing the proportion of women among the in-country technical expert community, which SilvaCarbon is seeking to grow. It could do this by leveraging the access SilvaCarbon provides to technical workshops and trainings to promote efforts towards more equal gender- and other minority group-representation from countries and regions, particularly those with already low female participation rates.

**Recommendation 17:** Sex-disaggregated data at SilvaCarbon trainings should be consistently collected and reported for all training and workshop and other capacity building activities. Report narratives should discuss implications of gaps found when reviewing sex-disaggregated data and include actionable items to address these gaps.

**Recommendation 18:** Effort should be made to bring primary forest carbon management stakeholders to the discussion table together with women's and indigenous groups. Even though forestry management policy regarding community engagement, wood harvesting and foraging, etc. are far outside the narrow scope of the national forest inventory design, mapping, and carbon monitoring and measurement SilvaCarbon is undertaking, the implications of that work spread to and affect communities.

**Recommendation 19:** It is worth reviewing national- and policy-level planning regularly for relevance to and inclusion of marginalized groups. Key program planning documents should be subject to review by USAID gender advisors regardless of whether thematic focus of planning work is directly relevant to gender equality in order to consider opportunities that may be more obvious to staff trained to view with a gender lens. In the absence of USAID gender advisor, especially in the countries with the strong established collaboration with FAO and other UN agencies, it is recommended that UN REDD+ gender advisors be invited to ensure that gender considerations are incorporated into planning and implementation.

## 4.5 EVALUATION QUESTION 3. HOW CAN THE EXISTING INTERAGENCY COOPERATION AND COLLABORATION BE IMPROVED?

### 4.5.1 3.A. HOW CAN THE EXISTING INTERAGENCY COOPERATION AND COLLABORATION BE IMPROVED IN ORDER TO ENHANCE MEETING SILVACARBON OBJECTIVES?

**Conclusion 11:** Overall, SilvaCarbon interagency cooperation and collaboration is effective and significantly better than other interagency initiatives key informants have been involved in. Almost all agency key informants spoke highly of this aspect of the program. Agencies feel that the interagency collaboration strengthens their ability to fulfill their mandate and meet SilvaCarbon objectives.

Overall, cooperation levels were rated by most key informants from the SilvaCarbon agencies as positive. Several interviewees emphasized the absence of fighting over turf, and many highlighted the cooperative spirit within SilvaCarbon as unusual based on their experiences with other interagency initiatives. Interagency collaboration, in terms of planning and avoiding unnecessary overlap, was also seen as generally positive (fostered in part by good cooperation) and one of SilvaCarbon's strengths, but with some areas for improvement.<sup>12</sup> The following are statements were made by agency KIs.

FIGURE 10. KEY INFORMANT REMARKS ON INTERAGENCY COOPERATION AND COLLABORATION

*"It's a very collaborative environment. Everyone [the SilvaCarbon agencies] is chipping in."*

*"Collaboration is great, it's a nice model. Everyone brings different expertise. There's no sense of duplication."*

*"EPA and USFS reportedly arrive at their forest carbon numbers and methodologies separately, don't effectively collaborate to produce one stream of advice."*

*[Other agencies] "are collaborative, beyond the terms and conditions, which is always appreciated in our office."*

*"There is really good communication, collaboration. I'm very impressed."*

*"I think it's a strong program over all... Interagency collaboration is fantastic."*

*"We get points for collaboration with the other agencies and we get benefits from coordinating... Everybody benefits. We give and get information from other players we wouldn't normally have access to."*

*"In terms of duplication, USAID has agreements with all different agencies, and we all have mandates that overlap. USAID basically says 'you must all work together and figure out how you can collaborate'. And that sometimes can be a challenge, when the direction is not super clear. There might be funding from DOI, but they will say, 'all our funding is for workshops, not for training.'"*

As the program developed and matured, the Steering Committee clearly recognized the importance of interagency cooperation and collaboration in conducting its work, having added interagency cooperation and collaboration as a fifth internal objective in 2012. This conscious focus on good cooperation and collaboration may well be a factor contributing to SilvaCarbon's success.

**Conclusion 12:** While inter-agency cooperation and collaboration have many highlights, internal stakeholders consider there to be untapped potential in some partner agencies and in the Technical Team. Some agencies are less active participants (e.g., EPA, NASA), in part related to internal procedural and

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<sup>12</sup> For the purposes of this evaluation, cooperation is understood, in the positive sense, as the extent to which interagency relationships are positive, mutually supportive and that information as well as levels of trust and goodwill are shared. Collaboration is understood to mean the extent to which decisions, activities, funding, and expertise are managed and/or shared; and thus is more concerned with logistics, coordination, and organization.

funding issues. Greater involvement of all agencies could allow SilvaCarbon to generate more synergies among the work-streams of each agency, increasing the program's value beyond the sum of its parts.

The depth of collaboration was found to be uneven among agencies. Some agencies' involvement, specifically that of EPA, NASA, and SI, is less integrated into TA activities, while NOAA's involvement seems the most peripheral. It is likely that the expertise and networks of these agencies could be used to greater advantage. Lack of participation is in part related to bureaucratic or procedural issues, which are specific to the various agencies. Some of these issues include:

- NASA: Operates on a different funding basis, which requires the need for individual research funding and donated staff time. NASA's role is as a space agency with a global, high-level perspective, and it has limited experience on the ground in a country context.
- USGS: Faces restrictions on funding use, specifically related to funding workshops and travel.
- USFS: Has more operational flexibility and can more easily receive and transfer funding on behalf of USAID, but includes a relatively high overhead rate.
- EPA: Conflicting responses were obtained concerning its (desired) level of engagement. Its work supporting GHG inventories (for LULUCF sector) can be seen as separate from forest inventory work.
- Smithsonian Institution: Plays a coordination role that is not clearly defined.

Another area that several KIs identified for improvement includes a number of bureaucratic financial management procedures concerning the transfer of funds between agencies. Also, decision making by the Steering Committee was described as sometimes slow and unclear. There is no formal decision-making mechanism, and the Steering Committee relies on consensus among its members, with decisions approved by USAID and DOS as the funding organizations.

At an organizational/logistics level, a SilvaCarbon agency KI noted that the responsiveness by Steering Committee leads regarding the planning and scheduling of Steering Committee and Technical Committee meetings was not always high, presenting a minor challenge.

The Andean-Amazon region uses performance indicators (going back to FY2012) and is the only region doing so consistently. Some indicators were reported for Gabon in 2013 and 2014, but in a different form than for the Andean-Amazon region. Four indicators cover: a) laws, policies, and agreements; b) number of people receiving training in GCC; c) number of institutions with improved capacity to address GCC issues; and d) number of awards made directly to local organizations.<sup>13</sup>

There are opportunities for more linkages among GHG inventory work and other work on NFMS, REDD+ MRV, and reference emission levels (e.g., between EPA and USFS). GHG inventory monitoring activities are informed by national MRV systems, as well as by GHG inventory tools and applications included in core SilvaCarbon capacity building programs.<sup>14</sup> Partner universities are involved in providing this support. However, according to some KIs, EPA participation is limited to conducting its ongoing GHG inventory activities under the SilvaCarbon umbrella, rather than active coordination with other partners. This may be related in part to staff resource constraints at SilvaCarbon agencies.

**Recommendation 20:** New efforts should be made to maximize synergies and the aggregate technical expertise of the SilvaCarbon program. There is not one clear means to achieve this, but various mechanisms could be explored. For example, the SilvaCarbon Technical Team could review the annual work plan for each SilvaCarbon bilateral partner country to ensure that all of SilvaCarbon's potential TA resources are being applied to the maximum relevant extent.

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<sup>13</sup> See SilvaCarbon Andean-Amazon Region Annual Report FY2012.

<sup>14</sup> See, for example, SilvaCarbon in the Andean-Amazon Region Semi-Annual Report October 2011–March 2012.

**Recommendation 21:** To increase responsiveness, SilvaCarbon should define and streamline decision-making processes based on internal analysis and agreement on which approach would work best within the existing collaborative framework.

#### 4.5.2 EVALUATION QUESTION 3.B. HOW CAN THE EXISTING INTERAGENCY COOPERATION AND COLLABORATION BE IMPROVED IN ORDER TO: ENHANCE SUSTAINABLE AND STABLE MANAGEMENT OF THE SILVACARBON PROGRAM?

The sustainability and stability of SilvaCarbon can be looked at from two different perspectives, one that emphasizes its continued existence as a *program*, and the other its post-program impact at the country/regional level.

**Conclusion 13:** SilvaCarbon management is solid and has improved over the life of the program, building on lessons learned and growing levels of trust among its partners. Internal and external stakeholders see SilvaCarbon as an effective program.

Stakeholder feedback strongly suggests that the program is managed in a manner that promotes sustainability. Cooperation and collaboration are strong; resources are used and managed well and creatively, with partner agencies filling gaps for each other when there is a need; and meetings are held and reports issued regularly. Perhaps the clearest indication of good collaboration (pointed out by a KI from a SilvaCarbon agency) is that, after three years, the partner agencies continue to actively participate in meetings and joint activities. This underlines a belief expressed by many staff at SilvaCarbon agencies that the program is worthwhile and that partner agencies see benefits in working through it.

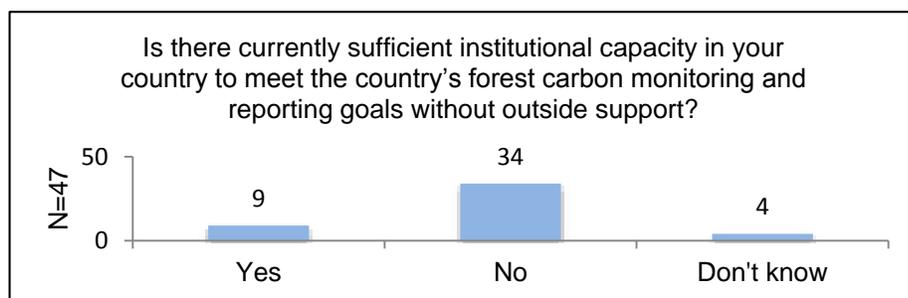
**Conclusion 14:** The sustainability of SilvaCarbon's existence as a program is closely linked to its management and funding. If the strong central coordination mechanisms that SilvaCarbon has at present were degraded, its cohesion as a program would be at risk.

Though the possibility is uncertain, there has been some discussion of a shift to a decentralization of funding, which would come mostly from USAID Missions. However, missions are naturally focused on the country in which they are based, and KIs expressed that it is not clear to them why missions should fund global or regional activities. The KIs from USAID Missions indicated they are content with their current levels of engagement in SilvaCarbon activities. They consider the work to be important and well executed but outside of their purview. In general, missions favor USAID/Washington continuing to lead these efforts. KIs from SilvaCarbon agencies feel this shift could risk the *Balkanization* of the program, splitting SilvaCarbon into a series of loosely related programs. Even if overall funding remains the same, the program could be weakened. Under such a scenario, global/central coordination would be more important than ever in order to hold the program together, while the centralized decision-making power would inherently decrease.

**Conclusion 15:** SilvaCarbon is considered effective by beneficiaries, and partner government demand for expertise and capacity building is generally strong. However, sustaining capacity-building results requires long-term engagement. If SilvaCarbon TA ends before completion of key steps to set up an NFMS (which can take four to five years), it is possible that SilvaCarbon's contributions could be lost. Any disengagement of SilvaCarbon in a bilateral partner country without a well-defined exit strategy could result in the loss of prior progress. At present, results are more likely to be sustained in the Andean-Amazon countries and Gabon than in other countries and regions.

Program sustainability also depends on partner country buy-in. Country partners rate SilvaCarbon as effective, based on KIIs and the online survey. 62 percent of survey respondents rated the program as mostly effective or extremely effective, compared with 21 percent who rated it least effective or only somewhat effective. In fact, many report that they would like more TA. The feedback that SilvaCarbon is doing effective work and more assistance is desired suggests that the program is meeting a clear need.

FIGURE 11. REMAINING NEED FOR ADDITIONAL CAPACITY BUILDING SUPPORT



Source: Online survey, Question C18

In response to the question about whether there is sufficient in-country institutional capacity to meet forest carbon monitoring and reporting goals without outside support, only nine out of 47 online survey respondents replied 'yes.' One online respondent noted that "We need more institutional-governmental support within the country," a sentiment that was echoed by at least one other respondent. This speaks to both a problem and the potential of a program such as SilvaCarbon to address it.

Key informants are divided over the sustainability of SilvaCarbon's work and achievements. They cite factors that may increase its sustainability but also factors that could weaken it. The capacity level at which countries start out is said to have a major impact on how far programs like SilvaCarbon can help them towards finalizing their NFI and moving from IPCC Tier 1 to Tiers 2 and 3.<sup>15</sup> The entire process can last four to five years. The higher the existing capacity, the more a country's ability to take advantage of the relatively sophisticated capacity-building work from SilvaCarbon.

Constant and regular presence of SilvaCarbon experts is deemed highly important for ensuring countries' capacity-building progress. A KI from a SilvaCarbon agency noted that between visits to countries, progress often seems to stall: Data is often not stored well or isn't used; staff don't have the analysis software up and running; or their NFIs are not underway, yet they are incorporating the USG inputs.

Furthermore, there are reported high levels of staff turnover at the agencies with which SilvaCarbon works. When the value of staff increases due to higher skills and training, they are more likely to get promoted or look elsewhere for work. This problem is not unique to SilvaCarbon; most capacity-development programs, particularly in government, face this problem. However, it can be observed that as long as the persons who receive training remain in the country, even at other institutions, capacity is retained by the country.

Intensive one-on-one work, where technical experts work with a single country or team, is said to have the most lasting impacts. Use of in-country coordinators has been effective in creating a constant presence, which improves relationships, communication, responsiveness, and trust. Ministry staff who come to the US to sit in with agencies for a period of weeks or months are said to make strong gains, as they avoid being pulled away for other work, which happens in their home agencies. Department staff are also encouraged to record what they learn through the SilvaCarbon capacity-building activities. However, this is not emphasized in a systematic way. Leaving detailed instructions in a set of manuals would be one way of strengthening institutional memory, even if it cannot fully substitute for one-on-one work with experts.

Countries may not take as much advantage of their own internal resources as they could, especially their respective country's academic institutions. Unlike in the US, the linkages among governments and universities in many countries are reportedly weak. Awareness of the value in such linkages may be growing; in the Andean-Amazon region, SilvaCarbon reported that some government officials "see a need to begin developing not only technical capacity within the government to do so, but also to start to develop

<sup>15</sup> See IPCC. Good Practice Guidance for Land Use, Land-Use Change and Forestry. 2003.

relationships with researchers at academic institutions.”<sup>16</sup>

**Recommendation 22:** SilvaCarbon’s current programming and funding structures are effective and should be maintained if possible. Regardless of the changes to come, functions such as the global Steering Committee and Technical Team must be retained to maintain program cohesion. Likewise, regional focal points who consistently participate in Technical Team meetings should be retained to provide the vital communication-coordination link between regional activities and central coordination bodies.

**Recommendation 23:** To enhance near-term program sustainability, SilvaCarbon should establish timelines for engagement and develop country exit strategies. Also, during the development of annual work plans, countries should be encouraged to develop individual capacity and knowledge retention plans, which could serve as a topic for inter- and intra-regional peer-to-peer exchange.

## 4.6 RESULTS MONITORING

The drawbacks associated with SilvaCarbon’s lack of an adequate results framework and monitoring systems is a recurring theme throughout this evaluation. This section assesses the program’s current monitoring and reporting efforts, identifies their drawbacks, and makes recommendations for improvement.

SilvaCarbon does not have a formal process for monitoring GCC indicators<sup>17</sup> and does not report on quantifiable GCC outcomes. There is also no management unit tasked with overseeing the process, as there would be in the context of a typical ODA project. The issue has not been specifically taken up by any of the external support agencies or been assigned by the Steering Committee. A SilvaCarbon agency KI described this as an issue of resources and priorities.<sup>18</sup>

**Conclusion 16:** SilvaCarbon does not comprehensively aggregate GCC results for the program as a whole. GCC indicators data is reported individually by USFS and USGS to USAID and DOS as required by the respective inter-agency agreements. However, results are not systematically reported or aggregated with respect to GCC or other indicators at either the output or outcome levels.

SilvaCarbon is pursuing seven GCC Clean Productive Environment Indicators (4.8.2), and as of FY2013, had collected partial data on only five of those seven. Further, while these seven indicators may be sufficient to measure whether the program is meeting DOS and USAID objectives (which is something the evaluation team did not assess), they are insufficient for tracking SilvaCarbon’s progress in meeting its own objectives. For example, the most closely related indicators for which the program is gathering data are:

- Indicator 4.8.2-6: Number of persons AND person hours of training completed in climate change supported by USG assistance (report total number and disaggregated by men and women)
- Indicator 4.8.2-27: Number of days of USG funded technical assistance in climate change provided to counterparts or stakeholders<sup>19</sup>

However, these are output-level indicators only. The lack of outcome-level indicators tied to SilvaCarbon’s own objectives implies SilvaCarbon has not fully defined its measures of success as a program, and has not identified the necessary conditions for achieving it.

Even the relatively straightforward activity of monitoring program inputs is generally not carried out. Records

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<sup>16</sup> See Annual Andean Amazon SilvaCarbon report (2013) Support to Research for Forest Carbon Monitoring.

<sup>17</sup> For DOS GCC indicators, see OES/DOS 4.8.2 indicators. <http://www.state.gov/f/indicators/>

<sup>18</sup> On a related note, the lack of a monitoring program for GCC indicators places limits on what an evaluation can achieve in terms of robust analysis and making clear conclusions on the extent of program achievements.

<sup>19</sup> SilvaCarbon Indicators Reporting for FY2013

are not kept of the number of workshops, workshop participants, persons trained, and other such statistics. While such information may have been collected in individual cases, it is not systematically monitored, collected, or aggregated at a global level where it could feed into program-level indicators.

There are several likely reasons why GCC results monitoring has not been carried out at the global program level. While some agencies, such as USFS, may collect data on their own, this is not a program requirement. Since SilvaCarbon is not structured as a traditional ODA project with formal reporting requirements (but rather a coordinated network-based initiative), there was no external requirement for conducting monitoring and reporting. Another reason is that resources were not set aside for it.

SilvaCarbon's Global Program issues monthly and quarterly reports covering countries or regions, for the purposes of systematizing internal reporting and promoting communication among the country/regional programs, according to a KI at a SilvaCarbon agency. SilvaCarbon Steering Committee and Technical Team members also provide oral updates on their activities at monthly meetings, as well as meeting minutes. However, these reports are of an informational nature and do not include systematic tracking of results based on an agreed set of GCC indicators. As a result, aggregate information on SilvaCarbon that can be monitored and tracked, an overview of all SilvaCarbon activities, and information on the degree to which country capacity is being developed is difficult to obtain. It should be noted that reporting has improved recently. The SilvaCarbon Steering Committee is aware of the issue, and since mid-2014, SilvaCarbon (through USFS) has hired a staff person to better document results and produce quarterly reports.

Only the Andean-Amazon region has produced semi-annual and annual reports (for its first two years). Some countries and regions (Vietnam, Southeast Asia, Andean-Amazon, Gabon) have always produced routine reports, while others (Central America, Congo Basin, and Bangladesh) produce quarterly updates. Some partner agencies, particularly USFS, report their own results (e.g., in the Andean-Amazon region). There is some interagency reporting on how funds are spent, but this is driven by interagency agreements (i.e., a funding agency's internal requirements), not SilvaCarbon requirements.

**Conclusion 17:** Monitoring GCC results was not given priority when SilvaCarbon was set up, and resources have not been specifically allocated to develop a monitoring and reporting framework. If SilvaCarbon devoted resources to monitoring GCC results, it would make it easier to track its progress, implement improvements, and communicate its achievements.

Although the present evaluation strongly suggests the program has been effective in building country capacity, the lack of systematic reporting on indicators poses a challenge for SilvaCarbon in measuring its achievements. Introducing GCC monitoring would help SilvaCarbon better communicate its achievements. SilvaCarbon has noted in its draft Communication Strategy (June 2014) the need to better explain the importance of the work to outsiders, define how it contributes toward the greater good, and produce success stories. The ability to draw on quantifiable indicators could assist in this effort.

On the other hand, the evaluation findings do not support the assumption (embedded in the evaluation question above) that reporting on GCC results is linked to problems with collaboration/cooperation levels within SilvaCarbon. It follows that any improvements to already high-quality cooperation and collaboration would not necessarily address monitoring and reporting issues. As noted above, improvement has more to do with prioritizing GCC results monitoring as a goal and then creating an internal management function to be responsible for it. The SilvaCarbon Steering Committee has proven that it has a good track record of identifying program weaknesses and taking steps to address them.

**Recommendation 24:** To improve tracking of GCC results, SilvaCarbon should commit additional human and financial resources to develop and implement a basic program monitoring and reporting framework and

corresponding reporting tools. A structured monitoring and reporting framework would include GCC indicators and be applied in all SilvaCarbon regions. The number of indicators must remain practical and feasible. Indicator data should be aggregated at the global level to the extent possible. This would involve systematic collection of basic data at the input/output level (number of workshops, participants, persons trained, etc.), to document, track, and share data on the program's results. The demonstration of progress using quantitative evidence helps provide a clear picture of the overall value of the program.