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QUARTERLY REPORT

CLIMATE CHANGE RESILIENT DEVELOPMENT

QUARTERLY IMPLEMENTATION REPORT

OCTOBER 2013 – DECEMBER 2013



January 17, 2014

This report was produced for review by the United States Agency for International Development (USAID). It was prepared by Enlilivt-IRG.

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ACRONYMS

ADN	Santo Domingo National District (Ayuntamiento del Distrito Nacional)
AgMIP	Agricultural Model Intercomparison and Improvement Project
AGU	American Geophysical Union
ALM	Adaptation Learning Mechanism (website)
AMEs	Associations des Mères-Elèves
AP	Adaptation Partnership
APes	Associations des Parents-Elèves
CAASD	Corporación del Acueducto y Alcantarillado de Santo Domingo
CAMI	Caribbean Agro-Meteorological Initiative
CATIE	Centro Agronómico Tropical de Investigación y Enseñanza
CCAFS	CGIAR Research Program on Climate Change, Agriculture and Food Security
CCRD	Climate Change Resilient Development Task Order
CCSR	Columbia's Center for Climate Systems Research
CDKN	Climate Development Knowledge Network
CDWG	Communications Dissemination Working Group
CEAS	Episcopal Commission for Social Action
CEQ	Council on Environmental Quality
CGIAR	Consultative Group on International Agricultural Research
CIMH	Caribbean Institute of Meteorology and Hydrology
CIMPACT-DST™	Climate Impacts Decision Support Tool
COMESA	Common Market for Eastern and Southern Africa
CoP	Community of Practice
COP	UNFCCC Conference of the Parties
CPT	Climate Predictability Tool
CRD	Climate Resilient Development
CRIS	Climate Resilient Infrastructure Services Program
CRLEDS	Climate Resilient Low Emissions Development Strategies
CRM	Climate Risk Management
CRURE	(Vietnamese) Center for Research and Planning on Urban and Rural Environment

CRW	Climate Resilient Wheat
CSP	Climate Services Partnership
DCHA	Bureau for Democracy, Conflict and Humanitarian Assistance
DL	Data Library
E.O.	Executive Order
E3	Bureau for Economic Growth, Education and the Environment
ECOWAS	Economic Community of West African States
EGAT	Bureau for Economic Growth, Agriculture and Trade (USAID)
EGU	European Geosciences Union
ELI	Environmental Law Institute
Engility-IRG	International Resources Group/Engility
ENSO	El Niño Southern Oscillation
EVI	Enhanced Vegetation Index
FCMC	Forest Carbon, Markets, and Communities Task Order
FY	Fiscal Year
GCC	Global Climate Change
GCMs	Global climate models
GEF	Global Environment Facility
GFCS	Global Framework for Climate Services
GIS	Geographical Information System
GLOF	Glacial Lake Outburst Flood
GM	Grants Manager
GPR	Ground penetrating radar studies
GUC	Grants Under Contract
HiMAP	High Mountain Adaptation Partnership
HPI	Hue Planning Institute
HQ	Headquarters
ICC	Institute for Climate Change Research
ICCS2	(Second) International Conference on Climate Services
ICF	ICF Incorporated, LLC
ICIMOD	International Centre for Integrated Mountain Development
ICT	Information and Communication Technology
IDB	Inter-American Development Bank
IEC	Information, Education, and Communication
IMHEN	(Vietnam) Institute for Meteorology, Hydrology, and Environment

INTEC	Instituto Tecnológico de Santo Domingo
IPCC	Intergovernmental Panel on Climate Change
IQC	Indefinite Quantities Contract
IRI	International Research Institute for Climate and Society
ISC	Institute for Sustainable Communities
ISET	Institute for Social and Environmental Transition
IT	Information technology
IUCN	International Union for Conservation of Nature
KACC	Khumbu Alpine Conservation Council
KM	Knowledge management
LAPA	Local Adaptation Plan for Action
M&E	Monitoring and evaluation
MINAM	Ministry of Environment
MOU	Memorandum of Understanding
MPA	Marine Protected Area
NAP	National Adaptation Plan
NCAR	National Center for Atmospheric Research
NEPAD	The New Partnership for Africa's Development
NGO	Non-governmental organization
NOAA	National Oceanic and Atmospheric Administration
ONAMET	National Office on Meteorology
PEAR	Post Event Assessment of Resilience
PMP	Performance Management Plan
POC	point of contact
pSIM	parallel System for Integrating Impacts Models and Sectors
Q1	Quarter One
RFA	Request for Applications
SAC	Senior Advisory Committee
SLR	Sea level rise
SIWW	Singapore International Water Week
SOW	Scope of work
SS	South-South
SUNY	State University of New York
TA	Technical assistance
TDY	Temporary Duty

TERI	The Energy and Resources Institute
TMA	Tanzania Meteorology Agency
TMI	The Mountain Institute
UA	University of Arizona
UKMO	United Kingdom Met Office
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UPCH	Universidad Peruana Cayetano Heredia
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
USG	U.S. Government
UT	University of Texas at Austin
V&A	Vulnerability and Adaptation
VDC	Village Development Committee
VIAP	Vietnam Institute for Architecture and Planning
WASH	Water, sanitation and hygiene
Water II IQC	Integrated Water and Coastal Resources Management Indefinite Quantities Contract
WG	Working Group
WIO	Western Indian Ocean
WIOMSA	Western Indian Ocean Marine Science Association
WMO	World Meteorological Organization
YMCI	Yayasan Mercy Corps Indonesia

A. INTRODUCTION

This report summarizes the activities undertaken by the consortium led by International Resources Group (Engility-IRG) during the quarterly reporting period of October 2013 – December 2013, under the Integrated Water and Coastal Resources Management Indefinite Quantities Contract (Water II IQC) Climate Change Resilient Development (CCRD) Task Order. The report covers project management and implementation activities undertaken and/or completed during the reporting period. The CCRD annual Performance Management Plan (PMP) report, current CCRD organizational chart, and annual financial report are provided as Annexes. The remaining sections are divided into four sections: 1) Project Management; 2) Objective One activities; 3) Objective Two activities; and 4) Objective Three activities.

The report includes updates on activities and tasks described in the CCRD Year Three Work Plan:

Project Management, Planning, and Evaluation:

Task PM-1 Develop Year Two Work Plan

Task PM-4 Conduct Advisory Committee Meetings

Task PM-6 Develop & Disseminate CCRD Knowledge Management (KM) Products

Task PM-7 Implement Grants Under Contract Program

Objective 1: Support for USAID Missions and Bureaus

Task 1.1.1 Revise Vulnerability and Adaptation Manual

Task 1.1.2 Develop Climate Briefs and Annexes

Task 1.1.5 New Directions in Pilots and Research

Task 1.2.3 Support the United Nations Development Programme (UNDP) Adaptation Learning Mechanism Website

Task 1.3.1 Provide Capacity Building Support on Mainstreaming V&A

Task 1.3.3 Support Development of USAID's Federal Agency Climate Change Adaptation Plan

Task 1.3.4 Provide support for USAID Integration Pilot in Kazakhstan

Task 1.4.1 Design a Health Program for Inclusion in the climate services program

Objective 2: Coordinate with Other U.S. Government (USG) Agencies to Support Mainstreaming

Task 2.1.1 Conduct Adaptation Partnership Workshops

Objective 3: Identify and Respond to Emerging Issues and Fill Gaps

Task 3.1.1 Support Preparation of National Adaptation Plans (NAPs)

Task 3.1.2 Develop and Pilot Fast Track Implementation Concept

Task 3.2.2 Develop the High Mountain Adaptation Partnership (HiMAP)'s CoP

Task 3.2.4 Implement CoP Pilot Projects and Research

Task 3.3.2 Coordinate Activities of the Climate Services Partnership

Task 3.3.3 Compile and Disseminate Current Climate Services Knowledge

Task 3.3.4 Conduct Case Studies and Assessments of Climate Services

Task 3.3.5 Economic Valuation of Climate Services

Task 3.3.7 National/Regional-level Climate Services Development

Task 3.3.8 Develop Climate Services Products for the Agriculture Sector

Task 3.10 IRAP

Task 3.4.1 Identification of Pilot Cities

Task 3.4.2 CRIS Support To pilot Cities To Accelerate Climate Risk Management

Task 3.4.3 Fast Track Implementation Small Grants Program

Task 3.4.4 Global City-to-City Information Exchange

Task 3.4.5 Provide Information and Technical Resources to USAID Staff

Task 3.4.6 Evaluate CTIS Activities and Recommend Next Steps

Task 3.4.7 Cascadia Vietnam Pilot

This report and all reports and presentations drafted and/or finalized during Fiscal Year (FY) 2014-Quarter 1 (Q1) are provided to USAID through the internal site: www.ccrdproject.com. In addition, performance indicators and achievements for the reporting period are provided in Annex I, an organizational chart is provided in Annex II, and a small grants summary table is provided in Annex III.

B. PROJECT MANAGEMENT, PLANNING, AND EVALUATION

Project management activities during FY 2014-Q1 focused on holding one high-level Senior Advisory Committee (SAC) meeting, establishing tools to better manage communications, and issuing and monitoring small grants awards.

TASK PM-1 DEVELOP YEAR THREE WORK PLAN

The Year Three Work Plan covers the period of August 2013 – July 2014 and is currently being implemented.

TASK PM-4 CONDUCT ADVISORY COMMITTEE MEETINGS

Fall (October 2-3, 2013): Focused on ongoing CCRD activities and communications. The first day was devoted to programmatic updates, discussions on CCRD white papers and next steps, and updates on current and potential National Adaptation Plan (NAP) activities, Climate Resilient Infrastructure Services Program (CRIS) grants and pilots, the Kazakhstan Climate Resilient Wheat project, and Climate Services. The second day focused on the status of CCRD deliverables, communications, and dissemination. Target audiences, key messages, communication products, communications channels, and dissemination strategies for CCRD were identified and prioritized.

TASK PM-6 DEVELOP AND DISSEMINATE CCRD KNOWLEDGE MANAGEMENT PRODUCTS

The CCRD communications manager established several dissemination processes and procedures across the CCRD program.

Proposed dedicated editor. Consultant Jamie Carson of CC Global Communications was proposed as a communications editor. A work order was submitted to USAID for review and rate approval. Her tasks include editing technical documents, creating social media strategy, and some minor website development.

National Adaptation Plans Working Group. Under the leadership of Jonathan Cook, formulated general communications strategy for National Adaptation Plans Working Group. A 30-40 page booklet of USAID's NAPs approach is being developed. A journal article strategy will be developed with Joel Smith of Stratus Consulting.

Created two communications trackers for CCRD staff:

- **Adaptation Journals Tracker:** Assists CCRD scientists and researchers identify publishing outlets. This tracker lists peer-reviewed, scientific climate adaptation journals.

- **Adaptation Networks Tracker:** This tracker assist the CCRD communications teams identify appropriate outlets to disseminate communications products. The tracker is a central clearinghouse of relevant climate adaptation Communities of Practice, knowledge sharing, and communications networks.

Disseminated a variety of technical reports, videos, and fact sheets to USAID and to adaptation networks.

Google Apps. Completed pilot testing of Google Apps and scaled up use with 28 users from CCRD partners and individual consultants. The users coordinate on a variety of CCRD deliverables, such as tracking adaptation journal and networks on select spreadsheets, developing journal articles, editing videos, and generally collaborating on a variety of communications products. A few users have reported issues with using the platform; namely, that their respective organization’s internal information technology (IT) management and internet security infrastructure disallows employees from accessing certain Google products, namely Gmail. While they have found workarounds to these restrictions, the issue prevents a larger scale roll-out and adoption of the product. Designed and distributed Google Apps training with assistance from Austin Morton, Schuyler Olsson, and Lyly Njinga.

CRIS. Developed and scaled up Google Apps platform to accompany CRIS communications manager Wendy Jaglom and her team.

Formed the CCRD Communications Dissemination Working Group (CDWG). A strategy group, the CDWG will hold monthly meetings to assign and manage key CCRD personnel to disseminate communications products. Assignments will include follow-up activities – such as acting as point of contact (POC) for a specific technical report – as needed. The working group comprises seven members: USAID communications staff Andre Mershon; Engility-IRG staff, Michael Cote, Lyly Njinga, and Schuyler Olsson; CCRD writers, Joanna Pratt (Stratus Consulting) and Brad Hurley of ICF; CDWG technical advisor Joel Smith (Stratus Consulting); and Wendy Jaglom (ICF).

TASK PM-7 IMPLEMENT GRANTS UNDER CONTRACT PROGRAM

Climber-Scientist Small Grants

Adam French (University of California, Santa Cruz): During the final months of 2013, Adam advanced his Climber Scientist research program in several ways, including: (1) site visits and the coordination of upcoming project activities with participants in the Lake Parón area and with stakeholders in Lima; (2) dissemination of research results in both Spanish and English; (3) continued research into ongoing conflict resolution, infrastructure maintenance, and collaborative management activities at Lake Parón; and (4) the cultivation of professional affiliation with the Catholic University of Peru. Through meetings with the president of the local *campesino* community and his board of directors and the president of the local irrigators’ association, Adam was able to confirm the willingness of participants in the Lake Parón watershed to move forward with the Santa River Field Excursion during Spring 2014. Adam was also able to arrange support for the excursion from Duke Energy as well as the collaboration of the Episcopal Commission for Social Action (CEAS). Additionally, as an invited speaker at *Aula Magna* – the Catholic University of Peru’s “most important academic event of the year,” he presented a talk on global change impacts in the Santa River basin that highlighted many research results linked to his work under the Climber Scientist program. In addition to research dissemination, his participation in this event provided opportunities for professional networking and the cultivation of a formal affiliation with the university. During this quarter, Adam has also worked on the preparation of two book chapters, one written in Spanish for the forthcoming book “Social Ecological Perspectives, Productive Activities, and Global Change in Latin America” to be published by the Institute of Peruvian Studies, as well as a chapter focused on glaciers and water resource conflicts that presents the Lake

Parón case for a book titled “The High Mountain Cryosphere: Environmental Changes and Human Risks” to be published by Cambridge University Press. He has also continued to advance the translation into Spanish of work published in English on the Lake Parón conflict and management process for distribution to Peruvian stakeholders in 2014. Finally, Adam has continued research into ongoing infrastructure maintenance and resource management activities at Lake Parón, which are progressing towards the completion of a thorough evaluation and maintenance of the discharge infrastructure at the lake as well as the formation of a multi-sectoral management committee for the Lake Parón watershed.

Laura Read (Tufts University): The optimization planning model for Lake Parón is in the testing phase and will be run under several feasible scenarios for management. The final phase of field measurements, installation, and community engagement workshops have been planned for Spring and Summer 2014 with colleagues and local leaders.

Shah Raees Khan (University of Manitoba): Activities and site visits have been canceled for this grant due to the current situation in Pakistan, including both political and religious clashes. CCRD is in the process of canceling this grant.

The Research Foundation for the State University of New York (SUNY) (Mongolia-Altai): During this period, the project team focused on the analysis of the field data gathered in western Mongolia during August 2013 and integration of it with the remote sensing data already accumulated. In summary:

- SUNY has downloaded global climate model projections (HadCM3 Climate Scenarios) for temperature and precipitation for the region and worked to ensure all data are down- and up-scaled as needed to a common resolution to enable final data synthesis.
- SUNY is in the process of identifying likely mean change in precipitation in the region (the model important driver of plant growth in the region) to use as the primary predictor of how rangeland is projected to change in the region. More specifically, in December three graduate students were engaged to focus on developing best models to predict changes in the percentage of vegetation cover due to climate change in 2020-2090 in the mountain landscapes of Mongolia.
- SUNY will next develop models predicting wildlife distribution and re-project likely change in wildlife occurrence based on the models developed in December 2013. Finalizing these models and their outputs will be the project focus for the next few months.
- Projections will then be converted to map form to use as a communications device for sharing the project outcomes with herders in 2014.
- SUNY will continue to refine the climber-scientist ecotourism guideline document developed by Castner for application in western Mongolia.
- SUNY will focus on preparing final project outcomes/products and organizing communications workshops with regional policy makers and local herders during February – May 2014 with the intent to travel to Mongolia in May to execute the meetings and workshops.

There are no delays at present with grant activities except for the initial delay in moving the project to Mongolia. Otherwise, the project is going according to expectations with no significant obstacles encountered nor anticipated.

Project personnel include Syracuse, New York-based project personnel – three females (Castner, Karpenko, and Egorova) and four males (Mountrakis, Paltsyn, Bloom, and Gibbs) as well as Mongolia-based local/indigenous collaborators – Chukhan, Bagdat, Khairat, Tattembek, Munkhtogtokh, Tolgond, and Atai Ayatkhan.

Resources Himalaya Foundation (Kathmandu, Nepal): The project titled “Building climate change resilience capacity of mountain people in Nepal” has been successfully completed at the end of this quarter. During this reporting period (July – October 2013), the project conducted the following activities:

1. Pilot Adaptation Technologies

The major activity of this quarterly was implementation of pilot adaptation technologies in the four project Village Development Committees (VDCs). The adaptation projects have been undertaken through users’ groups of the respective VDCs formed through a participatory process in which 116 local residents, including 47 females, actively participated. Altogether, 19 users’ groups were formed and the pilot projects are to benefit some 777 families suffering from the dry spell and drinking water shortage. In Chisapani VDC, a total of 105 households benefited through plantation and barbed wire fencing around a water reservoir at four vulnerable sites. In Himganga VDC, as a means of alternative farming, pomegranate plantation was promoted, which will benefit 122 households. Irrigation facilities were also improved in this VDC, supporting some 104 families. In Khaniyapani VDC, the adaptation technology emphasized water conservation through reservoir construction, benefiting 147 household. For livelihood support, apple plantation was also promoted there, involving 70 families. In Manthali, the headquarters of the district, the process of lifting water from the river was adapted, which has supported 79 families, and reservoir construction has provided water to 110 families.

2. Capacity Building

Project team leader Dr. Dinesh Raj Bhujyu participated in a third high mountain workshop titled “Managing Climate Change in High Mountain Glacial Watersheds: Promoting Social, Scientific and Institutional Collaboration” from July 11-23, 2013, held in Huaraz, Peru.

Project staff participated in a report writing training, remote sensing, and advance Geographical Information System (GIS) training.

Project Team Member GIS Analyst Mr. Janardan Mainali presented a paper in the International Conference on Forests, People and Climate; Changing Paradigm (August 28-30, 2013) in Pokhara, Nepal.

3. Preparation of Local Adaptation Plan for Action (LAPA)

The project prepared a Local Adaptation Plan for Action of the four project VDCs. In addition, LAPA guidelines for drought-prone districts was also drafted after consulting with LAPA experts. The LAPA guidelines at district level is the first such initiative in Nepal.

4. Communication and Sharing Workshop

In order to disseminate project achievements, a one-day Communication and Sharing Workshop was organized on October 31, 2013. The workshop was supported by the Ministry of Federal Affairs and Local Development. Forty-six participants from governmental, non-governmental, and international organizations, as well as concerned stakeholders working in the field of climate change adaptation, participated in the workshop. During the interaction, the graduate students involved in the project also shared their research findings. Four students of environmental science at Tribhuvan University are preparing their MSc dissertations.

5. Information, Education, and Communication (IEC) Materials

The project prepared a video documentary and a poster as a part of information, education, and communication materials. The documentary highlights the chronic water shortage problem of project district Ramechhap.

Raúl Loayza-Muro (Universidad Peruana Cayetano Heredia (UPCH), Lima, Peru)

Raúl Loayza-Muro evaluated physical and chemical parameters of water quality (pH, conductivity, temperature, dissolved oxygen, and metal concentrations) in reference and polluted lagoons and streams, and ultraviolet radiation along an altitude gradient between 3,200 and 4,500 m a.s.l in the Quillcay subcatchment in the Cordillera Blanca. The results have been shared with the authorities of the rural communities participating in this project.

This survey creates a base-line of environmental quality and bioindicator diversity in high altitude Andean streams and headwaters.

A final workshop to show the complete results of the project is being organized with the support of the Universidad Peruana Cayetano Heredia, The Mountain Institute (TMI), and the Ministry of the Environment. Also, a hands-on field workshop will be organized for training local people on bioindicator sampling, use of identification color keys, and interpretation of results on water quality.

Raúl also participated in the presentation of the Citizen Conference and Technical Committee of the Waraq Commonwealth, held in Huaraz on December 18, 2013. He presented part of his results on water quality and biodiversity in the Quillcay sub-catchment and explained the rationale of an upcoming project on phytoremediation of soils and water systems affected by metal pollution in the Cordillera Blanca. This initiative will be supported by USAID, the Ministry of the Environment, the Universidad Nacional “Santiago Antúnez de Mayolo,” the Water National Authority, and the Huascarán National Park within the Water Management and Climate Change Adaptation Program.

Central America Small Grants

Private Institute for Climate Change Research (ICC) (Guatemala): The development of a mechanism for technology transfer on adaptation to climate change for maize and bean crops is the main goal of this project, aimed at the promotion of Communities of Practice in four sites of the Guatemalan Pacific slopes (two in lowlands and two in highlands [one with indigenous – K’iche – beneficiaries]). The core activity of the project was the delivery of certificate courses (called *Diplomados*) targeted at farmers of maize and bean crops. Since this activity was completed, the work during this quarterly period (October – December) focused on continuing the remaining project activities to finalize the project and strengthen its impact over time. The project ended on December 15, 2013. The project’s main activities during this period were:

- A research project evaluating the potential of solid rain – polyacrylate potassium – for bean crop in Parramos, Chimaltenango (at the undergraduate level) was completed.
- A new experiment was established for the research project evaluating the potential of solid rain –polyacrylate potassium – for maize crop in La Máquina, Suchitepéquez (at the undergraduate level), as the results obtained in the previous experiment presented no significant difference between treatments (with and without polyacrylate potassium) due to an abnormal (rainy) mid-summer drought. The new experiment is being conducted during the dry season. Posters of the aforementioned research studies have been produced.
- ICC carried out gender engagement sessions (two extra training sessions per site in two out of four project sites) targeted at women only. Addressing female beneficiaries separately will help to increase women’s engagement and empowerment as well as complementing and consolidating knowledge gained during *Diplomados*. The sessions covered the following topics: climate change and vulnerability of women to its effects; leadership and self-esteem; effects of climate change on food security; and how gender inequality could lead to greater vulnerability.
- Similarly, two additional training sessions were held per site to promote information and experience sharing and joint work. The idea behind these sessions is to transform a process led

by the ICC into a process led by beneficiaries and to contribute to the creation of CoPs in the project locations. The sessions helped explain the idea behind a CoP and how beneficiaries could benefit from it; in addition, beneficiaries were asked in the first session to identify problems and constraints, which were addressed in the second session (e.g. in Nahualá, Sololá, given beneficiaries' limited money to acquire fertilizers and related products, ICC explained how to produce organic fertilizer – or compost).

- In order to increase farmers' self-planning and resilience to climate change, ICC is working to facilitate access to agrometeorological information by creating a structure for weather data communication concurrently with the development of climate tools. The structure benefits from *Diplomados'* experience as the most proactive participants (six for each of the project sites) were chosen. This activity resulted in three phases, performed during the quarter: the first, to train facilitators on climate tools and weather data communication; the second, to develop climate tools; and the third, to implement the structure for weather data communication by sending the climate tools to some of the facilitators (at this stage no information will be passed on to beneficiaries, and facilitators will work on validating the information contained in the climate tools).

The trainings addressed, amongst others, the following topics: facilitators' role, concepts of probability, soil sampling, and interpreting climate bulletins. ICC developed and sent to some facilitators climate tools for Nueva Concepción (Escuintla) and Nahualá (Sololá). Each tool contained rain forecast for seven days, and ENSO (El Niño Southern Oscillation) forecasts for a month.

- The ICC generated a set of indicators (a tool) to allow project assessment in the short-, middle-, and long-terms, as a proxy for determining higher resilience to climate change. This tool consists of surveys at different periods of time after the promotion of adaptation practices, in order to determine if beneficiaries implemented adaptation practices as a result of the project.
- The ICC has produced a draft of a book containing climate change adaptation practices and recommendations for staple crops farmers.

CATIE (Centro Agronómico Tropical de Investigación y Enseñanza) (Costa Rica): During the period, only the revision of the documents produced, the translation of some of the documents into English, and the preparation of the final workshops in February 2014 was carried out. By the end of December, the English draft version of the technical notes had been finalized and these are now in revision, to be complete by the end of January 2014. Starting in October, CATIE has also been looking at how results can be integrated into the activities of the regional MAP project on Climate Smart Territories, which works in the same landscapes as CATIE's activities. It was agreed that CATIE will take up the technical notes and manual in their farmer field schools. CATIE is looking now at integration of indicators on the impacts of improved livestock management into the monitoring framework for the MAP project.

As part of CATIE's revised project framework, they decided that the study on Climate Change impacts on seven silvopastoral species will be revised and edited to make it into a publishable document, as part of the technical series of CATIE, in Spanish.

Zamorano Pan-American Agricultural School (Honduras): Zamorano-established farms were the scenarios for community trainings and are now demonstration sites for a variety of practices for adaptation to climate change. The practices that can be seen include soil conservation, water harvesting, integrated crop management, and, more recently, crop diversification and nutrition alternatives in some sites. Farmers harvested and commercialized the different crops that they experimented with for the first

time and are pleased with the results, particularly in El Salvador. In Nicaragua, diversification has paid off since there were major losses due to drought for maize crops. Practices have expanded to neighboring farms, particularly in El Salvador and Nicaragua, and more families have benefited from this expansion. During project implementation the project has provided technical assistance and support to the farmers who have encountered climate-related difficulties in their production (droughts, destruction caused by winds, storm runoffs).

A video report was developed summarizing the activities carried out by each of the different farms. A biophysical/socioeconomic study was completed on the demonstration sites, which includes baseline information on climate, socioeconomic conditions, and soil analysis for the sites and the farmers. This will help in the future to provide inputs for measuring impact of project activities in the farms and validate our technical approaches.

Training activities continued at the CEFEDH Center. Zamorano also provided tools for teaching agricultural practices and continued with follow-up to the greenhouse production activities.

The demonstration site at Zamorano Campus has become one of the most attractive learning-by-doing scenarios for our students and also for national and international visitors interested in agriculture and adaptation to climate change. At this site, different kinds of practices can be observed and each group of students has designed and implemented new ideas that contribute to the scenario. During the last quarter, a permaculture garden was established with the support of funds from other projects that have been leveraged there have been improvements to all teaching conditions at the demonstration site (e.g., a field class room for students, seats and blackboard, green houses, tools, etc.) Supporting funding has been provided by the Hort Crisp Project also financed by USAID and implemented by University of California at Davis with Zamorano and by remaining funds from PROMIPAC Project under financing of Swiss Cooperation. During the last quarter, 68 students (37 men and 31 women) from 11 countries were trained.

Climate Resilient Infrastructure Services (CRIS) small grants

In consultation with USAID, **five** grants were recommended and approved for funding. Three of the grants are active and another two are in the process of signing the grant agreement. The objective of the first call for proposals was to identify and fund projects that involve direct collaboration with city governments in developing countries to increase the climate resilience of infrastructure services.

The Energy and Resources Institute (TERI): To date, three trips each have been made to the two cities. The first trip to both cities involved meeting the city authorities and making a presentation on the project objectives and seeking support. The visits to the cities were successful with full support extended from the city authorities which included the Municipal Corporations of the cities.

Component One on infrastructure inventory is based on intensive data collection. The data lists had been prepared and shared with the CRIS team. Data collection in the two cities has been completed. Initially, due to political unrest and then two consecutive storms in Vishakhapatnam, the data collection trips had to be postponed; however, the team was able to make up for the time lost and most of the data required has been procured at this stage.

The ongoing tasks within the project include:

1. Assessment and preparation of draft inventory on infrastructure assets in the project cities. The inventory would become the basis for identification of infrastructure that would be critical in case of climate impacts and sea level rise (SLR) in the cities.

2. Review of regulations, policies, rules and guidelines for planning of infrastructure and services in coastal cities in India and the project cities in particular to identify minimum benchmark in planning and development of infrastructure in coastal cities.

In addition, the following tasks will be initiated:

1. Converting all autocad maps (spatial information collected from cities) into GIS format
2. SLR analysis and climate impact analysis on the cities
3. Review of available literature on impacts of sea level rise on coastal cities and its infrastructure.

Yayasan Kota Kita: The local Indonesian NGO Yayasan Kota Kita is working with the local government of Manado, in Northern Sulawesi, Indonesia to conduct a climate change vulnerability assessment of the city and a capacity building program to introduce adaptation measures. Manado is similar to many Indonesian cities in that it is both threatened by multiple climate hazards and is also urbanizing rapidly; in January 2014 there have been serious floods to the city center. Such conditions present challenges to city governments that need to balance policies that reduce physical and social vulnerabilities while also promoting urban development and growth. The CCRD grant is supporting Yayasan Kota Kita to partner with government officials to raise their awareness about these challenges, to prioritize critical urban infrastructure vulnerabilities and identify actions to increase resilience, and to support efforts to train stakeholders how to best implement adaptation measures. The grant is thus designed to help the city government learn about and implement measures to reduce the city's vulnerability to climate change. During the last quarter of 2013, the Yayasan Kota Kita team conducted a climate change vulnerability assessment of the city, collecting information from a variety of sources through interviews and site visits, and analyzing it to identify areas of the city where social and physical vulnerabilities overlap. In many cases it was found that these were areas of strategic importance for both the urban development vision of the city and where adaptation strategies can reduce vulnerability. For example, it was found that Manado's coastline is both prized for its eco-tourism potential and is also used for commercial purposes; flooding, however, threatens to counteract these positives for the city, a consequence of recent large-scale infill projects. By exploring better planning options it is possible that development along the coastline can protect natural assets and lead to economic benefits. The vulnerability assessment will help government officials to focus on these issues and identify training modules they will find most useful to help tackle them. By providing skills and better understanding of climate change it is hoped that they will be better equipped to implement the city's vision of a sustainable development future.

Academic small grants

CCRD awarded nine new grants under the small grants program. All the grant agreements have been signed except for one which is in the negotiation process. These grants were designed to support engineering and physical and social science research related to CC impacts and adaptation. There is particular focus on supporting sustainable development outcomes despite CC stressors.

Solicitations and New Grant Activity

Scaling Up Climate Services for Farmers in Africa and South Asia: There is still a delay in awarding the climate services grants. CCRD is waiting to receive the remaining project funds from the USG. Once it has received the additional funding, CCRD will move forward with grant agreements for the five recommended grants for funding. These climate services grants were developed from the CCAFS/WMO/USAID/CSP workshop held in December 2012. Workshops were convened in June and July 2013 to assist potential applicants develop their proposals. IRI worked with CCAFS (CGIAR Research Program on Climate Change, Agriculture and Food Security) and other partners to include a session on climate services for smallholder farmers at ICCS3.

C. OBJECTIVE 1: SUPPORT FOR USAID MISSIONS AND BUREAUS

Under Objective 1, CCRD provides support for USAID Missions and Bureaus. During FY 2014-Q1, CCRD continued work on the climate mainstreaming guidance and supporting Annexes/papers, held a training of trainers in Macedonia, and provided support for the USAID integration pilot in Kazakhstan.

ACTIVITY 1.1 GUIDANCE, PILOTS, AND RESEARCH

Task 1.1.1 Revise Vulnerability and Adaptation (V&A) Manual

During the first quarter, the manual was formatted and printed to be taken by USAID's GCC Office to the 19th Conference of Parties in Warsaw, Poland for comment. The CCRD Team awaits clearance from USAID to finalize the document and make it publicly available. CCRD partner ICF has been working on updating the technical Annex on climate vulnerability assessment.

Task 1.1.2 Develop Climate Briefs and Annexes

CCRD staff made progress during the quarter on four Annexes. Emphasis was given to ensuring that Annexes complement the mainstreaming guidance. A final version of the Water Annex was prepared and the remaining three Annexes are at various advanced stages of development.

Water Annex

During this quarter, a final draft of the Water Annex was prepared for USAID to distribute at the November 2013 United Nations Framework Convention on Climate Change Conference of the Parties (UNFCCC COP) in Warsaw. A few additional changes were made in response to USAID review, including the addition of an adaptation action on governance. The Annex, however, was not distributed and we are now awaiting feedback from USAID on a final review and necessary steps to get final USAID approval.

Coastal and Marine Annex

A new draft of the Coastal Annex was developed, which responded to comments from USAID and other external reviewers. The draft has been shared with USAID's GCC Office for review.

Governance Annex

CCRD partner Stratus Consulting has begun to revise the Governance Annex. Only preliminary work was done in FY 2014-Q1. We anticipate significant revision to this document in FY 2014-Q2.

Vulnerability Assessment Guidance Annex

During this quarter, the Vulnerability Assessment Annex was revised and re-submitted to USAID. Considerable effort was devoted to reconfiguring the Vulnerability Assessment Annex to conform to the new Climate Resilient Development framework. In addition, the CCRD team made progress in

improving the practicality and readability of the document. In the upcoming quarter, the CCRD team will work to address USAID's comments on the most recent draft and revise the document accordingly.

Infrastructure Fact Sheets and Synthesis Paper

This quarter the CCRD team continued to distribute the fact sheet booklets to partners, stakeholders, and other groups to facilitate collaboration and peer learning. In addition, the CCRD team made edits to select parts of the Infrastructure Fact Sheets and Overview section to align with the revised Climate Resilient Development (CRD) Framework. These changes include updates in the Overview that discuss each step of the CRD Framework in detail as well as updates in each fact sheet that outline potential actions for the sector (i.e., transportation) in each framework step. These changes were sent to Engility-IRG for review and revised according to comments received.

The edited fact sheet booklets were reformatted and 10 copies were printed for USAID's Infrastructure Workshop on December 17, 2013. An additional 240 copies of the fact sheet booklets are planned to be printed by early January 2014. Furthermore, the fact sheets were sent to a translator to be translated into Latin American/Caribbean Spanish in order to reach a wider USAID audience. This translated version is currently going through a quality assurance/quality control process, after which it will be formatted into an InDesign template, printed, and bound. This process is expected to be completed in the next quarter.

Climate Info Users Guide

CCRD partner ICF made progress in considering specific applications for the Climate Info Users Guide in CCRD programming. In particular, ICF is considering ways in which the guide could be used in the context of the Climate Resilient Infrastructure Services (CRIS) program. ICF is expecting to significantly move this effort forward in the upcoming quarter.

Exploring Climate Resilient Low Emissions Development Strategies (CRLEDS)

In this quarter, CCRD partner ICF continued to develop a paper describing the concept of climate resilient low emission development strategies. ICF reviewed existing literature for examples of synergies and conflicts between climate resilient development and low emission development. In addition, ICF coordinated with USAID/Jamaica to potentially utilize materials from ongoing low emissions and climate resilience projects in Jamaica in the paper. In the next quarter, a draft of this paper is expected to be submitted to USAID. Work on the CRLEDS pilot will also continue in the upcoming quarter.

Task 1.1.5 New Directions in Pilots and Research

Preplanning for Climate-Resilient Reconstruction and Rapid Growth

CCRD partner ICF made progress on developing the Preplanning Paper, including conducting an internal review of the document and additional revisions based on the review's comments. In particular, the revisions focused on making the Preplanning Paper consistent with USAID's Climate Resilient Development framework and other concepts, such as the Vulnerability Assessment Annex. In the upcoming quarter, ICF expects to complete an additional review of the revised document and submit a final paper to USAID.

Post Event Assessment of Resilience (PEAR)

The CCRD team made significant progress on PEAR. In particular, they have developed a detailed outline for preparing for and executing a PEAR process. This outline includes: (1) setting the stage, (2) mobilizing for the assessment, (3) assessment/fieldwork, (4) post-field visit analysis, (5) assessing adaptive capacity, and (6) overlaying climate change. The outline will be presented to the GCC team in order to agree on a path forward, which will then be pursued in upcoming quarters.

ACTIVITY 1.2 INFORMATION, TOOLS, AND SCIENCE AND TECHNOLOGY

Task 1.2.3 Support the United Nations Development Programme Adaptation Learning Mechanism (ALM) Website

Progress on the redesign of the ALM site continues. The CCRD team meets with Aten Design Group weekly by telephone to raise and resolve issues and keep the process on track. Jenny Frankel-Reed (USAID) and Andrea Egan (UNDP) provide input at important decision points along the way, such as the initial site design and layout of specific pages. Adjustments to the design and wireframes based on USAID and UNDP feedback are in progress, and Aten is moving forward with building the site architecture. The feedback loop between Aten and CCRD/USAID/UNDP has been long, which has pushed back the expected completion date for the site. The planned launch date is now the second quarter of FY 2014.

ACTIVITY 1.3 TECHNICAL ASSISTANCE AND CAPACITY BUILDING SUPPORT

Task 1.3.1 Provide Capacity Building Support on Mainstreaming V&A

Training of Trainers on Climate Change and Municipal Adaptation Planning

The USAID Mission in Macedonia contacted USAID/E3 to request assistance in training the USAID-funded local non-governmental organization (NGO), Milieukontakt on USAID's Climate Resilient Development Framework. CCRD Chief of Party, Glen Anderson and ICF staffer Charlotte Mack, worked with Nora Ferm and Lela Bhagwat in the GCC Office to develop the agenda and training materials and conduct the two-day training of trainers on October 28-29, 2013. On the next three days, the training team worked Milieukontakt and their local trainers to adapt the Climate Resilient Development Framework training for their work with small municipalities in Macedonia. On November 2, Ms. Ferm, Ms. Mack, and Dr. Anderson traveled to Bogdanci in Southern Macedonia to observe the Milieukontakt trainers in presenting a one-day stakeholder workshop. In addition, Dr. Anderson presented a case study on Kazakhstan as an illustration of the Climate Resilient Development Framework. On November 4, Dr. Anderson and Ms. Mack debriefed with Milieukontakt on the Bogdanci training and provided suggestions for working side-by-side with municipalities to integrate climate issues into municipal strategies.

Task 1.3.3 Support Development of USAID's Federal Agency Climate Change Adaptation Plan

In FY 2014-Q1, ICF worked with USAID/Egypt staff to address comments on the Egypt Vulnerability Profile, which was one of four profiles awaiting clearance from the FY 2014 Plan process. The Vulnerability Profiles for Jordan, West Bank and Gaza, and Central Asia were also updated, edited, and formatted in preparation for clearance. These four profiles have now been cleared and will be posted on USAID's internal website (but not made publicly available). This work brings the FY 2014 Adaptation Plan to a close.

New guidance on the implementation of requirements under Executive Order 13653 is expected from Council on Environmental Quality (CEQ) very shortly. This guidance will shape our efforts under this Task during Q2 when the FY 2015 Plan will start being developed.

Task 1.3.4 Provide support for USAID Integration Pilot in Kazakhstan

CCRD continued to support the USAID-funded and UNDP-implemented Climate Resilient Wheat (CRW) Integration Pilot during the reporting period with activities focused on improving climate services, finalizing the first of three videos, and assisting UNDP with the design of a study tour to the US.

CCRD Support for Strengthening Climate Services

Detailed discussions took place between Brad Lyon, Tony Barnston, and the Kazakhstan climate forecasters and their supervisors regarding the development of new monthly and seasonal climate forecast methods, as well as methods for drought monitoring and prediction. Such approaches will supplement the current analogue forecasting method used for all time scales beyond daily weather. Discussions of the details of making probabilistic forecasts of drought, and monthly and seasonal climate, also took place. During a one-week visit to Kazakhstan by Brad Lyon and Tony Barnston in December, with the aid of the Hydrometeorological Center's IT Director, the collection of historical climate forecast data that resided in Excel files (most of which were recently digitized from paper as part of this project) was converted to text files. The data in these files were input to software that produced a first-ever successful historical verification of monthly and seasonal climate forecasts issued since 2000.

To help identify sources of climate predictive skill, several forecasters (three women) were trained to use IRI's Climate Predictability Tool (CPT). Each of the three women received approximately four hours of informal training.

Plans were made regarding the details of the installation of a stand-alone subset of International Research Institute for Climate and Society's (IRI) Data Library, to occur in Spring 2014. This Data Library will facilitate the automation needed for drought monitoring and prediction, and will make possible easier extraction of predictor data sets for use in CPT climate prediction experimentation.

CRW/CCRD Climate Resilient Wheat Videos

In the previous quarter, videographer, Daniel Byers and a local videographer, shot several hours of footage during the CRW Field Days and filmed several interviews in Washington, DC and Kazakhstan. During the reporting quarter, the local videographer filmed the harvesting of wheat and was granted access to film wheat being loaded into grain elevators. In addition, UNDP completed the translation of all Russian-language interviews. Mr. Byers revised the storyboard for the first of three videos and expects to have a draft ready to be reviewed by CCRD, USAID, and UNDP next quarter.

CCRD Support for the CRW Study Tour

CCRD Chief of Party Glen Anderson assisted UNDP in developing the program for the study tour planned for March 2014 to the United States. The proposed study tour will include visits to the National Drought Mitigation Center and the University of Nebraska Agricultural Research Center in Lincoln, Nebraska, Syngenta's Advanced Crop Lab in the Research Triangle in North Carolina, USAID and United States Department of Agriculture (USDA) in Washington, DC and the IRI at Columbia University in New York.

D. OBJECTIVE 2: COORDINATE WITH OTHER US GOVERNMENT AGENCIES TO SUPPORT MAINSTREAMING

Objective 2 activities during the year focused on support for the Adaptation Partnership (AP), including convening a workshop in Addis Ababa, Ethiopia and preparing a summary report following the Climate Change Basics Training for MPA [Marine Protected Area] Practitioners in Grahamstown, South Africa.

ACTIVITY 2.1 ADAPTATION PARTNERSHIP WORKSHOPS

Task 2.1.1 Conduct Adaptation Partnership Workshops

Climate Change and Security (Addis Ababa, Ethiopia)

The follow-on workshop to the 2012 *Climate Change Adaptation and Peacebuilding in Africa* took place October 14-16, 2013 in Addis Ababa, Ethiopia. The workshop, *Climate Change Adaptation and Peacebuilding: Developing Conflict-Sensitivity Guidelines for Adaptation Policy in Africa*, was held in consortium with The Woodrow Wilson Center, Institute for Security Studies, USAID, and the US Department of State. The purpose of the follow-on workshop was to address findings and deliberations of the first workshop and identify specific entry points of opportunity and practical ways forward to ensure the incorporation of conflict-sensitivity guidelines in climate change adaptation plans. Specific objectives included the facilitation of an ongoing community of practice around climate adaptation and peacebuilding, and further develop conflict-sensitive climate change adaptation guidelines that could eventually be mainstreamed into national adaptation plans or similar implementation opportunities in Africa.

Following the workshop, Peter Schultz (ICF), Aly Lyons (Wilson Center), and Mukul Sharma (Engility-IRG) presented at the November Adaptation Community Meeting. The presentation focused on key findings coming out of the workshop and recommendations for strengthening a Community of Practice around climate adaptation and peacebuilding. The team is planning a US Government stakeholder meeting to garner support for the CoP from outside donors and government agencies. The event is scheduled for February 20, 2014 at the Wilson Center.

Climate Change Basics Training for MPA Practitioners (Western Indian Ocean [WIO] region)

In December 2013, a summary report of the November 2013 Understanding and Communicating Climate Change and Mentor Training was completed for dissemination. The National Oceanic and Atmospheric Administration's (NOAA) International Capacity Building Program, NOAA's Climate

Program Office, the Western Indian Ocean Marine Science Association (WIOMSA), and CCRD will also collaborate on the follow-up training scheduled for March 2014. The training will focus on conducting vulnerability assessments, scenarios planning, and identification and analysis of adaptation strategies.

E. OBJECTIVE 3: IDENTIFY AND RESPOND TO EMERGING ISSUES AND FILL GAPS

CCRD continued work during FY 2014-Q1 on the four emerging areas. The NAP working group provided support to the USAID West Africa Mission on producing a policy brief for UNFCCC focal points. Under High Mountain Adaptation Partnership (HiMAP), work continued on completing the Local Adaptation Plans for Action (LAPAs) in Peru and Nepal. The CSP held the ICCS3 conference in Jamaica and continued supporting the Agricultural Model Intercomparison and Improvement Project (AgMIP). The CRIS program began engaging with the pilot cities in Peru, Dominican Republic, and Mozambique.

ACTIVITY 3.1 SUPPORT ADAPTATION PLANNING AND IMPLEMENTATION

Task 3.1.1 Support Preparation of National Adaptation Plans

During this quarter, in collaboration with USAID's GCC Office, West Africa Mission, the Economic Community of West African States, and the University of Rhode Island Coastal Resources Center, CCDR produced a draft policy brief that participants could use to engage high-level policymakers in their countries' NAP process. Progress in Jamaica has been transferred to the CRLEDS and Climate Services tasks within CCDR.

Task 3.1.2 Develop and Pilot Fast Track Implementation (FTI) Concept

In FY 2014-Q1, work on the FTI project focused on developing a compilation of fast track adaptation options. The objectives of the compilation document are:

- To explain the concept of fast-track adaptation
- To describe how the fast-track approach can be used in practice
- To present a large set of fast-track adaptation options that can be employed

Also in FY 2014-Q1, the FTI approach was presented to a larger group of people (participants from within the CCDR team, but also from the wider ICF team, and Stratus) to discuss how it might be applied in the field within CCDR projects. In Q2 the FTI approach will hopefully be piloted through the CRIS program.

ACTIVITY 3.2 GLACIERS AND MOUNTAINS

Task 3.2.2 Develop the HiMAP's Community of Practice

Community of Practice (CoP)

CoP Membership/Expectations

The CoP membership, goals, and process discussion from Huaraz has been distilled to its highlights and recommendations. These have been placed on highmountains.org/future-himap, sent to the membership in a newsletter, and the discussion will continue. Face-to-face communications continued at conferences and in the field and the interdisciplinary nature of the work, which unusually encourages collaboration between the social and physical sciences. The CoP felt that even more disciplines should be represented and that future conferences should perhaps be organized around problems to be solved, bringing diverse perspectives from around the world together on local issues. Education was also felt to be a very high priority for HiMAP's future endeavors.

CoP Platform

1. HiMAP's website, highmountains.org, has continued to grow on the original Drupal platform. Though HiMAP moderator John Harlin intended to move the website to a fresh WordPress platform, he focused his time instead on adding new content and to launching a new website.
2. The new website everestalliance.org was launched as the public face of the Everest Alliance special project (see CoP Outreach and Services, below). The highmountains.org website will continue as the HiMAP CoP insider's platform covering all HiMAP activities, while everestalliance.org will become the public outreach and networking site specific to the Everest Alliance project. (Note: at the close of 2013, everestalliance.org is only partially developed and loosely organized and not yet announced to the public, although it is available should anyone stumble upon it. The short-term goal is to have a basic presence online that will be useful during the fund-raising and awareness-building process that will commence at the Outdoor Retailer trade show in Salt Lake City January 22-25, 2014.)
3. All of HiMAP's work on Imja Lake, Nepal, was consolidated onto one page (<http://highmountains.org/imja-lake-nepal>) in order to make it more visible to the UNDP process for Imja Lake risk mitigation. Some of the decision makers at UNDP had lost track of HiMAP's original contributions; organizing Imja-specific work into a single location was intended to make it more useful and more noticeable, which could increase the likelihood of HiMAP winning a contract.

CoP Services/Expansion

The HiMAP newsletter was redesigned from a quarterly formal PDF publication to a less formal newsletter that will go out much more frequently (1-2 times per month). This system also allows management through MailChimp, which maximizes efficiency, including managing mailing lists, tracking open rates, and improving penetration through spam filters. The first such newsletter went out in mid-December (<http://bit.ly/1lualfA>) and the second is scheduled for the end of December. It is felt that more frequent, less formal communication will encourage more dialogue amongst CoP members.

CoP Meetings

No CoP member-meetings were held during this quarter, although some CoP members coordinated presentations at outside venues (see CoP Outreach and Services and CoP Presence at Workshops, below).

CoP Outreach and Services

1. **New Mountain Studies Course:** As part of the new HiMAP Special Projects initiative, Dr. Dinesh Bhujju, Director of Resources Himalaya and Professor of Environmental Science at Tribhuvan University, requested HiMAP to assist in the development of a mountain studies program specifically tailored to Nepali undergraduate students. Topics to be covered will include high mountain formation, catastrophic events, vegetation, climate change and adaptation approaches, peoples and culture, agriculture, tourism, and sustainable development. Most of the syllabus and lesson plans have already been developed.
2. **Summary of GLOF Handbook:** A summary of the GLOF book will be written by Byers, Harlin, and McKinney as an add-on HiMAP deliverable.
3. **Everest Alliance:** This initiative will establish a partnership to protect and restore the greater Mt. Everest ecosystem, from village to the summit. Modeled after the ongoing Khumbu Local Adaptation Plan of Action community consultations, the **Everest Alliance** will develop the methods and mechanisms needed to solve the problems of environmental, climate change, social, and experiential degradation. The initiative that will be managed in partnership with the HiMAP, and transferred to the most appropriate in-country entity when appropriate.
4. On September 23, 2013, Phurba Sherpa facilitated an introductory workshop at the Khumbu Alpine Conservation Council (KACC) headquarters in Dingboche, Sagarmatha (Everest) National Park, to explain the goals and objectives of the Everest Alliance. On November 30 and December 1, 2013, Byers participated in a second Everest Alliance meeting at the KACC that developed a work plan, budget, list of outputs, and roles and responsibilities for a Phase I project start-up initiative covering the January-December 2014 period. These materials were submitted to Engility-IRG and USAID on December 17, 2013, and are currently being revised for re-submission based on the feedback and recommendations received, primarily a request for more detail and a comprehensive activity and timeline list. Alton Byers and John Harlin will attend outdoor retailer trade shows, alpine clubs, donors, Everest climbers, and other prospective stakeholders during 2014 as part of the project's developmental and fund leveraging activities.
5. **Planet Ice:** Between November 25 and December 10, Byers acted as advisor to the Canadian Nova Media company, under contract with French TV, to film the second half of a new documentary entitled "Planet Ice." Planet Ice is the final segment to a four-part series of contemporary changes in glaciers, snow, and ice in the Andes, Iceland, Greenland, and the Himalayas. Climber Scientist Ulyana Horodysky joined the team between December 3-4, 2014, and did an excellent job describing her ongoing research at Ngozompa glacier. About half of the final documentary will feature a French scientist conducting glacier research in the Mera Peak region, with the second half featuring Byers and Horodysky. HiMAP is likewise expected to be featured prominently in the film because of its pioneering approaches and contributions.

CoP Presentations

CoP members Daene McKinney, Bryan Mark, Jeff Lefrennier, and Richard Armstrong organized the Global Environmental Change sessions for the American Geophysical Union (AGU) Fall meeting December 10, 2013: GC21E, GC22C, and GC23D. Glacier Hydrologic Change: Implications for Downstream Ecosystems I, II, and III. David Rounce made an oral presentation, "Thermal Resistances in the Everest Area derived from Satellite Imagery using a Nonlinear Energy Balance Model" in Session GC21E. Marcelo Somos-Valenzuela presented a poster titled "Hazard Map in Huaraz-Peru due to a Glacial Lake Outburst Flood from Palcacocha Lake" in the Session GC23D. Rachel Chisolm presented a poster "Using a Hydrodynamic Lake Model to Predict the Impact of Avalanche Events at Lake Palcacocha, Peru" in Session GC23D.

At the invitation of Dr. Dinesh Bhujju and Dr. K. Rijal, CoP member Alton Byers presented on the HiMAP project to approximately 60 undergraduate students at the Department of Environmental Science, Tribhuvan University, Kathmandu, Nepal on December 15, 2013. The presentation consisted of slides and two illustrative videos – the 2012 Nepal and 2013 Peru videos created by Skyship Films. Byers was then formally invited to become a Visiting Professor for the 2013-2014 period.

At the request of Bronwyn Llewelyn, Environmental Officer, USAID/Nepal, Byers also presented on glacial lakes and glacial lake outburst floods (GLOFs) to the Nepal Risk Reduction Council on December 16, 2013 at the UNDP headquarters in Kathmandu, Nepal. The purpose was to provide an introductory primer on GLOFs for the Council, which is currently focused primarily on earthquakes, to add to their portfolios. That same day a second presentation on HiMAP was given at USAID/Nepal, followed by a second GLOF presentation to the USAID Risk Reduction Group. All three presentations were well attended and involved considerable exchange and discussion at the end.

Task 3.2.4 Implement CoP Pilot Project and Research

Nepal Regional LAPA

LAPA: Building on the findings and progress of two previous community consultations (September 2012 and April 2013) and several winter meetings in Kathmandu, the final three LAPA community consultation workshops were conducted between September 9-24, 2013. The workshops were held in Phakding (Chaurikharka VDC), Namache (Namche VDC), and Khumjung (Khumjung VDC), with a total of approximately 110 people attending. Participants included representatives from the Ministry of Forests and Soil Conservation, Sagamatha National Park (SNP), SNP Buffer Zone Council, women groups, eco-club members, teachers, Dalit (traditionally untouchable ethnic groups), NGO representatives, former VDC officials, political party representatives, security forces, and porters.

The Phakding consultation was held September 11-12; Namche September 15-16; and Khumjung September 19-20. Dr. Shailendra Thakali and Phurba Sherpa facilitated the groups and nine LAPA exercises were conducted (e.g., timeline analyses, social and physical hazard mapping, climate change impact ranking, stakeholder impacts analyses, and adaptation project prioritization). For the final adaptation ranking and action plan, the major identified climate change impacts among all three workshop groups – i.e., GLOFs, landslides, windstorms, floods, and forest fires – were given four criteria – i.e., effectiveness, cost effectiveness, feasibility, and usefulness to targeted groups, each with a scale of 1-3 with totals in a fifth column. Prospective donors were also identified as part of the LAPA process.

The team returned to Kathmandu on September 24, 2013 and began the process of transcribing all workshop flipcharts, maps, materials, and notes. Weekly meetings were held throughout October to discuss findings and progress. The fully edited and complete LAPA will be ready by January 31, 2014.

Nepal: Khumbu Regional Commitments

Collaboration with the UNDP Imja Lake GLOF Risk Reduction project continued in this quarter with participation in the UNDP internal meeting October 8, 2013 and a project inception workshop October 9, 2013 in Kathmandu, Nepal. The final Imja Lake technical study reports were distributed to all interested parties in Kathmandu, Nepal during the UNDP Inception Workshop and after.

Development of the enhanced GLOF and hydrology models of Imja Lake continued. A model of thermal insulation (resistance) of the debris covering Imja Glacier was finalized and a paper entitled “Thermal Resistances in the Everest Area (Nepal Himalaya) derived from Satellite Imagery using a Nonlinear Energy Balance Model” by David Rounce and Daene McKinney was submitted to the journal *The Cryosphere* for publication (see also AGU presentation of Rounce).

The community-based risk assessment and decision making process continued through the:

- Initial processing of recent and historical remote sensing data for Khumbu region
- The Case Study: Glacial Lake Risk and Adaptation Options in the Mt. Everest Region of Nepal was further developed.
- Evolution of Imja Lake Mitigation Strategies report is being enhanced through the development of a two-dimensional GLOF model including debris flow.
- Water samples taken by Dave Rounce and Daene McKinney at Imja Lake in September 2013, which CoP member Jeff Lefrennier processed to analyze isotopes to determine origin of the water in the samples

Peru: Community-Based Glacial Lake Risk Reduction and Watershed Management – Quilcay Watershed

Activities were as follows:

Completed LAPA Steps 3 to 5 and completed a first version in Spanish of the LAPA document.

The LAPA document will be used by the Waraq Municipal Commonwealth to inform a legal instrument called “Strategic Institutional Plan,” which provides the legal framework to invest in adaptation projects with public funds.

Development of the Waraq Municipal Commonwealth as the local government platform that will deliver long-term implementation of the LAPA. Obtained government certification and established the operational systems to function and receive public funds. This included nomination of the Commonwealth General Manager (part-time; paid by Huaraz municipality) and one economist (part-time; paid by Independencia municipality) to prepare adaptation projects that will be presented to the national public investment system. Project staff provided technical assistance to prepare a diagnostic study to justify the need for the Commonwealth, and participated in multiple meetings to draft the ordinances of the Commonwealth and with Prime Minister’s Office (bureau of decentralization) to support the process of certification for the Waraq Commonwealth. As a result of these activities, the Commonwealth has incorporated (1) “Technical Multidisciplinary Committee” (18 members covering all relevant government agencies, local university researchers, and NGOs) who are tasked to revise the proposed adaptation projects and provide technical assistance to the commonwealth; and (2) the “Citizen Conference” (representatives of rural villages and grass-root organizations) who provide stakeholder opinions and recommendations during the annual budget process of the commonwealth). The Waraq Commonwealth was established in perpetuity by the Government of Peru on November 28, 2013. The Waraq Commonwealth has the explicit objective of promoting local economic development, and managing risk reduction and climate change adaptation in the territory of Quilcay watershed. The Technical Multidisciplinary Committee and the Citizen Conference were established by ordinance on December 18, 2013.

Teacher training program on high mountain glacier watershed risks and climate change.

HIMAP TMI staff Laura Trejo in coordination with the Ministry of Environment (MINAM):

(1) coordinated publication of school training materials on mountain geography of Cordillera Blanca (cost of printing covered by MINAM), and (2) supported the school system of Huaraz with one training workshop to strengthen capacity for risk of disaster management (training module and school system contest) and advised on lesson plans on this topic.

Quilcay pilot projects on adaptation: design guidelines and lessons learned.

TMI staff (J. Recharte, C. Giraud, L. Trejo) provided assistance to support MINAM design statements of work for five studies/initiatives that will generate information to prepare public fund projects in line with

priorities established through the LAPA. These are adaptation projects for (1) assessment of all irrigation and water storage infrastructure in Quillcay; (2) water quality assessments; (3) assessment of the extent, condition, and restoration of wetlands in HNP; (4) history and qualitative assessment of damages caused by the 1941 GLOF; and (5) high-resolution air photography of Quillcay Valley.

HIMAP participated in the working group designing a project to establish a GLOF Early Warning System for the city of Huaraz and also participated in two meetings at the Prime Minister's Office to discuss an emergency project to reduce the level and threat of Palcacocha Lake. By December 31, MINAM has funded and is implementing all projects through Inter-American Development Bank (IDB) funding (total to be invested by MINAM/IDB through July 2014 in this and other Quillcay support activities totals \$383,636 dollars).

TMI provided technical support to MINAM to increase the capacity of local Ancash government agencies and specialists to design climate change adaptation projects with government funds (October 18-20, 2013). TMI/HIMAP staff provided support to the municipality of Huaraz and Shallap irrigation canal stakeholder group to obtain central government funding for construction of Shallap irrigation canal in Quillcay due to start implementation in January 2014. TMI/HIMAP staff provided technical information to Waraq Municipal Commonwealth to ready proposals for adaptation funds for central government funds (FONIPREL program, final proposals due March 2014).

Peru: Climate Change Adaptation, Risk Mitigation, and Disaster Management Capacity Building for the High Mountain City of Huaraz, Peru

Updated digital elevation model data was obtained from MINAM after new aero-photography flights and production of DEM data by Horizons Company in Peru. These data are being used to improve the accuracy of the Palcacocha Lake GLOF model. The study by Denny Rivas, Daene McKinney, and Ben Hodges, "Predicting outflow induced by dam moraine failure in glacial lakes: the Lake Palcacocha case from an uncertainty perspective," is being submitted for publication. A report on the modeling of a Lake Palcacocha GLOF and the resulting inundation in the city of Huaraz is under preparation (Somos-Valenzuela, M. A., Chisolm, R. E., McKinney, D. C., and Rivas, D.: Hazard Mapping in Huaraz Due to a Glacial Lake Outburst Flood From Palcacocha Lake, Peru, in preparation). The GIS system for the Quillcay watershed has been updated and a new report prepared describing its functionality.

Peru: Building Scientific, Social, and Institutional Capacity to Mitigate Risks of Glacial Lake Recession and Outburst Floods

Training and technology transfers were continued for the Peruvian Glaciology Unit in collaboration with French colleagues from the Research Institute for Development. Ground penetrating radar studies (GPR) processing techniques were presented to the Glaciology Unit staff so that they could process data taken with their new GPR system. A report of the GRP survey of the Arteson Glacier in July 2013 was prepared.

ACTIVITY 3.3 CLIMATE SERVICES

Task 3.3.2 Coordinate Activities of the Climate Services Partnership

During the first week of December 2013, the CSP hosted the third International Conference on Climate Services, and several associated side events, in Montego Bay, Jamaica, with primary sponsorship of USAID/CCRD, NOAA, and CCAFS. Under active development for the last nine months, this was the signature event of the international CSP community for 2013 attracting more than 150 registered participants from 35 countries.

The conference served dual purposes of providing a forum where current experience and new ideas in the advancement of climate services could be presented, discussed, and acted upon, and also as a

meeting of the international CSP community to review current activities, accomplishments, and develop plans for future work.

In order to provide some structure to the diverse session discussions (across sectors, themes, and programs), and channel the conference findings toward key action areas, the Secretariat developed a revised Conference Roadmap, and presented it to the conference body during the opening session. The Roadmap introduced five Focus Areas, representing subjects already identified as emerging in interest and importance in the climate services community: Identifying Research Priorities, Improving Stakeholder Engagement, Establishing Good Practice, Building Capacity, and Directing Investment in Climate Services. Findings in each of these areas were discussed in a set of presentations in the concluding session of the conference, and these will inform future work of the CSP community.

In addition to the main working sessions of the conference, we introduced a Tools Expo. We were able to attract nearly 30 contributions to the Expo, which provided the participants exposure to a wide range of tools and resources available to support climate services.

Several of the sessions at ICCS3 were organized in support of existing or anticipated CSP Working Group activities. One session was dedicated to the activity in economic valuation of climate services, furthering plans for the completion of the book that the working group will publish. The CSP activity on evaluation of climate services also was featured in a session, and some of the lessons learned from the use of the so-called “midlevel” evaluation” guidelines were discussed. The Secretariat will be soliciting further input from the midlevel evaluations and preparing a synthesis document over the coming months.

A side event on the ethics of climate services provided the opportunity to introduce this new topic to the CSP agenda. In advance, we prepared, with external partners, a draft note on the concepts and motivation for ethical guidelines for climate services, and suggested next steps to organize a working group. The session resulted in strong endorsement for a set of next steps to consider aspects of good practices, as well as guidelines for the conduct of climate services, to be supported by CSP over the coming year.

Another session on prioritizing research to support improved implementation of climate services was included in the ICCS3 agenda. This discussion raised a number of issues in how implementation experience can be tapped to identify research needs, and also how research needs can be communicated and connected to the international research communities and programs. A small group will take up the charge of developing recommendations for further work in this area.

The CSP Secretariat also convened a special side event on the future of CSP, immediately following the close of the formal ICCS3. This was designed to bring CSP members and other interested parties together to consider the progress made in work of CSP to date, and ideas for future organization, resourcing, and functions of the Partnership, in general and in light of the findings of ICCS3. Among the issues discussed were establishing more formal connections with the Global Framework for Climate Services, outreach potential to additional research and development communities, and possible programs of work that could attract new resourcing. The outputs of this discussion will be brought to subsequent deliberations of the CSP Coordinating Group as we consider specific initiatives to pursue.

An ICCS3 Conference Report and notes from Side Events are currently being developed and will be forthcoming in early 2014. In the meantime, a great deal of information regarding the event, including photos, blog posts, Q&As with participants, and video interviews of session leads to the CSP website.

In other ongoing CSP activity areas, we are continuing to support a climate services survey to assess current climate services actors, programs, and capabilities with emphasis on providers. Three student

interns have been recruited to assist in outreach, retrieval, and analysis of results. About 40 inputs have been received to date, and we expect to build on these results substantially over the next quarter.

CSP was represented at the EUPORIAS General Assembly by Steve Zebiak, who is a member of the Advisory Board of this European project on climate services. He delivered a presentation on the CSP, emphasizing the work undertaken on evaluation of climate services. Steve Zebiak has also been appointed a member of the newly constituted American Meteorological Society Board on Global Strategies, where he can represent interests of the CSP community in the work the board will undertake to promote and support climate services capacities and good practices.

Task 3.3.3 Compile and Disseminate Current Climate Services Knowledge

The CSP web team has completed the interactive map, which is now available on the CSP website. The Secretariat is now working with interns to increase the number of entries on the map in order to provide a more comprehensive mapping of climate service activities around the world.

In addition to the map, the CSP web team has added a membership page designed to make it easier for people to join the partnership. We have also added a page dedicated to the Caribbean Climate & Water Community of Practice. An outgrowth of a USAID-funded project designed to build capacity to manage climate- and water-related risks in the Caribbean, this CoP brings together a range of experts from the region to develop solutions to improved climate risk management.

Task 3.3.4 Conduct Case Studies and Assessments of Climate Services

With midlevel evaluations now complete in the United States, Kazakhstan, South Africa, Indonesia, and the Caribbean, the CSP held a webinar on November 14 in order to collect lessons learned from CSP evaluators. The webinar provided an opportunity for evaluators to discuss with the CSP secretariat, and each other, challenges and opportunities in using the methodology that was developed at the expert workshop in March. In the coming months, this feedback will be channeled into a new methodology document that will be re-tested in several situations.

As mentioned earlier, the midlevel evaluation process was also presented at ICCS: David Letson of the University of Miami took the opportunity to present on his experience evaluating the Caribbean Agrometeorological Initiative using the midlevel assessment methodology. Cathy Vaughan presented overarching lessons from the process as a whole.

Jason Vogel continued an evaluation of the Caribbean Agro-Meteorological Initiative (CAMI). After the initial field work in Barbados and Dominica completed in FY2013 Q4, Stratus staff members Jason Vogel, Alexis St. Juliana, and Janet Clements, in collaboration with Professor David Letson of the University of Miami conducted a series of phone interviews with farmers, meteorological personnel, and agricultural personnel in Guyana and Grenada. Additional in-country work was done in Jamaica in conjunction with the ICCS3 conference in Montego Bay. Based on this work, a full draft of the CAMI evaluation has been prepared and provided to Adrian Trotman of the Caribbean Institute of Meteorology and Hydrology for his review. We anticipate a final draft submitted to the CSP in early FY 2014-Q2.

Task 3.3.5 Economic Valuation of Climate Services

Journal Article on Valuing Climate Services

Janet Clements, with support from Glen Anderson, prepared and submitted a paper based on the literature review and synthesis report to *Environment and Society: Advances in Research*. Although the article had been pre-accepted, it was rejected because the topic was not consistent with the journal's scope (we suspect that they didn't understand the concept of climate services or thought it was a variation of ecosystem services). The authors will identify alternative journals and resubmit the article for publication.

Primer on Valuing the Benefits of Weather, Climate, and Water Services

CCRD staff and consultants contributed to the preparation of the first draft of the primer, a joint effort of the Climate Services Partnership and USAID, World Meteorological Organization (WMO), and The World Bank. Dave Letson, Jeff Lazo, and Janet Clements prepared chapters for the primer, and Thomas Frei contributed to the preparation of one of the chapters. Glen Anderson and Dave Letson revised the annotated outline of the primer in response to comments from participants in the WMO seminar in Curacao (see below), and Glen Anderson participated in an internal review of the revised annotated outline by the World Bank.

WMO Seminars on Valuing the Benefits of Weather, Climate and Water Services

CCRD co-organized three seminars with the World Meteorological Organization in Brunei (October 21-25, 2013), South Africa (November 11-15, 2013), and Curacao (December 9-13, 2013), titled “Seminar on Social and Economic Benefits and Delivery of Meteorological and Hydrological Services.” CCRD led the first three days of the seminar. The first two days were structured as presentations on the chapters of the primer and the third day was devoted to case studies and a plenary discussion of the annotated outline for the primer. CCRD presentations were made by Drs. Glen Anderson and Jeff Lazo (Brunei), Dr. Lazo (South Africa), and Drs. Anderson and Dave Letson (Curacao).

Task 3.3.7 National/Regional-level Climate Services Development

Subtask 3.3.7.2 Central America Follow-up Workshops to Adaptation Partnership workshop

Climate Information Tools Workshop in New York

From October 28 to November 8, 2013 the IRI hosted a workshop geared toward building capacity toward the development of climate information tools for partners in Honduras, Guatemala, and the Dominican Republic; representatives from three Jamaican institutions also attended. In addition to building skills with regards to specific software tools (DSSAT, CPT, IRI DL, etc.), the participants made progress on the development of map rooms to illustrate, and ultimately forecast, soil water balance in specific agricultural zones in each country.

A roadmap for future work was developed that outlines the steps that will need to be taken by partners in collecting and manipulating meteorological data, producing seasonal climate forecasts, monitoring and forecasting soil water balance, and developing map rooms to display the information.

Subtask 3.3.7.4 National-level Climate Services development in Jamaica

During this period, IRI has successfully completed technical advances with the IRI Climate Predictability Tool, and conducted a training visit (S. Mason) to Jamaica Met from October 1-2, 2013. This has enabled the launch of the CPT-based seasonal drought forecasting system in Jamaica. A main target of the Working Group (WG) Year 1 work plan on the information side, this accomplishment has allowed the first application of such a drought prediction system globally, the results of which can now be incorporated into the farmer advisories that constitute a main deliverable for the Jamaica agricultural climate services.

During the period October 28 – November 8, 2013, IRI hosted a workshop on tools to support agricultural climate services in Central America and Caribbean. Three of the key Jamaica WG institutions – Met. Service, Rural Agricultural Development Agency, and ACIDI-VOCA – sent representatives to the workshop. The group identified as high priority new tools to assess soil moisture conditions (real-time and forecast), and began work with IRI assistance in building these new tools, which will add to the information products supported by the WG. IRI will continue working with WG partners to support the tool development over the coming months.

The considerable accomplishments of the Jamaica climate services initiative were presented to the global community in a dedicated session at ICCS3. IRI worked closely with the WG partners to plan the agenda for this session. This also provided a means to connect with the Jamaica Ministry of Water, Land, Environment and Climate Change, who participated in the session. The Ministry level support remains an important component of the long-term institutional plan to sustain Jamaica's new climate services. The session included presentation of the new technical capacities (drought tool, climate data base), WG institutional arrangements, farmer and agricultural extension training and feedback processes, farmer advisories, as well as the plans for additional tools and services to be developed with collaboration of regional and international partners over the coming year. The session evoked very positive responses, and requests for more information on the part of many participants.

Task 3.3.8 Develop Climate Services Products for the Agricultural Sector

Subtask 3.3.8.1 Develop the Next Generation of Global Gridded Biophysical Model Systems

In partnership with the University of Chicago, AgMIP researchers at Columbia's Center for Climate Systems Research (CCSR) continue to advance its prototype, harmonized platform that uses multiple crop models and improved climate, soil, and management inputs for a parallel System for Integrating Impacts Models and Sectors (pSIMS). Presently, pSIMS has translation apps for both the DSSAT and APSIM crop model interface that convert from standardized formats into model-specific inputs and multiple output parsing apps. The translation apps have been prototyped, refined, tested, and integrated into the framework. They were presented to developers at the workshop hosted in Chicago on September 3-6. They were also discussed with researchers – including AgMIP researchers from Sub-Saharan Africa and South Asia – at the 4th Annual AgMIP Global Workshop at Columbia University, October 28-30, 2013.

The framework interface has been further refined to improve usability and operational capacity. Using examples performed within the pSIMS framework for DSSAT and APSIM in Africa, CCSR demonstrated the use of the operational prototype of the gridded database and multi-model interface for DSSAT and APSIM Crop Models. The example provides 1980-2010 mean simulated yields for Africa maize at 0.5 degree resolution, alongside the same simulations run at 0.25 degree resolution for Southern/Eastern Africa (Zimbabwe, Malawi, Zambia, Tanzania, Mozambique, Ethiopia, Burundi, Rwanda, Uganda, Kenya, Somalia).

The work has benefited from technical development contributed by C. Porter and others at the University of Florida. The results are incorporated in a journal paper entitled “The Parallel System for Integrating Impact Models and Sectors (pSIMS).” The pending publication, presently in review for a special issue of *Environmental Modeling and Software: Agricultural systems modeling & software*, was prepared by J. Elliott (CCSR PI), M. Glotter, J. Chrystanthacopoulos, N. Best, D. Kelly, M. Wilde, and I. Foster.

Subtask 3.3.8.2 Develop Near-term Climate Scenarios for AgMIP

The simulation model focused on the West Africa subdomain of Sub-Saharan Africa (the Sahel region), described in the FY 2013 report, continues to undergo evaluation. Simulations targeting the West Africa subdomain of Sub-Saharan Africa (the Sahel region) continue to undergo evaluation. A model is also now being developed for several subdomains in South Asia, focusing on southern India and Sri Lanka. Precipitation climatologies in this region are complex, and involve both the southwest and northeast monsoons, as well as an intermediate rainfall season during Northern Hemisphere Spring. Consultation with CCSR-based experts in South India climatology is helping to advance this work.

A new method for “verifying,” or testing, the simulation model code is being developed, and is based on what is sometimes called the “perfect model” approach. With this rubric, output from one of the CMIP5 global climate models (GCMs) is taken to represent the observational record. The simulation model is trained on this output as if it were the actual climate observations. Projections are then generated for

future climate. Unlike in the case of the real observations, however, the GCMs also provide data for the future, with which the simulations can be compared. A suite of GCMs is rotated through this procedure, which can shed light on both the performance of the simulation model and the consistency of GCM behavior across centuries.

As before, the AgMERRA data is being resampled in order to generate climate sequences on the daily time step; the use of common data formats makes it possible for model output to be readily ingested by the full range of follow-on agricultural models.

In December 2013, Arthur Greene presented this work at the 2013 Fall Meeting of the American Geophysical Union, at a special session devoted to the AgMIP project titled “Climate scenarios for driving AgMIP models.” The session was based on a paper that was written that describes a statistical methodology for generating future climate data in a form suitable for driving the models that are the focus of the AgMIP project. There is great interest in agricultural outcomes over the next couple of decades, but little skill in climate prediction on decadal time scales. The method described provides a way of delimiting uncertainty, given this lack of predictive ability and represents a promising contribution to near-term climate change research. This is an innovation for the assessment of agriculture and food security risks in the near term to better inform adaptation efforts in support of Climate Change Resilient Development. Shorter time frames are more relevant for agricultural decision-makers in the developing world than are the centennial time horizons that have been the focus of recent Intergovernmental Panel on Climate Change (IPCC) reports.

Task 3.3.10 IRAP

Task 3.3.10.a Research and Development on Decision Support Tools. Early Warning System

In November 2013, Benno Blumenthal developed a prototype maproom for the Caribbean region. This maproom will serve as a possible foundation for the decision support tools that will be developed under the IRAP project.

Task 3.3.10.b Website

The IRI has developed a prototype project website that will be mirrored at both IRI and University of Arizona (UA), highlighting research progress, events, and prototype informational products. The website can be accessed at: <http://irap.iri.columbia.edu>.

Task 3.3.10.c Training Materials and Stakeholder Workshop

From November 7-8, 2013 the IRI hosted the UA for a project kick-off meeting in which IRAP team members jointly discussed the goals and objectives of the Stakeholder Workshop. These discussions were followed-up at ICCS3 where Lisa Goddard (IRI project lead) and Jim Buizer (UA project lead) met with Lisa Vaughan and Meredith Muth of NOAA and Adrian Trotman and Cedric vanMeerbeek of the Caribbean Institute of Meteorology and Hydrology (CIMH) to discuss the project and the Stakeholder Workshop. USAID was consulted in separate meetings. It was agreed during these discussions that a two-day IRAP Stakeholder Workshop would follow on from the Caribbean COF, which will be held in Jamaica in May 2014.

The IRAP team has requested and received existing documentation of past stakeholder workshops and needs assessments to better focus the pilot information and vulnerability discussions. These documents are currently under review.

ACTIVITY 3.4: CLIMATE RESILIENT INFRASTRUCTURE SERVICES PROGRAM

During this quarter, CCRD partner ICF continued to implement the Climate Resilient Infrastructure Services Program. CRIS is developing and testing approaches that can increase the climate resilience of infrastructure assets and the services they provide in developing countries.

Task 3.4.1 Identification of Pilot Cities

CRIS worked with the USAID/Peru Mission to develop a scope of work to add Trujillo, Peru as an additional pilot, at a lower level of effort, through a buy-in from the Peru Mission. A draft technical proposal was prepared for review by USAID. We expect the buy-in to be executed early in 2014.

Task 3.4.2 CRIS Support to Pilot Cities to Accelerate Climate Risk Management

In this quarter CCRD partners ICF and Cascadia worked with pilot cities in Mozambique, Peru, the Dominican Republic, and Vietnam. The work in Mozambique, Peru, and the Dominican Republic focused on developing and initiating CRIS work plans with each city. In these countries, ICF also collected information on vulnerabilities, sensitive infrastructure, and existing assessments that have been undertaken in the pilot cities. This information and data will support implementation of the work plan in the following quarters. In Hue and Hanoi, Vietnam, CCRD partner Cascadia continued to implement a customized Climate Impacts Decision Support Tool (CIMPACT-DST) for the government of Vietnam. The following sections summarize the progress achieved in each pilot city during this reporting period.

Mozambique

This quarter, the CRIS team developed a detailed trip report and a detailed draft work plan; selected an in-country coordinator and are in the process of hiring this individual; and began preparing for a visit to Nacala-Porto on January 13-24, 2014. The CRIS team developed a comprehensive summary of the work planning trip to Nacala-Porto, undertaken by Molly Hellmuth and Charlotte Mack of ICF International, from September 5-17, 2013. This trip report included a summary of meetings and potential work plan activities. The trip report was shared with the USAID GCC and the USAID Mission in Mozambique.

The CRIS team developed a draft work plan, based on the trip report outcomes, that outlines a detailed set of activities that CRIS and the Municipality of Nacala-Porto might undertake jointly from January 2014 to July 2014. The draft work plan focuses on the vulnerability of critical infrastructure services to erosion, including transportation, municipal buildings, and residences. The work plan establishes the goals, scope of work, tasks, and respective responsibilities of the municipal government and CRIS experts for the pilot city work. The work plan was translated into Portuguese and sent to the Municipality at the beginning of November, 2013. It was also sent to USAID GCC, USAID/Mozambique, and the Mozambique National Disasters Management Institute.

The original plan was to return to Nacala-Porto in December and to refine the work plan with the Municipality during that visit; however, due to in-country violence associated with the November 20th Municipal elections, this trip was postponed until January 2014.

The CRIS team developed a shortlist of three individuals for the position of “local coordinator.” The CRIS team extended a job offer to Sylvia Vaz and internship to Mr. Jose Perez.

The CRIS team has worked with the USAID Mission; Antonio Queface, technical consultant; and Adelino Emílio Cobre, POC for Nacala; to set up meetings and coordinate logistics for the January 13th trip.

Dominican Republic

In this quarter, CCRD partner ICF worked with the Santo Domingo National District (Ayuntamiento del Distrito Nacional or ADN), USAID GCC, and USAID/Dominican Republic to develop the work plan and conducted two trips to Santo Domingo to refine and begin implementation of this plan.

The first trip to Santo Domingo under Year 3 of CCRD took place from September 30 to October 5 to establish a work plan.

Meetings were held with ADN, the water utility company, Corporación del Acueducto y Alcantarillado de Santo Domingo (CAASD), the national office on meteorology (ONAMET), and an NGO working on climate change issues in Santo Domingo (IDDI). The work plan concept that was presented focused on the water and sewage infrastructure of Ward 3 in the National District, which lacks crucial infrastructure services, is densely populated, and is exposed to a variety of climate impacts such as flooding and erosion.

The working group for the CRIS pilot was established and is currently composed of the following entities:

- National District's City Hall – Ayuntamiento del Distrito Nacional (ADN)
- Water Utility – Corporación del Acueducto y el Alcantarillado de Santo Domingo (CAASD)
- National Meteorological Services Office – Oficina Nacional de Meteorología (ONAMET)
- Office on Territorial Planning – División General de Ordenamiento y Desarrollo Territorial (DGODT)
- Non-profit organization – Instituto Dominicano de Desarrollo Integral (IDDI)
- Dominican Federation of Municipalities – FEDOMU

The training workshop was held on Thursday, October 3 from 10 a.m. to 4 p.m.; 21 individuals attended. The CRIS team presented a “Climate 101” to provide basic training on climate change to the working group and ADN staff. The agenda and presentations for this workshop are submitted with this report.

Given that the work plan conversation focused on the water and sanitation systems within Ward 3 of the National District, during this quarter CCRD partner ICF started working with CCRD partner Stratus Consulting to draw on Stratus' technical expertise to better understand CAASD's Master Plan and develop a more detailed work plan.

The second trip of Year 3 took place from December 8 to the 14. CCRD partners ICF and Stratus traveled to Santo Domingo with the objectives of obtaining final consent from the working group on the work plan activities and to conduct a training on the fundamentals of vulnerability screening to get the working group started on work plan activities.

The CRIS team met with all the working group members individually to review the work plan activities and their individual roles. Additionally, the team met with Indhira de Jesús, an expert in water and renewable energy, currently the Research Deputy Director at a private university – Instituto Tecnológico de Santo Domingo (INTEC) – and former Project Manager at The Nature Conservancy.

The training workshop on vulnerability screening took place on Thursday, December 12 from 9 a.m. to 3 p.m. and 23 individuals participated. The agenda and presentations for this workshop are submitted with this report.

Peru

Conducted follow-up work to the second working visit to Piura in September 2013, which included sending thank you letters to city officials, developing a trip report memorandum, measuring results from the roundtable workshop that was conducted during the trip, and sharing fact sheets.

ICF conducted a third working visit to Peru from November 19 to November 30, 2013. ICF finalized the work plan with the Piura Municipality, and the USAID/Peru Mission Director and Mayor of Piura signed the Memorandum of Understanding (MOU) to recognize their partnership on the CRIS program. ICF also continued implementing work plan activities with Piura. The project team attended a workshop held by the Ministry of Economy and Finance, the Ministry of Environment, GIZ, and USAID to incorporate climate change into infrastructure investment through Peru's National System of Public Investment. ICF met with city officials, local NGOs, and academics in Piura to begin implementation of the climate vulnerability screening approach and climate information database and also to determine possible structures and functions for a technical network for longer-term support to the Municipality. Based on these conversations, ICF drafted a trip report memorandum.

Task 3.4.3 Fast Track Implementation Small Grants Program

In consultation with USAID, five grants were recommended and approved for funding. Three grants are active and two are in the process of signing the grant agreement. Grant proposals were solicited in the following areas:

- Demonstration of approaches for the development of an urban infrastructure inventory to support climate resilient planning efforts
- Demonstration of a rapid vulnerability assessment approach for infrastructure services
- Implementation of public-private partnerships to undertake joint strategies to ensure climate resilient infrastructure services

The grantees and their proposed work are:

- The Energy and Resource Institute – “Urban Infrastructure Inventory and Rapid Vulnerability Assessment for Resilience Planning in Two Coastal Cities in India” (Active Grant)
- Yayasan Kota Kita Surakarta – “Vulnerability Assessment, Infrastructure Inventory, Resilience Planning and Capacity Building for the City of Manado, Indonesia” (Active Grant)
- Yayasan Mercy Corps Indonesia – “CRISPI Climate Resilient Infrastructure Services Program – Indonesia” (Signing the grant agreement is in progress)
- Thailand Environment Institute – “Public-Private Partnerships for Climate Resilient Infrastructure: Barriers and Opportunities in the Phuket Tourism Sector” (Signing the grant agreement is in progress).
- Instituto Dominicano de Desarrollo Integral (IDDI) – “Increasing Resilience to Climate Change of Santo Domingo's Services Infrastructure” (Active Grant)

A second round of small grants, targeting organizations working in CRIS pilot cities, is planned for FY 2014.

Task 3.4.4 Global City-To-City Information Exchange

Further steps were taken to develop and implement the global city-to-city capacity building and information exchange in collaboration with other CCRD partners, USAID staff, and external organizations. Activities consisted of:

- Tracked relevant organizations in a consultation plan spreadsheet.
- Finalized the sidebar article for *Frontlines*.
- Delivered a methodology briefer on peer learning benefits, principles, and approaches, including information about the Institute for Sustainable Communities (ISC) leadership academy model, as well as AECOM's twinning approach.
- Proposed a panel session for consideration for the 2014 ICLEI Resilient Cities Congress.
- Delivered, in Santo Domingo, a presentation originally developed for Piura municipality representatives and other key Piura stakeholders on foundational concepts related to climate information and resilient development.
- Worked with ISC and Engility-IRG to prepare for the LAC Regional Workshop to be held in March 2014 in Santo Domingo.
- Revised the CRIS Peer Learning and Communications Strategy, including components focused specifically on dissemination, networking, webinars, and conferences.
- Established a photo/image/graphic database, first using the CCRD Google Apps system and then using Flickr, for consolidating media generated during city visits, peer learning, and training and capacity building events.
- Established a central location to keep presentations developed for communicating CRIS progress and outcomes to external audiences.
- Established a translation database with common terms and populated it with key phrases to improve the quality of translations and ensure consistency.
- Developed a storyline for the planned CRIS video to submit for USAID approval. ICF also explored options for videography and production.

Task 3.4.5 Provide Information and Technical Resources to USAID Staff

The CRIS program continued to collaborate with USAID Mission staff located in the countries in which CRIS is conducting pilots with municipalities, as discussed above.

CCRD partner ICF worked with USAID Global Climate Change staff to continue planning for and implementing the Infrastructure and Adaptation Session at the 2013 Infrastructure Workshop for USAID staff, held in December 2013.

ICF then attended the Infrastructure and Adaptation session on December 17; facilitated the “making the case” and warm-up exercises; and delivered three presentations on the CRIS program, accessing and using climate data, and different types of adaptation activities.

Task 3.4.6 Evaluate CRIS Activities and Recommend Next Steps

Began to develop indicators for monitoring and evaluation of the CRIS program, drawing on the CCRD indicators applied in Year 2. CRIS staff drafted a set of indicators for the Mozambique pilot and for

review and refinement for application to all pilots. Information on some indicators, such as participation in training, has been collected.

The CRIS team also began to explore potential strategies for program continuity at the conclusion of CRIS through discussions with the pilot cities, the USAID Missions in each country, and other stakeholders and donors. Work plans with each city were reviewed and revised to explicitly include a task focused on defining steps for each municipality to take post-CRIS to ensure continuity and ongoing progress.

Task 3.4.7 Cascadia Vietnam Pilot

In FY 2014-Q1, Cascadia Consulting Group began evaluation of the pilot release of their Climate Impacts Decision Support Tool (CIMPACT-DST) in Hue, Vietnam and continued scoping, planning, and cross-learning activities for the national deployment of the tool with partner organizations in Hanoi. Activities included (1) a pilot tool evaluation excursion to the Thua Thien Hue province; (2) presentation and discussion of the national tool form and function with collaborators at the Vietnamese Center for Research and Planning on Urban and Rural Environment (CRURE) and the Vietnam Institute for Architecture and Planning (VIAP); and (3) a training and technology transfer visit to Cascadia offices in Seattle, Washington by two key Vietnamese collaborators at CRURE. These activities, described below, contribute towards CCRD's overall objectives (CCRD Indicators 6 and 7) and those of the Climate Resilient Infrastructure Services Program (Activity 3.4) in particular.

1. **Pilot Tool Evaluation.** During an evaluation visit to Hue, Vietnam in October 2013, Cascadia learned from tool users at the Hue Planning Institute (HPI) that the tool was effectively used to develop a climate-resilient urban master plan for the coastal commune of Vinh Thanh in Thua Thien Hue province. Specifically, it was learned that use of the tool resulted in three key improvements in climate resilience of the urban plan – (1) a shift in residential zoning areas inland away from potential inundation areas, (2) introduction of a natural buffer and concomitant restriction of large-scale permanent infrastructure (e.g., resorts) within, and directly adjacent to, the outer coast “shore zone,” and (3) a preservation of natural drainage features and brackish water compatible agricultural activities – all of which will render the community of Vinh Thanh more resistant to climate change impacts as it grows and develops into a new urban area. During a post-excursion discussion of the Institute's experience with the tool, HPI expressed an interest and desire to begin integrating cost-benefit considerations into their climate risk assessments. In FY 2014-Q2, the Cascadia team will seek to connect emergent CCRD resources on this topic to the work in Hue. The team will also continue to work with our collaborators at the HPI to evaluate the tool's use and effectiveness as it is applied to future planning projects.
2. **National Tool Scoping and Planning.** Cascadia continued to coordinate with Dr. Luu Duc Cuong at CRURE and Mr. Ngo Trung Hai and Dr. Luu Duc Minh at VIAP to define the scope, content, and organization of the national-level CIMPACT-DST. During a visit to Hanoi, the Cascadia team discussed with CRURE a proposed sector organizational structure for the tool, and the team continued defining features and boundaries of each sector and planning type to ensure consistency with the country's urban planning policies and procedures. The team also discussed the availability of spatial information for the tool and challenges that may be faced in gathering this information for all 63 provinces of the country. Initial findings from the tool's use in Hue were presented and well received by representatives at CRURE, VIAP, and the Vietnam Institute for Meteorology, Hydrology, and Environment (IMHEN). Cascadia staff used the feedback and information gathered during this trip to begin compiling the tool's initial design concept and to continue building the Project Description, Needs Assessment, and Scope of Use documents.

Training and Technology Transfer Visit. Staff from CRURE and VIAP traveled to the American cities of Seattle, Washington and Portland, Oregon over a week-long period covering November 18 to 22, 2013. The visit allowed for cross-cultural learning around climate resilient urban planning and further design development for the national-level CIMPACT-DST. Through site visits, discussions, and presentations, Dr. Cuong and Dr. Minh gained first-hand insight into the benefits, challenges, and limitations associated with a variety of strategies and approaches for addressing climate change, including urban forestry, green infrastructure, and sustainable building. Additional discussions and brainstorming meetings also resulted in a more complete sector organization scheme for the tool that incorporates nuanced differences in Vietnam's urban planning processes at various spatial scales, as well as a full list of potential spatial information and paths for obtaining and updating that information. In the coming months, Cascadia will use what was learned to draft a full design sketch of the tool, develop an initial customized beta tool, and populate the tool with locally-vetted climate impacts and guidance information.

ANNEX I. CCRD PERFORMANCE INDICATORS AND ACHIEVEMENTS

During FY 2014-Q1, implementation activities supported eight of the 11 performance indicators specified in the CCRD Performance Management Plan. Below is a summary of CCRD performance indicator achievements, followed by a summary table.

Indicator #1: Number of people with increased capacity to adapt to the impacts of climate variability and change as a result of USG assistance (mandatory for Adaptation funding). This indicator is the most stringently measured under CCRD. Measuring adaptive capacity requires an initial baseline assessment of the targeted capacity(ies) and a post-intervention assessment. Due to the need for post-intervention assessment and follow-up, some interventions are not reported until a later reporting period.

- (1) Three women received training to improve monthly and seasonal forecasts for Kazakhstani farmers needing improved information to cope with climate variability. The training was designed to help develop a new tool that would shift from analog to statistical/analog forecasting. The training also focused on improving and automating the drought index.

Indicator #2: Number of stakeholders receiving training in climate change supported by USG assistance (Person-hours of training completed in climate change supported by USG assistance). Training is defined as a learning activity involving 1) a setting intended for teaching or transferring knowledge, skills, or attitudes; 2) formally designated instructors or lead persons; 3) a defined curriculum, learning objectives, and outcomes. Meetings or other efforts that could have educational value but do not have a defined curriculum or objectives are not considered training.

Support for indicator #2 resulted from 19 workshops/trainings:

- (1) Zamorano's field school trainings in El Salvador (268 people, 148 men, 120 women, 1,475 hours of training, 824 hours of training for men, 651 hours of training for women)
- (2) Zamorano's Field School Trainings in Nicaragua (112 people, 71 men, 41 women, 560 hours of training, 355 hours of training for men, 205 hours of training for women)
- (3) Zamorano's Field School Trainings in Honduras (212 people, 142 men, 70 women, 577.5 hours of training, 398.5 hours of training for men, 179 hours of training for women)
- (4) Zamorano's Learning-by-Doing Trainings in Honduras (68 people, 37 men, 31 women, 7,552 hours of training, 4,088 hours of training for men, 3,464 hours of training for women)

- (5) ICC training to facilitators on climate tools and weather data communication (24 people, 18 men, 6 women, 268 hours of training, 196 hours of training for men, 72 hours of training for women)
- (6) ICC's Gender Engagement Sessions (31 women, 186 hours of training for women)
- (7) ICC's Community of Practice Sessions (96 people, 69 men, 27 women, 576 hours of training, 414 hours of training for men, 162 hours of training for women)
- (8) Training of Trainers on Climate Change and Municipal Adaptation Planning in Macedonia (14 people, 9 men, 5 women, 224 hours of training, 144 hours of training for men, 80 hours of training for women)
- (9) Kazakhstan Hydrometeorological Center informal training by Brad Lyon and Tony Barnston in December 2013 on the IRI's Climate Predictability Tool to help identify sources of climate predictive skill (3 women, 12 hours of training for women)
- (10) Seminar on Social and Economic Benefits and Delivery of Meteorological and Hydrological Services in Brunei (31 people, 21 men, 10 women, 744 hours of training, 504 hours of training for men, 240 hours of training women)
- (11) Seminar on Social and Economic Benefits and Delivery of Meteorological and Hydrological Services in South Africa (26 people, 21 men, 5 women, 624 hours of training, 504 hours of training for men, 120 hours of training women)
- (12) Seminar on Social and Economic Benefits and Delivery of Meteorological and Hydrological Services in Curacao (19 people, 17 men, 2 women, 456 hours of training, 408 hours of training for men, 48 hours of training women)
- (13) IRI Central America Climate Information Tools Workshop in New York (10 people, 6 men, 4 women, 800 hours of training, 480 hours of training for men, 320 hours of training for women)
- (14) Jamaica Met. Climate Predictability Tool Training (1 person, 1 man, 16 hours of training for men)
- (15) Training sessions at the ICCS3 on tools supporting risk assessment, climate prediction, Geographic Information systems, and statistical analysis (50 people, 29 men, 21 women, 113 hours of training, 67 person-hours of training for men, 46 hours of training for women)
- (16) CRIS training on the fundamentals of climate change, including "Climate 101" in Santo Domingo (21 people, 11 men, 10 women, 168 hours of training, 88 hours of training for men, 80 hours of training for women)
- (17) CRIS training on the fundamentals of vulnerability screening to Santo Domingo working group (23 people, 8 men, 15 women, 184 hours of training, 64 hours of training for men, 120 hours of training for women)
- (18) CRIS training on the fundamentals of climate change, including "Climate 101" in Piura (17 people, 9 men, 8 women, 51 hours of training, 27 hours of training for men, 24 hours of training for women)
- (19) CRIS training on the fundamentals of vulnerability screening to Piura working group (17 people, 9 men, 8 women, 42.5 hours of training, 22.5 hours of training for men, 20 hours of training for women)

Indicator #3: Number of laws, policies, strategies, plans, agreements, or regulations addressing climate change officially proposed, adopted, or implemented as a result of USG assistance

Data is forthcoming.

Indicator #4: Amount of investment leveraged in U.S. dollars from private and public sources, for climate change as a result of USG assistance

CCRD benefitted from the financial contributions of numerous public and private organizations. Not all organizations providing leverage have been forthcoming in sharing cost information. In those instances, an estimate of the value of leverage is provided based on CCRD's experience in convening similar events such as international conferences and workshops.

Multiple organizations in support of Zamorano (**\$26,138**)

- Includes labor and support from local partners including World Vision, PROMAC Project, and HORT-CRSP Project for activities in El Salvador, Honduras, and Nicaragua.

Multiple organizations in support of ICC (**\$29,747.69**)

- Contributions from CEDIG, FEWSNET, ICTA, ASOBORDAS, CENGICANA, Monsanto, Pruductora de semillas, DUWEST, Valle Verde, Asur, CUNSUROC, ADRI, Vivamos Mejor, and FAO to implement the ICC training programs in Guatemala.

World Meteorological Organization and Brunei Meteorological Service (**\$57,603**)

- Covered venue costs (coffee breaks and a morning reception) as well as all workshop costs for international participants and Holly Kootval (airfare, hotel, and per diem) for seminar on Social and Economic Benefits and Delivery of Meteorological and Hydrological Services Brunei.

World Meteorological Organization (**\$38,151**)

- Covered venue costs (coffee breaks and a morning reception) as well as all workshop costs for international participants and Holly Kootval (airfare, hotel, and per diem) for seminar on Social and Economic Benefits and Delivery of Meteorological and Hydrological Services in South Africa.

World Meteorological Organization and Curacao Meteorological Service (**\$28,598.90**)

- Covered venue costs (coffee breaks and a morning reception) as well as all workshop costs for international participants and Holly Kootval (airfare, hotel, and per diem) for seminar on Social and Economic Benefits and Delivery of Meteorological and Hydrological Services in Curacao

Indicator #5: Number of institutions with improved capacity to address climate change issues as a result of USG assistance. Measuring improved institutional capacity requires an initial baseline assessment of the targeted capacity(ies) and a post-intervention assessment. Due to the need for post-intervention assessment and follow-up, some interventions are not reported until a later reporting period.

Support for indicator #5 resulted from six workshops/trainings:

- (1) ICC Workshop on Climate Change Adaptation for the Agriculture Sector (second project workshop targeted at professionals (six institutions)
- (2) Zamorano Workshop “Climate Information System for Agriculture in Central America (held in July 2013 but not counted yet towards indicators). (33 institutions – 8 Honduras, 6 Costa Rica, 1 Panama, 1 Belize, eight Guatemala, 6 El Salvador, 3 Nicaragua)
- (3) CCRD training for Milieukontakt by trainers trained by the CCRD technical team. Building capacity to adapt the Climate Resilient Development Framework training with small municipalities in Macedonia. (1 institution)
- (4) Kazakhstan Hydrometeorological Center informal training December 2013 (1 institution)
- (5) Central America Climate Information Tools Workshop in New York: from October 28 to November 8, 2013 (10 institutions)
- (6) Climate Predictability Tool Training for Jamaica Met on October 1-2, 2013 (1 institution)

Indicator #6: Number of days of USG funded technical assistance (TA) in climate change provided to counterparts or stakeholders. Includes the transfer of knowledge and/or expertise by way of staff, skills training, research work and financing to support quality of program implementation and impact, support administration, management, representation, publicity, policy development and capacity building. Generally, workshops/meetings that are not counted under Indicator #2 (climate change training) are included here.

- (1) Six days (three days each) of TA from Dr. Anderson (CCRD-Chief of Party) and Charlotte Mack (ICF) for training-of-trainers on Climate Change and Municipal Adaptation planning in Macedonia as well as additional debrief with local institutions for further work with municipalities to integrate climate issues into municipal strategies
- (2) Twelve days (three days each) of TA from Mukul Sharma, Peter Schultz, Aly Lyons, and Roger-Mark DeSouza for the Climate Change Adaptation and Peace Building: Developing Conflict-Sensitivity Guidelines for Adaptation Policy in Africa Workshop
- (3) One day of TA from Phurba Sherpa for the Everest Alliance introductory workshop at the KACC headquarters in Dingboche, Sagamartha (Everest) National Park
- (4) Two days of TA from Alton Byers at the second Everest Alliance meeting at the KACC
- (5) Four days of TA (two days each) from Dr. Shailendra Thakali and Phurba Sherpa at the Phakding Community Consultation workshop as part of the Khumbu Valley LAPA
- (6) Four days of TA (two days each) from Dr. Shailendra Thakali and Phurba Sherpa at the Namche Community Consultation Workshop as part of the Khumbu Valley LAPA
- (7) Four days of TA (two days each) from Dr. Shailendra Thakali and Phurba Sherpa at the Khumjung Community Consultation Workshop as part of the Khumbu Valley LAPA
- (8) Two days of TA from Cristina Giraud at the Coyllur-Ichoca Community Consultation Workshop as part of the Quilcay Watershed LAPA
- (9) Two days of TA from Cristina Giraud at the Marian Community Consultation Workshop as part of the Quilcay Watershed LAPA

- (10) Two days of TA from Cristina Giraud at the Llupa-Unchus Community Consultation Workshop as part of the Quilcay Watershed LAPA
- (11) Four days of TA from Laura Trejo at the Huaraz (urban areas) Community Consultation Workshop as part of the Quilcay Watershed LAPA
- (12) One day of TA (three hours each for Joanne Potter, Judsen Bruzgul, Wendy Jaglom) at the Adaptation Session at the 2013 Infrastructure Workshop for USAID staff
- (13) Four days of TA and technology transfer by Spencer Reeder for the Vietnamese Center for Research and Planning on Urban and Rural Environment and the Vietnam Institute for Architecture and Planning on climate-resilient infrastructure, tools, strategies, and planning in Seattle, Washington and Portland, Oregon.

Indicator #7: Number of climate adaptation tools, technologies and methodologies developed, tested, and/or adopted as a result of USG assistance

- (1) The Climate Impacts Decision Support Tool (CIMPACT-DST) customized for the city of Hue, Vietnam was used to inform the climate-resilient urban master plan of Vinh Thanh commune in the Phu Van district of Thua Thien Hue province, Vietnam.
- (2) Eighteen tools introduced by Zamorano in farmer trainings that increase resilience by improving crops, increasing water storage in the soil/the overall water availability in the farms, and promoting diversification of income to the farming families.

Indicator #8: Number of climate vulnerability assessments conducted

Data is forthcoming.

Indicator #9: Number of people registering to participate in adaptation-related communities of practice

The Climate Services Partnership established 391 new contacts. For a list of contact names and emails please refer to Cathy Vaughan at IRI cvaughan@iri.columbia.edu.

Indicator #10: Number of unique visitors logging on to/accessing the adaptation-related websites supported with USG assistance

CCRD monitored visits to the Adaptation Partnership, Climate Services, and High Mountain websites:

- 1. Adaptation partnership: **1,834 unique visitors**
- 2. HMGWP Community of Practice: **2,492 unique visitors**
- 3. CSP Community of Practice: **5,274 unique visitors**
- 4. Central America Climate Resilient Agriculture: **27 unique visitors**

Indicator #11: Number of adaptation financing proposals benefitting from USG assistance

Data is forthcoming.

CCRD Performance Indicators and Achievements

#	Indicator	Unit	FY 2012 Actuals	FY 2013 Actuals	Achievement – FY 2014					Remarks	CCRD Cumulative FY 2012 – FY 2014	
					FY 2014 Targets	QTR 1	QTR 2	QTR 3	QTR 4			FY 2014 Total
1	Number of stakeholders with increased capacity to adapt to the impacts of climate variability and change as a result of USG assistance (mandatory for Adaptation funding) MEN	Number	48	4	70	0				0	Three women received training to improve monthly and seasonal forecasts for Kazakhstani farmers needing improved information to cope with climate variability.	52
	Number of stakeholders with increased capacity to adapt to the impacts of climate variability and change as a result of USG assistance (mandatory for Adaptation funding) WOMEN	Number	9	0	30	3				3		12
2	Number of	Number/	376/	1,665/	600/	626/				626/	CCRD supported 19	2,667/

#	Indicator	Unit	FY 2012 Actuals	FY 2013 Actuals	Achievement – FY 2014						Remarks	CCRD Cumulative FY 2012 – FY 2014	
					FY 2014 Targets	QTR 1	QTR 2	QTR 3	QTR 4	FY 2014 Total			
	people receiving training in climate change supported by USG assistance (Person-hours of training completed in climate change supported by USG assistance) MEN	Hours	7,913	36,585.50	10,000	8,600					8,600	workshops/trainings in Central America, Asia, and South America, and Caribbean resulting in 14,629 hours of training for 1,043 people. For more information on the events please refer to the indicator explanations above.	53,098.50
	Number of people receiving training in climate change supported by USG assistance (Person-hours of training completed in climate change supported by USG assistance)	Number/ Hours	148/ 2,736	890/ 21,311	200/ 5,000	471/ 6,029					471/ 6,029		1,455/ 30,076

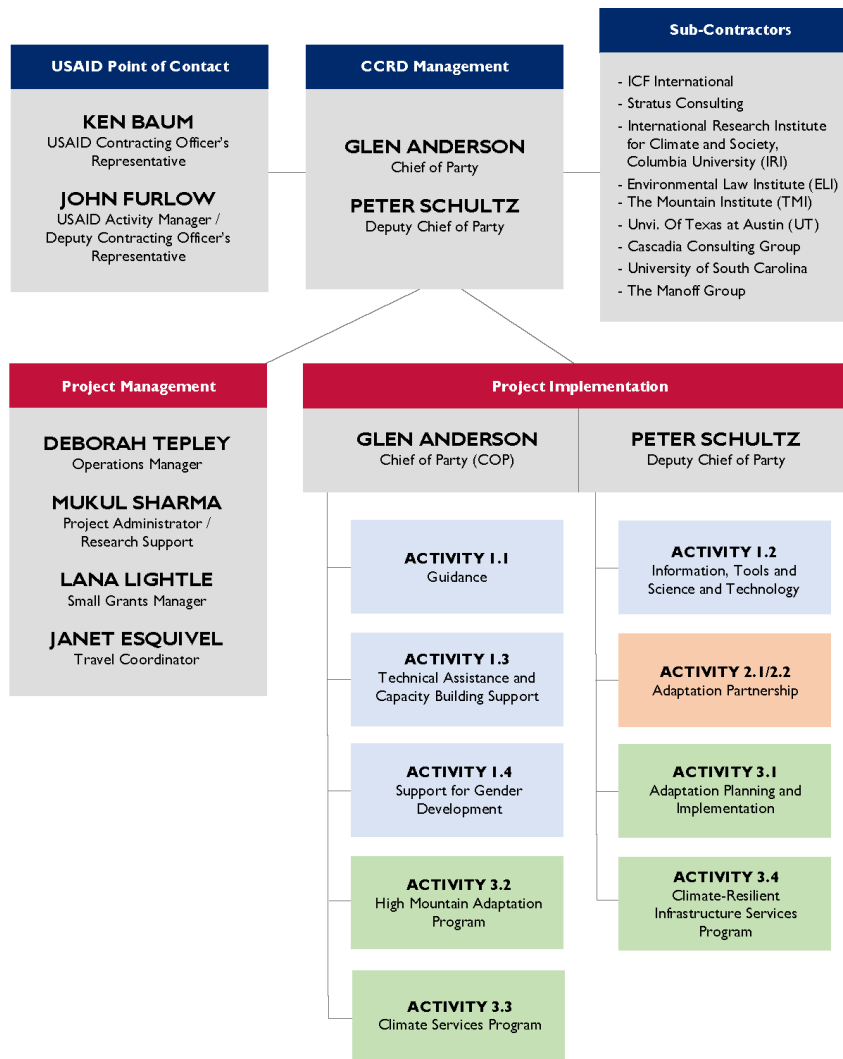
#	Indicator	Unit	FY 2012 Actuals	FY 2013 Actuals	Achievement – FY 2014						Remarks	CCRD Cumulative FY 2012 – FY 2014
					FY 2014 Targets	QTR 1	QTR 2	QTR 3	QTR 4	FY 2014 Total		
	WOMEN											
3	Number of laws, policies, strategies, plans, agreements, or regulations addressing climate change officially proposed, adopted, or implemented as a result of USG assistance	Number		11	12	0				0		11
4	Amount of investment leveraged in US dollars from private and public sources, for climate change as a result of USG assistance	Dollars	\$440,000	\$804,425	\$600,000	\$108,238				\$108,238	CCRD benefited from financial contributions from a consortium of organizations in Central America (in support of Zamorano and ICC) as well as The WMO, Brunei Met Service, and Curacao Met Service	\$1,424,663

#	Indicator	Unit	FY 2012 Actuals	FY 2013 Actuals	Achievement – FY 2014						Remarks	CCRD Cumulative FY 2012 – FY 2014	
					FY 2014 Targets	QTR 1	QTR 2	QTR 3	QTR 4	FY 2014 Total			
5	Number of institutions with improved capacity to address climate change issues as a result of USG assistance	Number	272	386	20	52					52	Support for indicator five resulted from six workshops/trainings in Central America, Kazakhstan, Macedonia, Jamaica, and New York	710
6	Number of days of USG-funded technical assistance in climate change provided to counterparts or stakeholders	Days	171	141.50	160	46					46	Technical assistance provided through 16 separate events in Central and South America, Africa and Asia	358.50
7	Number of climate adaptation tools, technologies and methodologies developed, tested, and/or adopted as a result of USG assistance	Number	6	19	20	19					19	Specifically technologies used at Zamorano's demonstrative farms/sites in El Salvador, Honduras, and Nicaragua as well as the CIMPACT-DST customized for the city of Hue	44

#	Indicator	Unit	FY 2012 Actuals	FY 2013 Actuals	Achievement – FY 2014						Remarks	CCRD Cumulative FY 2012 – FY 2014
					FY 2014 Targets	QTR 1	QTR 2	QTR 3	QTR 4	FY 2014 Total		
8	Number of climate vulnerability assessments conducted	Number	5	1	N/A	0				0		6
9	Number of people registering to participate in adaptation-related communities of practice	Number	80	349	N/A	391				391	391 new CSP Community of Practice Members	820
10	Number of people logging on to/ accessing the adaptation-related websites supported with USG assistance	Number	7,687	9,908	N/A	9,627				9,627	Includes visitors to the Adaptation Partnership, Climate Services, and High Mountain websites	27,222
11	Number of adaptation financing proposals benefitting from USG assistance	Number		3	N/A	0				0		3

ANNEX II. ORG CHART

Exhibit 2. Organization Chart



PROJECT MANAGEMENT ----- GLEN ANDERSON

WORK PLAN ----- G. ANDERSON / KEN BAUM
 PMP ----- G. ANDERSON / K. BAUM
 STRATEGIC PLANNING/SAC ----- G. ANDERSON / JOHN FURLOW
 REPORTING ----- DEBORAH TEPLY / K. BAUM
 COMMUNICATIONS, OUTREACH AND COMMUNITIES OF PRACTICE ----- MICHAEL COTE / JENNY FRANKEL-REED
 POC FOR SUBCONTRACTOR/CONSULTANTS ----- D. TEPLY / K. BAUM
 SMALL GRANTS ----- LANA LIGHTLE / K. BAUM

PROJECT IMPLEMENTATION ----- GLEN ANDERSON / PETER SCHULTZ

1.1 ACTIVITY: GUIDANCE ----- G. ANDERSON / J. FRANKEL-REED
1.1 GUIDANCE, BRIEFS AND ANNEXES ----- YOON KIM / J. FRANKEL-REED
 CLIMATE RESILIENT DEVELOPMENT FRAMEWORK ----- Y. KIM / J. FRANKEL-REED & JONATHAN COOK
 DIAGNOSIS ANNEX ----- P. SCHULTZ / J. FRANKEL-REED & J. COOK
 COASTAL AND MARINE ANNEX ----- JASON VOGEL / J. COOK
 DIFFERENTIATED VULNERABILITY ANNEX ----- ED CARR / ANDRE MERSHON
 GOVERNANCE ANNEX ----- JESSICAL TROELL / J. COOK
 CLIMATE INFORMATION GUIDE ----- P. SCHULTZ / J. FRANKEL-REED
 NEW DIRECTIONS IN PILOTS AND RESEARCH ----- P. SCHULTZ / J. FURLOW

1.2 ACTIVITY: INFORMATION, TOOLS AND SCI AND TECH ----- P. SCHULTZ / J. FRANKEL-REED
 UNDP ADAPTATION LEARNING MECHANISM WEBSITE ----- M. COTE / J. FRANKEL-REED

1.3 ACTIVITY: PROVIDE CAPACITY BUILDING SUPPORT ON MAINSTREAMING ----- G. ANDERSON
 SUPPORT DEVELOPMENT OF USAID'S FEDERAL AGENCY CLIMATE CHANGE PLAN ----- MICHELLE COLLEY / NORA FERM
 SUPPORT FOR USAID INTEGRATION PILOT IN KAZAKHSTAN ----- G. ANDERSON / J. FRANKEL-REED
 SUPPORT FOR CLIMATE RESILIENT LOW EMISSIONS DEVELOPMENT STRATEGIES ----- CHARLOTTE MACK / J. FURLOW

1.4 SUPPORT FOR GENDER DEVELOPMENT
 TECHNICAL ASSISTANCE TO THE OFFICE OF GENDER EQUALITY AND WOMEN'S EMPOWERMENT ----- E. CARR / A. MERSHON

2.1/2.2 ACTIVITY: ADAPTATION PARTNERSHIP ----- P. SCHULTZ
2.1 ADAPTATION PARTNERSHIP ----- ROSAMUND MISCHÉ JOHN
 CONDUCT URBAN ADAPTATION PARTNERSHIP WORKSHOP ----- C. MACK / N. FERM
 CONDUCT CLIMATE AND SECURITY ADAPTATION PARTNERSHIP WORKSHOP ----- MUKUL SHARMA / J. FURLOW
 CONDUCT TRAINING ON MAINSTREAMING FOR MARINE PROTECTED AREA MANAGERS ----- Y. KIM / J. COOK

3.1 ACTIVITY: SUPPORT ADAPTATION PLANNING AND IMPLEMENTATION ----- P. SCHULTZ
 SUPPORT PREPARATION OF NATIONAL ADAPTATION PLANS (NAPS) ----- Y. KIM
 DEVELOP AND PILOT FAST TRACK IMPLEMENTATION CONCEPT ----- P. SCHULTZ

3.2 ACTIVITY: HIGH MOUNTAIN ADAPTATION PROGRAM ----- G. ANDERSON
3.2 HIGH MOUNTAIN AND ADAPTATION PROGRAM ----- M. COTE
 DEVELOP THE HIGH MOUNTAIN ADAPTATION PROGRAM CoP SECRETARIAT ----- JOHN HARLIN
 IMPLEMENT COMMUNITY OF PRACTICE PILOT PROJECTS AND RESEARCH ----- TMI / UT

3.3 ACTIVITY: CLIMATE SERVICES PARTNERSHIP ----- G. ANDERSON
3.3 CLIMATE SERVICES ----- FERNANDA ZERMOGLIO
 COORDINATE ACTIVITIES OF THE CLIMATE SERVICES PARTNERSHIP ----- STEVE ZEBIAK
 COMPILER AND DISSEMINATE CURRENT CLIMATE SERVICES KNOWLEDGE ----- IRI STAFF
 CONDUCT CASE STUDIES AND ASSESSMENTS OF CLIMATE SERVICES ----- IRI STAFF
 ECONOMIC VALUATION OF CLIMATE SERVICES ----- G. ANDERSON
 PILOT NATIONAL LEVEL CLIMATE SERVICES ANALYSIS ----- S. ZEBIAK/IRI
 DEVELOP CLIMATE SERVICES PRODUCT FOR AGRICULTURAL SECTOR ----- IRI STAFF
 CLIMATE SERVICES TECHNICAL BACKSTOPPING OF DEVELOPMENT PROGRAM ----- S. ZEBIAK/IRI
 INTERNATIONAL RESEARCH AND APPLICATIONS PROJECT ----- LISA GODDARD/IRI

3.4 ACTIVITY: CLIMATE RESILIENT INFRASTRUCTURE SERVICES PROGRAM (CRIS) ----- P. SCHULTZ
 PROVIDE CRIS SUPPORT TO PILOT CITIES TO ACCELERATE CLIMATE RISK MANAGEMENT ----- J. POTTER
 DESIGN AND IMPLEMENT A SMALL GRANTS PROGRAM ----- CHRIS EVANS / L. LIGHTLE
 FACILITATE GLOBAL CITY-TO-CITY INFORMATION ----- J. POTTER/ WENDY JAGLOM
 PROVIDE INFORMATION AND TECHNICAL RESOURCES TO USAID STAFF ----- J. POTTER
 EVALUATE CRIS ACTIVITIES AND RECOMMEND NEXT STEPS ----- J. POTTER

J. FURLOW
 J. COOK
 J. COOK
 J. FURLOW
 N. FERM

ANNEX III. SMALL GRANTS

Name-Number	Title	Type	Amount	Status
Adam French (University of California, Santa Cruz): CCRDCS0001	Integrated and Participatory Risk Management in Peru's Lake Paron Glacier Basin	Climber-Scientist Small Grants (Individual Grant)	\$24,818	Active
Ulyana Nadia Horodyskyj (University of Colorado (UC) at Boulder): CCRDCS0002	Quantifying Supraglacial Lake Changes: Contributions to Glacial Ice Volume Loss and Runoff Inputs to Rivers in Nepal and Tibet	Climber-Scientist Small Grants (Individual Grant)	\$31,527	Closed out
Shah Raees Khan (University of Manitoba): CCRDCS0003	Understanding Vulnerabilities to Environmental Hazards in Mountain Areas: A Case Study of Climate Change Analysis on Livelihoods in Northern Pakistan	Climber-Scientist Small Grants (Individual Grant)	\$24,985	Cancelled
Laura Read (Tufts University): CCRDCS0004	Tres Cuencas Commonwealth	Climber-Scientist Small Grants (Individual Grant)	\$25,962	Active
Raúl Augusto Loayza Muro (Universidad Peruana Cayetano Herida): CCRDCS0005	Natural acid and metal leaching in Andean headwaters: an interdisciplinary approach to evaluate water quality and potential sources for remediation in a climate change	Climber-Scientist Small Grants (Individual Grant)	\$24,997.60	Active

Name-Number	Title	Type	Amount	Status
	context in the Cordillera Blanca (Peru)			
ATREE (India-Nepal): CCRDCS0006	Climate change in Kanchenjunga TCA: Vulnerabilities and adaptive capacities	Climber-Scientist Small Grants (Institutional Grant)	\$93,700	Active
The Research Foundation for the State University of New York (SUNY) (Mongolia-Altai): CCRDCS0007	Engaging Climber-Scientists and Indigenous Herders on Grazing and Climate Change Issues in the Altai Mountain Region of Mongolia	Climber-Scientist Small Grants (Institutional Grant)	\$99,655	Active
Resources Himalaya Foundation (Nepal): CCRDCS0008	Building Climate Change Resilience Capacity of Mountain People in Nepal	Climber-Scientist Small Grants (Institutional Grant)	\$97,823.53	Clouse out is in the process
Geo-Science Innovations (Nepal): CCRDCS0009	Investigation of the Seti River disaster (May 5, 2012) and assessment of past and future mountain hazards facing Pokhara, Nepal and upstream communities	Climber-Scientist Small Grants (Institutional Grant)	\$100,000	Closed out
Institute of Environmental Engineering (Eidgenössische Technische Hochschule ETH), Zurich, Switzerland: CCRDCS0010	Including the Sherpa Factor in Water Resources Projections in the Nepalese Himalaya	Climber-Scientist Small Grants (Institutional Grant)	\$99,590	Active
Stephanie Spray	Snow River Film	Climber-	\$28,610	Active

Name-Number	Title	Type	Amount	Status
(Harvard University): CCRDSC0011	Project	Scientist Small Grants (Individual Grant)		
Private Institute for Climate Change Research (ICC); part of the Guatemalan Sugar Association (Asociación de Azucareros de Guatemala - ASAZGUA) CCRDCR0001	Develop a mechanism for Climate Change Technology Transfer for staple crops within the Guatemalan Pacific slopes.	Costa Rica Small Grants (Institutional Grant)	\$127,511.29	Active
Tropical Agricultural Research and Higher Education Center (CATIE) CCRDCR0002	Strengthening the resilience of cattle farms to climate variability and climate change in Honduras, Nicaragua and Costa Rica	Costa Rica Small Grants (Institutional Grant)	\$171,570.83	Active
Pan American School of Agriculture, also known as Zamorano (university) CCRDCR0003	Building capacity for climate-resilient agriculture in the dry corridor of northern central America	Costa Rica Small Grants (Institutional Grant)	\$159,362.50	Active
International Environmental Data Rescue Organization (IEDRO) : CCRDSS0001	West Africa Data Rescue and Digitization Facility	Sole Source Small Grants (Institutional Grants)	\$85,321.75	Active
The Energy and Resources Institute (TERI)	Urban Infrastructure Inventory and Rapid Vulnerability Assessment for Resilience Planning in Two Coastal Cities in India	The Climate Resilient Infrastructure Services (CRIS) Program (Institutional Grants)	\$136,630.91	Active

Name-Number	Title	Type	Amount	Status
Yayasan Kota Kita Surakarta	Vulnerability Assessment, Infrastructure Inventory, Resilience Planning and Capacity Building for the City of Manado, Indonesia	The Climate Resilient Infrastructure Services (CRIS) Program (Institutional Grants)	\$108,874	Active
Yayasan Mercy Corps Indonesia (YMCI)	CRISPI Climate Resilient Infrastructure Services Program - Indonesia	The Climate Resilient Infrastructure Services (CRIS) Program (Institutional Grants)	\$149,990	Grant Agreement is in process
Thailand Environment Institute (TEI)	Public-Private Partnerships for Climate Resilient Infrastructure: Barriers and Opportunities in the Phuket Tourism Sector	The Climate Resilient Infrastructure Services (CRIS) Program (Institutional Grants)	\$122,852	Grant Agreement is in process
Instituto Dominicano de Desarrollo Integral (IDDI)	Increasing Resilience to Climate Change of Santo Domingo's Services Infrastructure	The Climate Resilient Infrastructure Services (CRIS) Program (Institutional Grants)	\$146,673.98	Active
Western Kentucky University			Tropical Andean Climate Change Adaptation and Ecosystem Services Monitoring, Cordillera Blanca, Peru	Academic Grants (Institutional Grants)

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