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EVENT REPORT

# ADVANCING CLIMATE-RESILIENT DEVELOPMENT SYMPOSIUM

WASHINGTON, D.C., MARCH 16–19, 2015 FINAL REPORT



**SEPTEMBER 2015**

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September 2015

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## **DISCLAIMER**

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# ACRONYMS

ACRD	Advancing Climate-Resilient Development
ADPC	Asian Disaster Preparedness Center
AP	Adaptation Partnership
ARCC	African and Latin American Resilience to Climate Change (USAID project)
ATLAS	Adaptation, Thought Leadership, and Assessments (USAID project)
CCRD	Climate Change Resilient Development (USAID project)
CIMPACT-DST	Climate Impacts Decision Support Tool
CoP	Community of Practice
COP15	Copenhagen Climate Change Conference of Parties (2015)
CRIS	Climate Resilient Infrastructure Services
CRW	Climate Resilient Wheat (Kazakhstan CCRD program)
CSP	Climate Services Partnership
DAI	Development Alternatives Incorporated
DCHA	Democracy, Conflict and Humanitarian Assistance (USAID Bureau)
DFID	Department for International Development (United Kingdom)
E3	Bureau for Economic Growth, Education, and Environment
ECOWAS	Economic Community of West African States
GCC	Global Climate Change
GIS	geographic information system
GIZ	Gesellschaft für Internationale Zusammenarbeit (Germany)
GLOF	glacial lake outburst flood
HiMAP	High Mountains Adaptation Partnership
ICCS	International Conference on Climate Services
ICIMOD	International Centre for Integrated Mountain Development
IPCC	Intergovernmental Panel on Climate Change
IRAP	Integrating Climate Information and Decision Processes for Regional Climate Resilience
IRI	International Research Institute for Climate and Society
LAPA	Local Adaptation Plan of Action
LDC	Least Developed Country
M&E	monitoring and evaluation
MCCS	Municipal Climate Change Strategies (USAID project)
MKM	Milieukontakt Macedonia
MPA	Marine Protected Area
NCA	National Climate Assessment
NAP	National Adaptation Planning
NAPA	National Adaptation Plan of Action
NASA	National Aeronautics and Space Administration
NGO	nongovernmental organization
NOAA	National Oceanic and Atmospheric Administration
OCA	Organizational Capacity Assessment
OCM	Office of Conflict Management
RCMRD	Regional Center for Mapping of Resources for Development
TMI	The Mountain Institute
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
USAID	U.S. Agency for International Development
WIO	Western Indian Ocean
WIOMSA	Western Indian Ocean Marine Science Association
WMO	World Meteorological Organization

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# I. INTRODUCTION

The Advancing Climate-Resilient Development (ACRD) Symposium took place in Washington, D.C., March 16–19, 2015. The U.S. Agency for International Development (USAID) Bureau for Economic Growth, Education, and Environment (E3) Global Climate Change (GCC) Office, together with GCC Office’s Climate Change Resilient Development Project (CCRD), hosted the symposium. The invitation-only event brought together adaptation and development experts and decision-makers to:

- Share lessons learned from the CCRD project
- Exchange adaptation-related approaches and experiences
- Identify new ways to advance climate-resilient development.

This report summarizes symposium highlights; synthesizes lessons learned from past work on climate-resilient development and ideas for moving forward; and provides links to symposium resources, including presentations (in PowerPoint and video formats), photographs, session summaries, and related documents.

## Key Resources

### CCRD:

Learn about CCRD programs and find CCRD reports, videos, tools, and websites:  
[www.ccrdproject.com/](http://www.ccrdproject.com/)  
[www.ccrdproject.com/ccrd-library](http://www.ccrdproject.com/ccrd-library)

### ACRD Symposium:

Find session presentations, videos, photographs, speaker information, and summaries:  
[www.ccrdproject.com/acrd-symposium](http://www.ccrdproject.com/acrd-symposium)  
[www.flickr.com/photos/ccrdproject](http://www.flickr.com/photos/ccrdproject)  
[www.ccrdproject.com/acrd-symposium/speakers](http://www.ccrdproject.com/acrd-symposium/speakers)

## I.1. THE CLIMATE CHANGE RESILIENT DEVELOPMENT PROJECT

The CCRD project was a global four-year project of USAID’s GCC Office, which was implemented from 2011 to 2015. Its goal was *enhancing the resilience of developing country peoples, assets, and livelihoods through improved design of USAID programs and increased capacity to respond to climate change impacts*.

The CCRD team conducted activities in more than 30 countries throughout Asia, Africa, Southern Europe, Latin America, and the Caribbean to help define and advance climate-resilient development. Engility Corporation/IRG implemented the project with the support of a consortium of partners from private industry, NGOs, and academia, including ICF International, Stratus Consulting (now a wholly-owned subsidiary of Abt Associates), Cascadia Consulting, the Manoff Group, the International Research Institute for Climate and Society at Columbia University, The Mountain Institute, the Environmental Law Institute, the Cockrell



**CCRD-funded Vietnam National Climate Planning Tool Dissemination Workshop, Vietnam, 2014.**

Photo credit: Michael E. Cote.

School of Engineering at the University of Texas and the Department of Geography at University of South Carolina.

The cornerstone of the CCRD project is the Climate-Resilient Development Framework, a “development-first” approach to climate change adaptation that development practitioners and others can use to systematically include climate considerations in their development planning and implementation activities. The framework starts from the development goals of a community, region, or country before assessing vulnerability to the most relevant climate and non-climate stressors. From there, countries and communities are better equipped to identify, plan, and implement concrete actions to ensure their plans and activities are climate-resilient.

Over the course of the project, the CCRD team implemented numerous programs that focused on developing, testing, and implementing the Framework; providing technical assistance and training to USAID missions, governments, and other stakeholders on national adaptation planning, climate-resilient infrastructure services, climate services, adaptation in high mountain regions, and other issues; promoting peer learning and knowledge sharing; developing climate planning tools; conducting stakeholder workshops; and providing small grants.

## 1.2. THE ADVANCING CLIMATE-RESILIENT DEVELOPMENT SYMPOSIUM

<b>Table 1.1. ACRD Symposium Agenda.</b>		
<b>Type of Session</b>	<b>Session Title</b>	<b>Chapter in Symposium Report</b>
<b>March 16: The Wilson Center</b>		
Opening Plenary:	<i>Advancing Climate-Resilient Development</i>	Chapter 2, Advancing Climate-Resilient Development
Lunchtime/Interactive Keynote:	<i>Adaptation Simulation Games</i>	Chapter 2, Advancing Climate-Resilient Development
Plenary Session:	<i>Lessons Learned from the Climate-Resilient Development Framework</i>	Chapter 2, Lessons Learned from the Climate-Resilient Development Framework
Reception:	<i>Celebrating Four Years of the Climate Change Resilient Development Project</i>	
<b>March 17: U.S. Department of State and the Cosmos Club</b>		
Panel Presentations:	<i>The Adaptation Partnership: A Model for Sustainable Program Design</i>	Chapter 3, The Adaptation Partnership
Plenary Session:	<i>Lessons Learned from the High Mountains Adaptation Partnership</i>	Chapter 4, The High Mountains Adaptation Partnership
<b>March 18: Carnegie Endowment for International Peace</b>		
Plenary Session:	<i>Urban Day: Adaptation Planning in Cities</i>	Chapter 5, Adaptation Planning in Cities
Plenary Session:	<i>Urban Day: Applying Technical Research and Tools in Developing Cities</i>	Chapter 5, Adaptation Planning in Cities
USAID Adaptation Community Meeting:	<i>Mainstreaming the Climate-Resilient</i>	Chapter 5, Adaptation Planning

	<i>Development Framework into Development Planning in Macedonia</i>	in Cities
USAID Demonstration Session:	<i>Institutional Capacity Assessment Tool</i>	Chapter 5, Adaptation Planning in Cities
<b>March 18: Carnegie Endowment for International Peace</b>		
Plenary Session:	<i>Leadership Perspectives of Climate Services</i>	Chapter 6, Climate Services
Plenary Session:	<i>Technical and Economic Assessment of Climate Services</i>	Chapter 6, Climate Services
Rapporteur's Report:	<i>A Look Back at the Week – Advancing Climate-Resilient Development</i>	Chapter 7, Climate Services
Panel Discussion:	<i>Panel Discussion: New Directions for USAID on Climate Change Adaptation</i>	Chapter 8, New Directions for Federal Government and USAID

The Advancing Climate-Resilient Development Symposium took place over four days and in four different locations across Washington, D.C. More than 45 climate change adaptation and international development experts and decision-makers presented lessons learned from their work and engaged in lively discussions with the 350 participants who joined the symposium both in-person and online.



From left, Rolf Anderson, USAID, Roger-Mark De Souza, Wilson Center, and John Furlow, USAID, open the Advancing Climate-Resilient Development Symposium on March 16, 2015, at the Wilson Center in Washington, D.C. Photo credit: Ruben Gamarra.

The symposium speakers included U.S. Government agency staff, White House staff, CCRD team members, international development practitioners, and adaptation experts from NGOs and private companies. Speakers represented countries around the world, including Jamaica, Peru, Guatemala, Macedonia, and Vietnam. A complete list of the speakers, their affiliations, and speaking topics is provided in Appendix A (also see <http://www.ccrdproject.com/acrd-symposium/speakers>).

Table 1.1 presents the symposium agenda and shows which chapter in this report summarizes each session of the symposium. A more detailed agenda is available in Appendix B and at <http://www.ccrdproject.com/acrd-symposium>.

The symposium presentations and discussions revealed several important findings and conclusions related to climate-resilient development:

- USAID’s Climate-Resilient Development Framework provided a big step forward in understanding and implementing climate-resilient development in developing countries.
- An effective approach to climate-resilient development is flexible, engages stakeholders (including local champions) early, works within the local cultural context, considers development options, and encourages information sharing.
- Climate information is crucial to climate-resilient development, but it is also essential to understand and incorporate local knowledge and cultural norms from the beginning.
- Pilot projects are valuable when used appropriately – for example, for learning and evaluating key lessons before scaling up a project, ensuring that a project is going in the correct direction, testing innovative ideas, and building communication connections among local partners.
- When developing and using tools, it is important to consider questions such as: How do we know we have the right tool for the right job? Is the tool usable? How should we balance usability with the technical applications of the tool? How do we engage local communities so that they can continue to use and maintain the tool over time?

Overall, symposium participants agreed that it is essential to continue to apply and build upon the Climate-Resilient Development Framework and other lessons learned about adaptation and climate-resilient development, which participants shared during the meeting.

There is much to be learned going forward – climate-resilient development is an evolving process that requires ongoing learning, evaluation, and implementation.

# 2. DAY 1: WELCOME AND OVERVIEW

## 2.1. CCRD OVERVIEW: ADVANCING CLIMATE-RESILIENT DEVELOPMENT

### Advancing Climate-Resilient Development

Monday, March 16, 9:00 a.m. – 1:15 p.m.

The Wilson Center

Roger-Mark De Souza, Wilson Center, Opening Remarks and Moderator  
Rolf Anderson, USAID, Opening Keynote

John Furlow, USAID, Introduction to the Symposium

Glen Anderson, Engility Corporation and Peter Schultz, ICF International, *Climate Change Resilient Development: Overview*

John Furlow, USAID, *Climate-Resilient Development Framework and Annexes*

Pablo Suarez, Red Cross/Red Crescent Climate Centre, Interactive Keynote

The first day of the ACRD Symposium provided an overview of the symposium and an introduction to the USAID CCRD project including the Climate-Resilient Development Framework (described in this chapter). In the afternoon, speakers took a closer look at the Climate-Resilient Development Framework and its annexes, which provide the foundation for many CCRD activities (see Chapter 3, *Lessons Learned from the Climate-Resilient Development Framework*).

### 2.1.1. SUMMARY OF PRESENTATIONS AND DISCUSSIONS

**Opening Remarks: Roger-Mark De Souza, Wilson Center.** Mr. De Souza opened the ACRD Symposium with an introduction about the Wilson Center, which hosted the first day of the symposium and has coordinated with USAID on climate change adaptation and conflict resilience work. He introduced John Furlow, who in turn introduced Rolf Anderson of USAID.

**Opening Keynote: Rolf Anderson, USAID.** Mr. Anderson set the stage for the topic of advancing climate-resilient development. He stated that President Obama has taken significant steps over the last year to integrate climate change into development programs around the world, and within USAID every project is now required to consider climate risks. The GCC office has been working in three broad areas related to climate change: fostering low-carbon growth, promoting sustainable and resilient societies, and reducing emissions from deforestation and land degradation.

#### Links to Key Resources

**Symposium presentations:**

<http://www.ccrdproject.com/acrd-symposium/acrd-day-1>

***Climate-Resilient Development: A Framework for Understanding and Addressing Climate Change:***

<http://www.ccrdproject.com/ccrd-library/climate-resilient-development-framework>

***The Climate Resilient Development Project: A Compendium:*** <http://www.ccrdproject.com/ccrd-compendium>

In terms of climate resilience, Mr. Anderson pointed out that throughout human history, people have been good at adaptation – for example, agriculture was an adaptive action in response to the need for food. However, decision-makers have difficulty dealing with climate risks – uncertainty is a major challenge. A goal of the CCRD project is to decode climate-resilient development and help developing countries make informed decisions about how to integrate climate risk into their development activities and take appropriate actions.

This week’s symposium introduces the following CCRD project actions:

- The Climate-Resilient Development Framework, annexes, and applications
- The Adaptation Partnership (AP)
- The High Mountains Adaptation Partnership (HiMAP)
- Urban climate resilience
- Climate services
- New directions in adaptation, including information on the new USAID Climatelinks.org knowledge portal (to launch September 2015).

***Climate Change Resilient Development (CCRD): Overview: Glen Anderson, Engility Corporation, and Peter Schultz, ICF International.*** Glen Anderson described the CCRD project as a unique opportunity: the open scope enabled the team to add relevant activities over the course of the project; five USAID staff members were involved in the project, enabling crucial conversation and collaboration; and the team included partners from a range of private companies, universities, and NGOs who brought diverse experiences and expertise. The CCRD project had three key objectives, described below.

1. *Objective 1:* To provide support to USAID Missions and Bureaus to mainstream climate into development programs and projects

The Climate-Resilient Development Framework, developed in support of the first objective, was the centerpiece of the entire CCRD project (see summary of the *Climate-Resilient Development Framework and Annexes* below). Other Objective 1 activities included providing support in the preparation of USAID’s Federal Agency Climate Change Adaptation Plan; conducting a water security case study in Iloilo, Philippines, to pilot test the framework; supporting GCC integration pilots in Kazakhstan, Macedonia, and Benin; facilitating desktop studies for USAID missions (in Peru, Timor Leste, Niger, and Burkina Faso); and providing capacity development for USAID staff (e.g., economics of adaptation and annual infrastructure workshops). In addition, the CCRD project has generated a



**From left, CCRD Chief of Party Glen Anderson, Engility Corporation; CCRD Deputy Chief of Party Peter Schultz, ICF International; and USAID Environment Officer Rolf Anderson, Director of the USAID Global Climate Change Office, provide an overview of the CCRD project.** Photo credit: Ruben Gamarra.

library of more than one hundred technical reports, factsheets, and training materials for use by USAID missions and bureaus and other stakeholders.

2. *Objective 2:* To coordinate with other U.S. government agencies to support global mainstreaming of adaptation

CCRD project work addressing the second objective focused on conducting a series of seven Adaptation Partnership (AP) workshops in conjunction with the U.S. Department of State. Held in locations across the globe and addressing a range of adaptation issues, these workshops resulted in knowledge sharing, the launch and expansion of three Communities of Practice (CoPs) and identification of emerging issues and knowledge gaps to address under Objective 3. (See [Chapter 3, Adaptation Partnership](#).)

3. *Objective 3:* To identify and respond to emerging issues and provide knowledge management assistance for design, planning, and implementation of climate resilient development.

Objective 3 activities included:

- *National Adaptation Planning (NAP)*, where CCRD staff provided technical assistance and workshop support in Jamaica, Tanzania, West Africa, and Cambodia to help these countries apply the Climate-Resilient Development Framework to the development of their national adaptation plans under the UN Framework Convention on Climate Change (See [Section 2.2, Lessons Learned from the Climate-Resilient Development Framework](#))
- *The High Mountains Adaptation Partnership*, included activities such as provision of technical assistance on local adaptation plans of action (LAPAs), innovative research on glacial lake mapping, a climber-scientist small grants program, and development of a glacial lake management handbook (See [Section 2.2, Lessons Learned from the Climate-Resilient Development Framework](#) and [Section 4.1, High Mountains Adaptation Partnership](#))
- *Climate Resilient Infrastructure Services Program (CRIS)*, which supported pilots in four medium-sized, rapidly growing coastal cities in order to field test the Climate-Resilient Development Framework and develop, test, and share innovative tools and approaches to help ensure reliable, sustainable infrastructure services in a changing climate. A key hallmark of this program is that local partners now have the knowledge and capacity to continue this work after CCRD has ended (See [Section 2.2, Lessons Learned from the Climate-Resilient Development Framework](#) and [Chapter 6, Urban Adaptation Planning, Technical Research, and Tools](#)).
- *The Climate Services Program*, which supported the Climate Services Partnership (CSP) as well as other activities including developing new climate services products for Jamaica and Kazakhstan, providing technical assessments of service quality and value, authoring a book with the World Meteorological Organization (WMO) and the World Bank on the economic valuation of climate services, and conducting training in the use of climate services (See [Section 6.1, Climate Services](#)).

In his portion of this presentation, Peter Schultz stated that as USAID moves forward in its work to advance climate-resilient development, it will be important to answer a number of questions that have been raised by the CCRD project. For example:

- *How can climate-resilient development be mainstreamed both within and outside of USAID?* Answering this question involves assessing additional questions such as what opportunities exist? What institutional barriers need to be overcome? What partnerships can be used or developed? How can capacity be built?
- *What technical developments are most needed?* This could involve data collection, analysis, and tool development; economic analysis; and monitoring, evaluation, and adaptive management.

See presentation at: <https://goo.gl/XHKCO2>.

**Discussion:** Questions during the discussion period centered on the economics of adapting to climate change and lessons learned from the CCRD project. In terms of economics, Dr. Anderson said it is possible to make a business case in the short-term for some adaptation actions, especially for marginal populations and extreme events. However, it is more difficult to do so for other cases (e.g., climate-resilient infrastructure), where costs are incurred now and benefits are discounted in the future. He stated that another common issue is siloing of adaptation actions; they must be considered alongside all other investments and at present, we don't have the metrics needed to answer these complicated economic questions. Dr. Schultz agreed that we still lack the information and data needed to justify adaptation actions; he added that we don't yet understand what the economic payoff will be in a highly varying climate.

John Furlow stated that many mission staff find support beyond guidebooks; the CCRD project brought in teams to train mission staff on topics such as understanding the USAID Climate Change and Development Strategy and general adaptation training. Deeper training was offered on focused content such as climate services and glacial lake hazards. Initially, Mission staff needed training on simple concepts, along the lines of "climate 101." Missions are now requesting more complicated training to build on the initial programs. CCRD found that people learn best from trusted voices and that the interactive training modules that were used were well-received. Overall, lessons learned on training and the importance of peer learning can be used to keep up the momentum on conducting climate-resilient development activities and can also be transferred to other USAID programs.

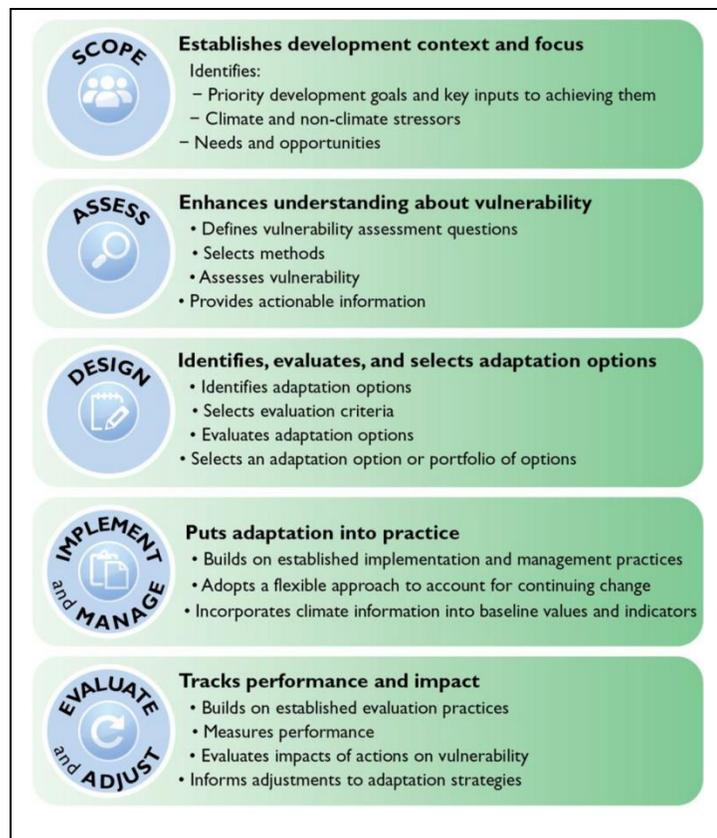


Figure 1. The Climate-Resilient Development Framework.

***Climate-Resilient Development Framework and Annexes: John Furlow, USAID (on detail to U.S. Department of State in 2015).***

John Furlow presented an introduction to the Climate-Resilient Development Framework. In 2006, USAID did not have a large budget for adaptation, but his team did have funding to develop a guidance document on how to address climate variability in development projects. This approach focused on specific projects and specific climate vulnerabilities. As USAID's adaptation budget increased, it became possible to take a broader view of adaptation, and in 2008, Mr. Furlow and a team from IRG joined an effort by Conservation International and the World Wildlife Fund to assess how climate change might affect



**John Furlow, USAID.**  
Photo credit: Ruben Gamarra.

Madagascar's protected areas. During an exercise looking at where different activities could take place in the future as climate changed, participants selected the same locations for multiple, incompatible activities: rice production, livestock, horticulture, and conservation for new protected areas. During this process, and a subsequent review of Madagascar's national development plan, the Madagascar Action Plan, it became apparent that adaptation issues cut across the country's various development goals, and consequently it was essential for agencies responsible for different objectives to coordinate with each other. In addition, it was clear that good governance, solid information, and informed planning and design are essential as countries move from a climate-vulnerable economy to a climate-resilient one. This initial work on adaptation provided insights and inputs for the CCRD team's development of the Climate-Resilient Development Framework. Figure 1 shows the framework, which consists of five steps:

- *Scope* entails determining the development context of the location you are working with – what are the development goals? How do you build climate into these goals? This step focuses on looking at climate as a stressor – not a sector – that cuts across different development sectors.
- *Assess* involves identifying vulnerabilities and impacts and understanding the nature of these vulnerabilities.
- *Design* includes identifying, evaluating, and selecting adaptation options.
- *Implement and manage* entails implementing adaptation activities.
- *Evaluate and adjust* includes tracking and measuring performance, evaluating the impacts of adaptation activities on vulnerability, and adjusting adaptation strategies.

The first two steps – Scope and Assess – represent the most innovative parts of the framework; the last three steps are typical of many development program approaches. A country, region, or community can apply the scope and assess steps as follows:

- Identify development objectives
- Determine requirements for meeting development objectives, including inputs and enabling conditions

- Identify the climate and non-climate stressors that will hinder achieving these objectives; this involves thinking about potential constraints and impediments holistically across all development objectives
- Identify sources of climate vulnerability resulting from those stressors
- Develop adaptation actions that can reduce vulnerability to climate and/or non-climate stressors.

In 2012, USAID and the CCRD team applied the framework in Jamaica, which had recently developed a national 25-year development plan that laid out separate development and climate change goals (*Vision 2030 Jamaica: National Development Plan*). One agency had primary responsibility for climate change, and the many agencies representing sectors likely to be affected had a mixed record of addressing climate risks. Many felt climate change was "somebody else's problem." CCRD staff convened a workshop in Kingston that was attended by 100 people from about 30 Jamaican ministries and other organizations. The participants divided into groups, with each group assessing a different development strategy and working to weave climate into that strategy based on the framework approach. The participants drew a number of important conclusions from the workshop. For example, the need for better climate information came up frequently, which showed that Jamaica's Met Service Agency is a key to helping the more powerful ministries (e.g., water and energy) achieve their goals. They also discovered the importance of working across development sectors. For example, the group that was working on tourism sector issues assumed that the country's coastal roads would be in place to enable tourists to visit coastal areas. However, the transportation group, which was concerned about the vulnerability of coastal roads, was developing a plan to move these roads inland. Building on the workshop results, Jamaica created a policy framework that lays out the justification for addressing climate change in a way that shares responsibilities among the 26 agencies and across 12 different sector policies. Over the course of the project, CCRD staff applied the Climate-Resilient Development Framework in other areas, including:

- National adaptation planning (NAP) development in Tanzania and West Africa (see [Section 2.2, Lessons Learned from the Climate-Resilient Development Framework](#)).
- Local Adaptation Plan of Action (LAPA) development in mountainous regions of Peru and Nepal (see [Section 2.2, Lessons Learned from the Climate-Resilient Development Framework](#) and [Section 4.1, High Mountains Adaptation Partnership](#)).

## **LOCAL APPLICATION FOR CITIES THROUGH THE CLIMATE (SEE SECTION 2.2, LESSONS LEARNED FROM THE CLIMATE-RESILIENT DEVELOPMENT FRAMEWORK AND SECTION 0,**

- Urban Adaptation Planning, Technical Research, and Tools).
- Sector application for a water utility in Iloilo, Philippines (see [Section 2.2, Lessons Learned from the Climate-Resilient Development Framework](#)).
- The Climate-Resilient Wheat project in Kazakhstan (see [Section 2.2, Lessons Learned from the Climate-Resilient Development Framework](#)).
- Small grants for climate-resilient development research (see [Section 2.2, Lessons Learned from the Climate-Resilient Development Framework](#)).

Several annexes to the framework have been issued or will be published soon, covering the topics of climate change and water, climate change and coastal zones, governance, climate vulnerability assessment, climate change and conflict, and working with marginal populations. More information about the annexes is provided in [Section 2.2, Lessons Learned from the Climate-Resilient Development Framework](#).

See presentation at: <https://goo.gl/Ev1QDK>.

**Discussion.** John Furlow defined “non-climate stressors” as non-climate-related issues that can hinder the achievement of a development outcome. Identifying and addressing non-climate stressors can sometimes be an important way to improve resilience. For example, in the Western Caribbean, CCRD staff learned that the coastal infrastructure was being destroyed because developers were ignoring existing zoning codes. As another example, in agriculture, the development of a climate-resilient seed does not necessarily result in farmers using the new seeds; they might plant the seeds only if they see an economic reason for doing so. Another non-climate stressor is population growth. Mr. Furlow also answered a question about the difference between climate change adaptation and resilience. He stated that resilience takes a broader view than adaptation; it helps us understand the multitude of problems that undermine development rather than focusing on one or two issues that might not provide the best answer. In response to several discussion questions, one lesson learned is the importance of actively identifying and engaging the local people who will be affected by a program. These stakeholders can provide essential information, and by being initially engaged in the project they will have an incentive to stay involved and become local champions who will continue the work after the development practitioner has left. Related to stakeholder engagement is the importance of understanding, respecting, and incorporating local culture into your project and tailoring your work to fit with what the country or locality is doing and how they do it.

*Response to a question about the difference between climate change adaptation and resilience:*

“ Resilience takes a broader view than adaptation; it helps us understand the multitude of problems that undermine development rather than focusing on one or two issues that might not provide the best answer.”

— John Furlow, U.S. Agency for International Development

**Lunchtime Activity: Pablo Suarez, Red Cross/Red Crescent Climate Centre.**

Mr. Suarez engaged symposium participants in a series of adaptation simulation games designed to showcase the difficulties of



Pablo Suarez, Red Cross/Red Crescent Climate Centre, presents the lunchtime activity. Photo credit: Ruben Gamarra.

implementing effective climate-resilient development. The games highlighted the importance of communication and interaction across different agencies, organizations, and stakeholders as well as proactive planning before an emergency occurs (e.g., by conducting appropriate planning, having the right people in place, and identifying funding in advance).

See a video of this activity at: <https://goo.gl/HP1thC>.

## 2.2. LESSONS LEARNED FROM THE CLIMATE-RESILIENT DEVELOPMENT FRAMEWORK

### Lessons Learned from the Climate-Resilient Development Framework

Monday, March 16, 1:30 – 4:30 p.m.

The Wilson Center

Jenny Frankel-Reed, USAID, Moderator

Jason Vogel, Abt Associates (Stratus Consulting), *Annexes to the Climate-Resilient Development Framework*

Mary Ackley, USAID, *Climate Change and Conflict Annex*

Edward Carr, University of South Carolina, *Marginal Populations and the CRD Framework*

Joel Smith, Abt Associates (Stratus Consulting) and Charlotte Mack, ICF, *National Adaptation Plans*

Alton Byers, the Mountain Institute, *Local Adaptation Plans*

Jason Vogel, Abt Associates (Stratus Consulting), *Iloilo Water Security Case Study*

Glen Anderson, Engility, *Kazakhstan Climate Resilient Wheat*

Michael Cote, Engility, *CCRD Small Grants Program*

Jonathan Cook, USAID, *Lessons Learned and the Way Forward for USAID*

Jenny Frankel-Reed introduced this session, which described the practical applications of the Climate-Resilient Development Framework, including descriptions of six framework annexes, brief discussions of CCRD projects that tested and applied the framework, and lessons learned from these activities.

### 2.2.1. SUMMARY OF PRESENTATIONS AND DISCUSSIONS

#### **Annexes to the Climate-Resilient Development Framework, Jason Vogel, Abt Associates.**

Because the Climate-Resilient Development Framework report is a high-level guidance document, the CCRD team developed five companion annexes and supported a sixth annex prepared under the leadership of USAID's Bureau for Democracy, Conflict, and Humanitarian Assistance (DCHA).

#### **Links to the CRD Framework and Annexes**

Climate-Resilient Development: A Framework for Understanding and Addressing Climate Change:

<https://goo.gl/myI615>

Climate Change and Coastal Zones: An Annex to the USAID Climate-Resilient Development Framework:

<https://goo.gl/akK9BO>

Climate Change and Water: An Annex to the USAID Climate-Resilient Development Framework

<https://goo.gl/V3nKv1>

Governing for Resilience: An Annex to the USAID Climate-Resilient Development Framework:

<https://goo.gl/AUuOgi>

Climate Vulnerability Assessment: An Annex to the USAID Climate-Resilient Development Framework:

<http://goo.gl/sO5kFd>

Climate Change and Conflict: An Annex to the USAID Climate-Resilient Development Framework:

<https://goo.gl/qR4s69>

Working with Marginal Populations: An Annex to the USAID Climate-Resilient Development Framework:

<https://goo.gl/xntMG8>

Dr. Vogel provided a brief description of the annexes on water, coastal zones, governance, and vulnerability assessment. These four annexes present detailed information on the scoping, assessment, and design phases of the Climate-Resilient Development Framework, providing discussion of affected sectors, climate and non-climate stressors, exposure assessment, and adaptation actions. The Water and Coastal Annexes provide in-depth appendices that present specific actions, organized by adaptation category. The Vulnerability Assessment and Governance Annexes offer an in-depth look at different kinds of vulnerability assessments and governance examples as well as detailed descriptions of potential adaptation options. These annexes already serve as an essential, living resource within USAID.

## LESSONS LEARNED FROM THE CLIMATE-RESILIENT DEVELOPMENT FRAMEWORK: PART I



The panel covering Annexes to the CRD Framework, Part I, include, from left, Moderator Jenny Frankel-Reed, USAID; Jason Vogel, Abt Associates (Stratus Consulting); Mary Ackley, USAID; Edward Carr, University of South Carolina; Joel Smith, Abt Associates (Stratus Consulting); Charlotte Mack, ICF International; and Alton Byers, The Mountain Institute. Photo credit: Ruben Gamarra.

***Climate Change and Conflict Annex, Mary Ackley, USAID.*** Next, Mary Ackley provided an overview of the Climate Change and Conflict Annex. She pointed out that there is a growing connection between climate change and conflict (or fragility). According to the Intergovernmental Panel on Climate Change (IPCC), close to 80% of security and stability issues incorporate some element of climate change, and USAID’s research and field experience demonstrates the need to pay attention to this connection. USAID/Bureau for Democracy, Conflict and Humanitarian Assistance’s (DCHA) Office of Conflict Management (OCM) conducted a quantitative analysis of the relationship between instability and exposure to climate stressors. They found that countries with a high risk of instability are facing the most serious climate threats. On the other hand, countries with high climate vulnerabilities are not necessarily fragile. These results demonstrate the complexity of this issue; there is not a simple cause and effect relationship between climate change and conflict.

“ Countries with a high risk of instability are facing the most serious climate threats. On the other hand, countries with high climate vulnerabilities are not necessarily fragile.”

— Mary Ackley, USAID/Bureau for Democracy, Conflict and Humanitarian Assistance’s Office of Conflict Management

The OCM has conducted 11 case studies in 13 countries and has found that:

- Climate change is already happening in the case study locations,
- Climate change is affecting the more vulnerable populations,
- Climate change impacts are interacting with known and enduring conflict variables, and
- Every situation is different and so any intervention must be based on an assessment of that area’s conflict dynamics.

The Climate Change and Conflict Annex provides practical guidance on how to deal with these issues and how to apply conflict analysis within the climate-resilient development approach. It also provides illustrative scenarios and lists of guidance questions. The OCM plans to pilot and apply the annex and is supporting research grants on various issues addressed in the annex. OCM is also partnering with other organizations, such as the Wilson Center’s Resilience for Peace Project. Ms. Ackley also mentioned the Wilson Center’s Security Beat Blog, which covers climate change and conflict issues ([newsecuritybeat.org](http://newsecuritybeat.org)).

***Marginal Populations and the CRD Framework: Edward Carr, University of South Carolina.***

Edward Carr started by acknowledging the challenge of identifying marginal populations. He provided a definition of a marginal population as “those whose social, political, economic, ecological, and biophysical circumstances limit or prevent their access to resources, assets, and services.” But he noted that marginality depends on activities, stressors, and potential interventions. Marginal populations matter to the Climate-Resilient Development Framework because they (1) are exposed to different climate impacts, (2) are affected by the same climate impacts but in different ways, and (3) have different forms of resilience to climate and non-climate stressors. Overall, marginal populations might not be the most vulnerable populations; they have unique roles and responsibilities that present unique opportunities for managing climate and other risks. When applying the Climate-Resilient Development Framework to marginal populations, Dr. Carr noted the following:

- *Scope:* Look at country or regional development goals and who benefits.
- *Assess:* Do different marginal groups have distinct exposures or differentiated sensitivities to a stressor?
- *Design:* Engage with marginal populations to identify innovative adaptation actions.
- *Implement and Manage:* Use culturally-appropriate methods to involve and engage representatives of marginal populations
- *Evaluate and Adjust:* Collect and evaluate data that specifically addresses marginal populations’ outcomes.

The Marginal Populations Annex provides guidance on how to accomplish this essential analysis.

See presentation at: <https://goo.gl/qu3Pzq>.

***Incorporating Climate-Resilient Development into National Adaptation Plans (NAPs):***

**Charlotte Mack, ICF International, and Joel Smith, Abt Associates (formerly Stratus Consulting).**

USAID supports developing countries as they build climate change resilience through the United Nations Framework Convention on Climate Change’s (UNFCCC’s) National Adaptation Plan (NAP) process. Joel Smith and Charlotte Mack described how the CCRD project has incorporated climate-resilient development within this process. In 2001, the UNFCCC asked Least Developed Countries (LDCs) to develop National Adaptation Programmes of Action (NAPAs). The NAPA approach focused on “urgent and immediate” projects, and tended to have a climate-first and project-level approach. In 2010, USAID began to support the development of economy-wide, integrated national-scale adaptation plans, which are intended to take a mid- to long-term strategic view on adaptation, with a focus on integrating climate change into development” The UNFCCC adopted the idea of National Adaptation Plans (NAPs), with a similar mid- to long-term strategic view, in 2010. CCRD’s work on supporting NAPs entailed two main efforts: (1) facilitating stakeholder workshops to kick-start the NAP process in developing countries, and (2) improving coordination with bi-lateral donors.

CCRD helped to organize NAP workshops in Jamaica (July 2012), Tanzania (March 2013), and West Africa (June 2013). The West African workshop included participants from 11 West African coastal countries within the Economic Community of West African States (ECOWAS). The workshops were held early in each country's or region's NAP process with the objectives of linking to development plans and goals, identifying key climate stressors, determining adaptation priorities, ensuring coordination and collaboration among critical stakeholders, and identifying next steps. Participants included representatives of the government(s), NGO organizations, civil society, multi-lateral and bi-lateral donors, and the private sector.

USAID and CCRD staff also met with staff from the United Kingdom's Department for International Development (DFID) and Germany's Gesellschaft für Internationale Zusammenarbeit (GIZ) in May 2014 to coordinate NAP support. In addition, CCRD staff accompanied a GIZ team to Cambodia to develop a USAID-funded activity that will provide technical support to the Ministry of Environment on integrating climate change into their planning and budgeting processes; and train Ministry staff on how to mobilize additional funding (e.g., from the Green Climate Fund) to support their NAP.

Mr. Smith and Ms. Mack offered numerous lessons learned from the NAP process:

- A development-first approach can catalyze national adaptation planning and ensure that adaptation supports development objectives.
- Ownership and buy-in at an early stage in the NAP process is critical.
- Grounding NAPs in existing planning processes is more likely to promote mainstreaming.
- A comprehensive approach to national adaptation planning is preferable to a narrow geographic or single-sector approach.
- A multi-national or regional approach can facilitate regional cooperation and avoid maladaptation.
- NAPs can serve as platforms to coordinate technical and financial support.
- Consistent, longer-term donor engagement can help build capacity to implement an effective NAP.

See presentation at: <https://goo.gl/F4heob>.

***Local Adaptation Plans of Action (LAPAs) in Nepal (Mt. Everest) and Peru (Cordillera Blanca): Alton Byers, The Mountain Institute.*** One of the activities conducted through the High Mountains Adaptation Partnership (HiMAP) is the provision of support for the development of science-based LAPAs for Peru and Nepal. Nepal had developed a LAPA for the Mt. Everest/Khumbu region in 2010, and the HiMAP ([www.highmountains.org](http://www.highmountains.org)) team worked with local stakeholders to modify it, using the following seven-step process: (1) climate change sensitization in the context of development goals, (2) identifying vulnerabilities and adaptation options, (3) prioritizing adaptation options, (4) developing the LAPA, (5) mainstreaming the LAPA into local planning processes and funding opportunities, (6) implementing the priority adaptations, and (7) assessing the LAPA process and modifying it as needed. This process identified five priority climate change impacts, with glacial lake outburst floods (GLOFs) recognized as the number one priority. Adaptation options to address GLOFs included researching and monitoring glacial lakes, taking measures to lower lake levels, and developing an early warning system and disaster management systems. **The resulting work will decrease the risk of a GLOF for 90,000 residents.**

In Peru, the LAPA entailed a similar, six-step process: (1) climate change sensitization in the context of development goals, (2) identifying vulnerabilities and adaptation options in the context of conflicting stakeholder priorities (i.e., the *campesinos* who live above the floodplain are not concerned about drinking water supply whereas the urban dwellers who live below the glacial lakes have a different concern—GLOFs), (3) identifying and analyzing adaptation options for the different groups while building strategies to work with government on implementation, (4) developing a LAPA that is consistent with government and local institutional development goals, (5) implementing priority adaptations with the support of local and national networks, and (6) evaluating adaptation actions. **Resulting work to lower lake levels and develop an early warning system will directly benefit 35,000 residents.**

Dr. Byers described several key lessons learned from the LAPA process:

- The process should start with diagnosing key issues, then build climate change awareness, and then identify vulnerabilities
- Build formal relations with government and community partners at the beginning of the LAPA process
- Tailor LAPA steps to local needs, conditions, and stakeholder groups, and encourage consistent project staff presence at field sites
- Integrate complementary science-based knowledge in support of the LAPA process; this provides a higher credibility to the process
- Share knowledge and data generated from the process
- Recognize and plan for the challenges of working in remote mountain regions
- Remember that glacier-dominated regions pose and will continue to pose unique challenges
- Interdisciplinary and collaborative approaches provide the best way forward.

See presentation at: <https://goo.gl/wOp0nd>, and [Section 4.1, High Mountains Adaptation Partnership](#).

**Discussion.** One participant asked what is different about climate-resilient development projects as compared with other work in developing countries? Several speakers stressed that dealing with climate change necessitates thinking about flexibility and uncertainty. There is also a degree of urgency to address the problems that developing countries already face; we must ask, “how do we build programs that solve existing problems but also incorporate future changes?” When asked how CCRD staff work with groups that may be illiterate, the answer was that illiteracy is not necessarily related to knowledge of climate change and adaptability. Dr. Byers reminded participants that the local Nepalese population understood the dangers of GLOFs and introduced the HiMAP scientists to a new range of triggers with which they were not familiar. Dr. Carr added that the local people he has worked with understand their environments, but it is also important to understand and work in accordance with the local ways of obtaining information. Symposium participants also discussed ways to ensure work on climate-resilient development continues into the future, especially given the frequent turnover of governments. Suggestions to address this concern included: integrate climate-resilient development activities into daily activities and across all levels of government, work with government ministries, and use both bottom-up and top-down approaches to project engagement and implementation. Private-sector engagement was also discussed. Participants provided examples of private sector contributions, but also stressed that private sector funding isn’t the only solution; government intervention and funding is also required in many cases.

## LESSONS LEARNED FROM THE CLIMATE-RESILIENT DEVELOPMENT FRAMEWORK: PART II



The panel covering Annexes to the CRD Framework, Part II, include, from left, Moderator Jenny Frankel-Reed, USAID; Joanne Potter, ICF International; Jason Vogel, Abt Associates (Stratus Consulting); Glen Anderson, Engility Corporation; Michael Cote, Engility Corporation; and Jonathan Cook, USAID. Photo credit: Ruben Gamarra.

***Climate Resilient Infrastructure Services (CRIS) Program – Testing the Framework: Joanne Potter, ICF International.*** Joanne Potter summarized the following reasons that sustainable infrastructure is important to development: infrastructure is expanding rapidly in many developing areas, it is expensive and long-lasting, it is threatened by climate change, and it is designed for the past – not future – conditions. The goals of the CRIS program were to (1) ensure that sustainable infrastructure services will be available to support development goals in a changing climate, and (2) develop, test, and share methods to increase the climate resilience of infrastructure. The program focused on four pilot cities (Piura, Peru; Trujillo, Peru; Santo Domingo, Dominican Republic; and Nacala-Porto, Mozambique) that were selected based on criteria relating to population, rapid development, high vulnerability to coastal climate impacts, portfolio of infrastructure, interest and capacity in the program, the USAID mission’s interest in the program, and replicability. The CRIS team worked with each pilot city to tailor a work plan designed around the Climate-Resilient Development Framework. This work included (1) conducting “Climate 101” training to help build an understanding of basic climate change principles, (2) developing replicable methods and tools (e.g., vulnerability assessment screening tools, adaptation options screening tool), (3) institutionalizing climate-aware decision-making through processes such as mainstreaming climate risk into plans, policies, and guidance, (4) creating interdisciplinary and interagency working groups, (5) conducting staff-staff training, and (6) developing action plans for next steps to be taken after the CRIS program ends. CRIS staff also organized peer learning study tours and knowledge management exchanges. Ms. Potter described a number of lessons learned from the CRIS program:

- The development-first approach, with a focus on scoping and assessment, works for local governments. It helps governments focus on their existing goals and objectives and then assess how climate will affect them.
- Decision-relevant climate information is critical to the effective climate-resilient development. CRIS developed a climate database to help users determine which climate data are important for specific decisions.
- Accessible, innovative tools are needed to support local government action.
- Technical collaboration helps to expand municipal capacity.

**SEE PRESENTATION AT: [HTTPS://GOO.GL/IBSCYO](https://goo.gl/ibscyo), AND  
[SECTION 0](#),**

Urban Adaptation Planning, Technical Research, and Tools.

***A Water Security and Climate Change Assessment of Iloilo, Philippines: Jason Vogel, Abt Associates.*** Jason Vogel explained that the key objectives of the Iloilo case study were to: (1) identify current and future water security and climate risks to Iloilo's economic growth, (2) engage local partners in the assessment, laying the foundation to build capacity and ownership, and (3) identify and analyze a set of options for addressing these risks. In addition, this case study provided the opportunity to pilot test the Climate-Resilient Development Framework and the climate change and water annex. The project team met with USAID and Philippine government officials in Manila and conducted field work on the island of Panay in the city of Iloilo and the Tigum-Agawan watershed, where they consulted with a range of stakeholders – from government officials to the homeless population. To assess water security and climate issues in Iloilo, they applied the Climate-Resilient Development Framework to describe development goals, key inputs, climate stressors, and non-climate stressors; conduct a vulnerability assessment; and identify and evaluate adaptation options. Climate stressors (e.g., drought, typhoons, sea level rise) related to having too little water, too much water, and poor water quality. Key non-climate stressors included poor distribution systems and poor water governance. An important finding was that although water is clean when it leaves the treatment facility, it degrades in quality along the distribution path. Recommended adaptation activities included information-based options (e.g., develop an information clearinghouse), governance-based options (e.g., enhanced land use planning and public-private partnerships), and water security options (e.g., community-based potable water supplies, rainwater harvesting).

See presentation at: <https://goo.gl/6RXp8M>.

***Kazakhstan Climate Resilient Wheat: Glen Anderson, Engility Corporation.*** The Kazakhstan Climate Resilient Wheat (CRW) integration project is one of ten integration pilots awarded by USAID; it is implemented by the United Nations Development Programme (UNDP). CCRD provided support to this project in three areas: (1) climate vulnerability assessment for the wheat sector (and more broadly, for agriculture), (2) climate information, and (3) regional dialogue on food security. CCRD staff conducted four workshops for national and local stakeholders. Structured according to the Climate-Resilient Development Framework, the workshops covered challenges facing the wheat sector, climate information access and usability, perceptions of climate change, climate impacts, and adaptation options. Kazakhstan is the ninth largest producer and the seventh largest exporter of wheat. The country's main development goals are to increase wheat production, strengthen food security, modernize the wheat sector, and adapt to climate variability and change. Challenges at the farm level include the need to adopt advanced cultivation practices and technology and to diversify away from a wheat monoculture. At the sector and national policy level, key challenges include strengthening agricultural research and extension services; providing improved weather, climate, and market information and forecasts; improving access to financing; reforming tariffs on imported equipment and chemicals; and restructuring the crop insurance program.

Recommendations for improving resilience in the wheat sector included:

- Focus on climate variability (e.g., drought, heat extremes, late summer rains, cool temperatures) through improved soil management (e.g., no- and low-till cultivation, mulching, snow retention) and improved farm-level decision-making (e.g., access to and use of climate information; guidance on planting times, seed varieties, and crop selection; and access to market information).
- Address non-climate stressors to increase profits.

Dr. Anderson noted the following lessons learned from the CRW project:

- It is important to tailor stakeholder workshops, extension service training, and climate information for family farms versus commercial farms.
- Farmers need results from a comparative analysis of stressors and solutions. However, common metrics are not readily available for comparing climate vulnerability to the impacts of non-climate stressors.
- At the government level, resources for assessing adaptation options versus development options tend to be separate, thus presenting a barrier to implementing the best adaptation solutions.

See presentation at: <https://goo.gl/K3fOaH>.

***The CCRD Small Grants Program: Michael E. Cote, Engility Corporation.*** The CCRD small grants program is intended to pilot innovative adaptation approaches globally through activities that (1) develop tools, methods, and information resources, (2) test the Climate-Resilient Development Framework, (3) help increase the resilience of people, economies, and livelihoods to climate change impacts, and (4) raise the capacities of stakeholders and grantees. CCRD competitively awarded 36 small grants for a total of \$3.3 million, grouped according to the following categories:

- Climber-scientist grants for work in high-mountain areas (11 grants)
- Climate adaptation academic grants (9)
- Climate-resilient infrastructure services grants (5)
- Sole-source grants (5)
- Climate services for farmers in Africa and South Asia (3)
- Climate-resilient agriculture in Central America (3)
- Development-first approach grants (1)

CCRD tracked the results of the program based on a lengthy set of indicators. For example, the small grants program provided thousands of hours of training and helped strengthen the resilience of hundreds of direct stakeholders. One management challenge that surfaced during this program was the limited ability of the prospective grantees to apply, receive, and manage grants. Consequently, CCRD held a series of innovative “writeshops” in Kenya, Nepal, and Senegal to train participants in grant-writing. This approach greatly improved the quality of the applications.

Next steps for this program include:

- Determine how to transfer the innovations and tools developed by the grantees to stakeholders, donors, and USAID
- Publish a detailed project portfolio that describes each grant (e.g., tools created, methods tested)
- Share lessons learned with USAID and practitioners
- Share the writeshop approach and techniques
- Share program indicators with USAID and practitioners
- Interview the grantees to document follow-on activities, funds leveraged, publications, and other new work.

See presentation at: <https://goo.gl/uMfni2>.

***Lessons Learned and Future Directions: Jonathan Cook, USAID Global Climate Change Office.*** Jonathan Cook commented that the Climate-Resilient Development Framework is the connective tissue for nearly all the work CCRD has conducted over the past four years. He described a comprehensive set of lessons learned from the project.

#### *Mainstreaming*

- The Climate-Resilient Development Framework is a flexible document that can be used at all levels – from sectoral to local to regional to national.
- When applying the framework, find a recognized entry point or process (e.g., urban planning processes, LAPAs).
- Align the framework with existing planning and financing structures.
- To ensure consistency and effectiveness, it is important to develop partnerships and coordinate with other donors.



**Jonathan Cook, USAID and CCRD Contracting Officer's Representative.**

Photo Credit: Ruben Gamarra.

#### *Information for decision-making*

- Bring weather and climate information into planning and decision-making.
- Use information at the right timescale and formats, based on an understanding of how people obtain and use information (e.g., do they prefer written information, graphics, maps?).
- Build capacity to access and apply information. People can be intimidated by climate information, so it is important to improve their ability to understand and use it.
- Climate services (the dissemination of climate information to specific users) is growing in importance.

#### *Multi-sectoral, multi-stakeholder approaches*

- Obtain broad stakeholder engagement starting early in the process in order to incorporate multiple interests.
- Work across sectors to promote integrated approaches and avoid maladaptation.
- Build from the local perspective and focus on vulnerable groups.

#### *Implementation and financing*

- Move beyond planning (the Climate-Resilient Development Framework helps to do this).

- Financing is a common concern for stakeholders and is essential for effective implementation.
- No one donor can fund the costs of adaptation; a mix of public and private funding sources is necessary.
- Align behind strategic priorities (e.g., NAPs, LAPAs) to obtain support and help direct future funding.
- Take a broad approach to climate finance and be prepared to mobilize and integrate funding sources. This approach becomes even more important in the future with new finance initiatives such as the Green Climate Fund.

### *Moving forward*

- Continue to bridge adaptation and development through use of the Climate-Resilient Development Framework. The framework is intended to map onto existing planning processes rather than to replace them. How can we encourage country partners to use and institutionalize this process? What does it mean to reorient development priorities, decisions, and plans?
- We need tools for decision-making, especially to help prioritize climate and non-climate stressors and to assess and select adaptation options.
- USAID has applied the Climate-Resilient Development Framework in more than 10 countries, and it has garnered significant interest. How do we increase its use by USAID and other organizations? How do we continue to improve this approach?

See presentation at: <https://goo.gl/9IoaCB>.

**Discussion.** This discussion focused around the issues of how to best use the Climate-Resilient Development Framework approach to efficiently advance climate resilience and how to ensure the continued use of the framework in the future. One key consideration in using the framework is the importance of looking at non-climate stressors as well as climate stressors. Glen Anderson, Engility, provided an example from Kazakhstan where CCRD staff found that while farmers need data about precipitation variability, they must also have access to information about markets because economics is a key factor in their decision-making. Joanne Potter, ICF, stressed the importance of using the right timeframe – adaptation should not always involve long-term projects, but should include a wide portfolio of adaptation options that span short- and long-term solutions. Jason Vogel, Abt Associates, summarized the framework’s purpose by stating that it should be used as a heuristic tool. It focuses primarily on development goals and climate is secondary. In Iloilo, the CCRD team identified 22 adaptation options, 18 of which involved non-climate stressors. The framework provides a pragmatic way to prioritize how to fund projects on a context-by-context basis.

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Urban Adaptation Planning, Technical Research, and Tools). It is also essential for the USAID missions to continue the work started through the CCRD project. Next steps also include moving to the implementation and monitoring stages of the framework.

# 3. DAY 2: ADAPTATION PARTNERSHIP – LESSONS LEARNED

## **The Adaptation Partnership: A Model for Sustainable Program Design**

Tuesday, March 17, 2015, 9:00 – 10:30

United States Department of State

Richard Driscoll, U.S. Department of State, Opening Remarks

John Furlow, USAID, Moderator

Alton Byers, The Mountain Institute, *South/South: Andean-Asian Mountains Global Knowledge Exchange*

Joanne Potter, ICF International, *Building Urban Climate Change Resilience in Asia*

Peter Schultz, ICF International, *Adaptation Partnership: Monitoring and Evaluation; Climate Change Adaptation and Peacebuilding*

Stephen Zebiak, International Research Institute for Climate and Society, *Climate Services Partnership*

Joyce-Lynn Njinga, Engility Corporation, *Marine Protected Areas (MPAs) Western Indian Ocean (WIO) Workshop and Trainings*

Alex Guerra Noriega, Climate Change Research Institute, Guatemala, *Assessing Vulnerability and Increasing Climate Change Resilience in the Agricultural Sector in Central America*

## **3.1. ADAPTATION PARTNERSHIP**

This session presented an overview of several workshops organized under the auspices of the Adaptation Partnership (AP). The AP was established by the governments of the United States, Costa Rica, and Spain in 2010 to serve as a forum for policymakers and practitioners from developed and developing countries to share information and lessons learned about global climate change adaptation planning and implementation. The U.S. Department of State provided funding to the CCRD project to assist in the organization, convening, and logistics of AP workshops.

### **Links to Key Resources**

Symposium presentations:  
<http://www.ccrdproject.com/acrd-symposium/acrd-day-2>

Adaptation Partnership website:  
[www.adaptationpartnership.org](http://www.adaptationpartnership.org)

Climate Services Partnership website:  
[www.climate-services.org/](http://www.climate-services.org/)



U.S. Department of State presenters and distinguished guests, from left, include Peter Schultz, ICF International; Glen Anderson, Engility Corporation; Ninette Sadusky and Catherine Simons, Office of the Oceanographer of the Navy; BGEN Stephen Cheney, American Security Project; CAPT James Goudreau, Office of the Secretary of the Navy; RADM Jonathan White, Office of the Oceanographer of the Navy and Navy's Task Force Climate Change; Joyce-Lynn Njinga, Engility Corporation; Alex Guerra Noriega, Instituto Privado de Investigación sobre Cambio Climático, Guatemala; Steve Zebiak, International Research Institute for Climate and Society; John Furlow, USAID; Joanne Potter, ICF International; and Richard Driscoll, U.S. Department of State. Photo credit: Jamie Carson.

### 3.1.1. SUMMARY OF PRESENTATIONS AND DISCUSSIONS

**Opening remarks:** Richard Driscoll, U.S. Department of State

Richard Driscoll opened the session. He noted that the idea for the AP was conceived after the 2009 Copenhagen Climate Change Conference of Parties (COP 15), where representatives identified gaps in knowledge on climate change adaptation and the need for additional work on this topic. The AP was created to provide a forum to share information about adaptation among key stakeholders (see <http://www.adaptationpartnership.org/>). Two initial AP actions were to develop an online inventory of adaptation actions worldwide (see [https://www.iisd.org/adaptation/ap\\_review/](https://www.iisd.org/adaptation/ap_review/)) and to support workshops to help inform future adaptation work.

**Overview of the AP:** John Furlow, USAID, Moderator

John Furlow emphasized that the AP workshops provided an essential way to foster new ideas on emerging areas in adaptation and to spur the development of related programs to support USAID missions. He stated that much of the work that came out of the AP workshops will continue after the CCRD project ends. Mr. Furlow introduced speakers who described seven AP workshops and the CCRD programs that these workshops spawned.

**South/South: Andean-Asian Mountains Global Knowledge Exchange:** Alton Byers, The Mountain Institute. This event involved a three-week scientific expedition to Imja Lake in the Khumbu region of Nepal and a three-day workshop in Kathmandu in September 2011 to share knowledge and develop ideas for follow-on activities. Alton Byers explained that the objective was to share knowledge learned from Peru's experience in glacial lake management with Nepal. The workshop catalyzed the creation of the High Mountains Adaptation Partnership (HiMAP), with the goal of integrating science into the community planning process. The workshop also led to the development of an approach for glacial lake rapid reconnaissance; local adaptation plans for action (LAPAs) in Peru and

Nepal; the Climber Scientist Small Grant Program; the HiMAP community of practice (CoP), which has a membership of 125 scientists and practitioners (see <http://www.ccrdproject.com/adaptation-partnership/himap>); and numerous publications, videos, and outreach documents. A critical and exciting finding was the value of engaging local practitioners, stakeholders, and other citizens in the glacial lake management planning process.

***Building Urban Climate Change Resilience in Asia: Joanne Potter, ICF International.*** This workshop was held in Bangkok, Thailand, in July/August 2012 to provide a forum for exchanging knowledge on adaptation planning in urban areas and identifying gaps and new directions. Joanne Potter described the themes that emerged during the workshop, including the sense of urgency for implementing urban adaptation, the importance of integrating the assessment of climate change stressors with the multitude of other urban stressors; leveraging existing CoPs; and identifying champions within city agencies and donor organizations, and researchers. This workshop provided the impetus for CCDR's Climate Resilient Infrastructure Services (CRIS) program, which features pilots in four cities; peer-learning events; development and tailoring of assessment tools; and a small grants program.

***Adaptation Partnership: Monitoring and Evaluation; Climate Change Adaptation and Peacebuilding: Peter Schultz, ICF International.*** Peter Schultz described three AP workshops. A workshop on the topic of monitoring and evaluation, *Tracking Successful Adaptation – Smart Monitoring for Good Results*, was held in Bonn, Germany, in May 2012. Workshop objectives were to (1) take stock of existing monitoring and evaluation (M&E) approaches for assessing adaptation progress, (2) validate existing M&E approaches, and (3) define a roadmap for future collaboration on M&E. Dr. Schultz noted that a workshop survey found that practitioners do not place much trust in their M&E programs, and that few M&E mechanisms are in place at the national level. He described some of the issues involved in effective M&E, including how to measure benefits that do not accrue for decades, and how to deal with climate change uncertainty. Conclusions from the workshop focused on the need for precise definitions of the hypotheses and change processes that a researcher is studying, the importance of identifying and defining outcomes and impacts, the need to use a mix of qualitative and quantitative indicators, and the benefits of conducting repeat surveys.

Dr. Schultz went on to describe two AP workshops on *Climate Change Adaptation and Peacebuilding in Africa*, one held in Washington, D.C., in November 2012, and another in Addis Ababa, Ethiopia, in October 2013. Participants included practitioners involved in climate change and adaptation; conflict analysis, mitigation, and resolution; and population dynamics and global health. Dr. Schultz described workshop conclusions, including the understanding that (1) climate vulnerability can increase conflict and that, in turn, can increase vulnerability; (2) adaptation can help build peace by reducing inequalities in natural resource management; and (3) peace-building can also improve adaptation. Dr. Schultz announced the March 16, 2015, release of *Climate Change and Conflict: An Annex to the USAID Climate-Resilient Development Framework*, which drew from the workshop dialogue, and which considers the relationship between climate and non-climate stressors that can lead to or exacerbate conflict and security challenges. He also stated that it will be important for USAID to continue to explore the workshop conclusions and learn more from the peace-building community.

***Climate Services Partnership: Stephen Zebiak, International Research Institute for Climate and Society (IRI).*** The three-day International Conference on Climate Services (ICCS) was held at Columbia University in New York City in October 2011. The AP sponsored an additional “Developing Country” workshop attended by representatives of development institutions, United Nations organizations, government offices, nongovernmental offices, and academic institutions. The workshop focused on putting a developing country lens on the issue of climate services and identified major gaps in knowledge about existing climate services programs, successes, challenges, good practices, and outcomes.

Dr. Zebiak described priority actions resulting from the conference, which involved undertaking knowledge capture at three levels: a global survey, case studies, and detailed evaluation studies of agrometeorological services in Mali and India. Specific outcomes included an initiative on climate services for farmers in Africa and Southern Asia, a report on the economic valuation of climate services, 40 case studies conducted jointly with the Global Framework for Climate Services, annual international conferences to continue sharing climate services knowledge, and the development of the Climate Services Partnership (CSP) CoP. The CSP has more than 2,000 on-line members (see <http://www.climate-services.org/content/what-are-climate-services>). A key lesson learned from the CSP is that “partnership increases learning and leveraging.”

***Marine Protected Areas (MPAs) Western Indian Ocean (WIO) Workshop and Trainings: Joyce-Lynn Njinga, Engility Corporation.*** The *Western Indian Ocean (WIO) Climate Change Workshop for Coastal and Marine Protected Areas (MPA)* was held in South Africa in February 2012. Sponsored by USAID, the U.S. Department of State, the National Oceanic and Atmospheric Administration (NOAA), and the Western Indian Ocean Marine Science Association (WIOMSA), the objective was to identify capacity-building needs for MPA managers and practitioners in the region. Joyce-Lynn Njinga described three capacity-building and training sessions implemented as a result of the workshop: (1) *Understanding and Communicating Climate Change* training (South Africa in November 2013), (2) training on *Vulnerability Assessment, Scenario Planning, and Analyzing Adaptation Strategies* (Tanzania in June 2013), and (3) training on *Building Skills, Knowledge, and Comfort with Climate Change Monitoring Tools and Methods for Implementing Adaptation Strategies* (scheduled to be held in the Seychelles in November 2015). More than 30 MPA managers from nine countries received training and brought their new knowledge back to their countries, where they are now training their colleagues and others in the community. Other outcomes included developing implementation roadmaps, establishing a formal knowledge-exchange network, and creating informal training networks that will continue into the future.

***Assessing Vulnerability and Increasing Climate Change Resilience in the Agricultural Sector in Central America: Alex Guerra Noriega, Climate Change Research Institute, Guatemala.*** This workshop was held in Costa Rica in March 2012. Alex Guerra Noriega described the workshop process to evaluate possible adaptation measures: participants identified climate hazards and adaptation measures for different types of crops and established criteria to assess adaptation options. Participants also took steps to begin a CoP for farmers to communicate with each other about hazards, issues, and adaptation measures. After the workshop, participants were offered an opportunity to submit small grant proposals to apply the knowledge gained at the workshop and share adaptation information with their communities. Grants were awarded to (1) Zamorano University for building capacity for climate-resilient agriculture in the drought-prone hillsides of Honduras, El Salvador, and Nicaragua; (2) the Climate Change Institute for building capacity for climate-resilient maize and bean production in Guatemala; and (3) the CATIE Research Center for best practices for climate-resilient livestock production in Honduras and Nicaragua.

### 3.1.2. LESSONS LEARNED AND NEXT STEPS

The presentations and related discussions revealed a number of important lessons learned about climate-resilient development, how to ensure effective workshops and CoPs, and next steps for building on past successes.



From left, CAPT James Goudreau, Office of the Secretary of the Navy, and RADM Jonathan White, Office of the Oceanographer of the Navy and Navy’s Task Force Climate Change. Photo credit: Jamie Carson.

#### Lessons learned about climate-resilient development

- GLOFs will occur in the future; however, it is difficult to predict when these events will occur because they are caused by unpredictable triggers such as earthquakes. One way to prepare is to reduce the volume of glacial lakes. This action has been implemented in 20 Peruvian lakes.
- Issues related to M&E are difficult to resolve. As noted by Dr. Schultz in his presentation, these could include how to measure benefits that do not accrue for decades, and how to deal with climate change uncertainty. In the discussion, Ms. Potter also added that the next big challenge for CRIS is to estimate return on investment of climate-resilient infrastructure projects.
- Ms. Njinga mentioned that the MPA training session in the Seychelles will touch on monitoring activities, and that this issue came up frequently in the MPA workshops and trainings in the context of overfishing. Participants from the U.S. Department of Defense offered to partner with USAID in this area.
- It is important to integrate climate change into peacekeeping, disaster response, and other efforts. Efforts to combine peace building and adaptation are new. CCRD can focus on moving it forward by identifying the added value of efforts to date.

## Lessons learned about effective workshops

- Workshop structure and content:
  - Workshop participants need to have a stake in the outcome. Ensure that workshop topics are relevant to the location where they are held and where the participants are from.
  - Include on-site field trips – some things can only be learned in the field.
  - Ensure participant diversity.
  - Include and engage local participants.
  - Ensure that workshop moderators have a high profile among the CoP.
  - Identify champions – the people who will be in a position to carry projects forward after the workshop.
  - Focus on producing outputs that are useful to everyone.
- Project funding:
  - It is important to consider ways to fund follow-on projects from the beginning: bring funders to the workshops. When participants know funding is available, they will be more invested in the workshop process.
  - Local organizations often have a good understanding of how to attract funding – leverage this knowledge.
  - Improve the ability of diverse organizations to work together programmatically, and determine how to bring together different donor investments and initiatives.
  - Improve cooperation with other donors and countries to avoid duplication of effort. CCRD invited donors to participate in the AP, but many declined.
- Models of cooperation
  - Different workshop models of cooperation were based in large part on the different strengths of the CCRD project team. For example, for MPA, CCRD had already been working with NOAA and so was able to work with the agency to tap existing relationships with outside groups. The workshop in Costa Rica engaged participant organizations that CCRD staff had already worked with in Central America.
- Financing CoPs
  - Work with local partners and look to more stable partners, such as universities. For example, governments may change frequently, thereby affecting continuity.
  - Consider turning CoPs into professional, dues-paying organizations.
  - Look for communities that think the CoP is a must-have, not just something that would be nice to have.
  - Seek participants and communities with a development-first/decision-first mindset, as described in the CCRD Climate-Resilient Development Framework.

## Next steps for building on past successes

- Much of the work started by the AP workshops, CoPs, and the CCRD programs that emerged from these activities will live on through the knowledge sharing, training, and grant research opportunities that have been established.
- It is important to take what CCRD has accomplished to date and “multiply it” by taking it on the road to other locations and by conducting training about lessons learned.
- Peace-building and adaptation is an emerging topic that USAID should continue to work on.



ACRD Symposium at the U.S. Department of State, March 17, 2015. Photo credit: Jamie Carson.

# 4. DAY 2: HIGH MOUNTAINS ADAPTATION PARTNERSHIP – LESSONS LEARNED

**Lessons Learned from the High Mountains Adaptation Partnership**  
Tuesday, March 17, 3:00–5:00 p.m.  
Cosmos Club

John Furlow, USAID, Moderator

Alton Byers, The Mountain Institute, *An Introduction to the High Mountains Adaptation Partnership*

Jonathan Cook, USAID, *Reflecting on Local Adaptation Plans of Action (LAPAs)*

Cesar Portocarrero, The Mountain Institute, *Risk Reduction in the Dangerous Glacial Lakes as an Adaptation Process in Peru*

Ulyana Horodyski, University of Colorado, Boulder, *Supraglacial Lake Evolution: Ngozumpa Glacier*

Gregory Leonard, University of Arizona, *Seti River Flood*

## 4.1. HIGH MOUNTAINS ADAPTATION PARTNERSHIP

The *Lessons Learned from the High Mountains Adaptation Partnership* (HiMAP) session provided an in-depth look at HiMAP, including work on local adaptation planning in Nepal and Peru, planning and research concerning glacial lake outburst floods (GLOFs), and presentations from two recipients of climber-scientist small grants. Participants also watched a short field expedition video about HiMAP.

### Links to Key Resources

Symposium presentations:  
[www.ccrdproject.com/acrd-symposium/acrd-day-2](http://www.ccrdproject.com/acrd-symposium/acrd-day-2)

HiMAP website:  
<http://highmountains.org/>

### 4.1.1. SUMMARY OF PRESENTATIONS AND DISCUSSIONS

**Session opening: John Furlow, USAID, Moderator.** USAID staff member and Symposium moderator John Furlow thanked Dr. John Schilling, who is on the Board of The Mountain Institute (TMI), for hosting this session at the Cosmos Club. Mr. Furlow introduced the session by describing the beginnings of the HiMAP program. In 2009, Alton Byers and other researchers from TMI approached Mr. Furlow with the idea of funding work on high mountains and climate change. Although TMI and USAID did not have sufficient funds to initiate a project on their own, the National Science Foundation co-sponsored a workshop with them in Huaraz and Lima, Peru, in July 2009. Nearly 100 people attended the workshop – *Adapting to a World Without Glaciers: Realities, Challenges, and Actions*, primarily from the United States and South America. At the end of the workshop, a participant from Nepal expressed interest in learning directly from the Peruvians how they are managing the risk of GLOFs in their country. This idea led to the Adaptation Partnership workshop

held in Nepal in September 2011 where engineers from Peru, which had more than 70 years of experience in managing potentially dangerous glacial lakes, shared their knowledge and experience on glacial lake management with participants in Nepal, where GLOFs had more recently begun to increase in frequency (see also, Chapter 4, Summary of Presentations, South/South: Andean-Asian Mountains Global Knowledge Exchange). The HiMAP program was a direct result of this workshop.

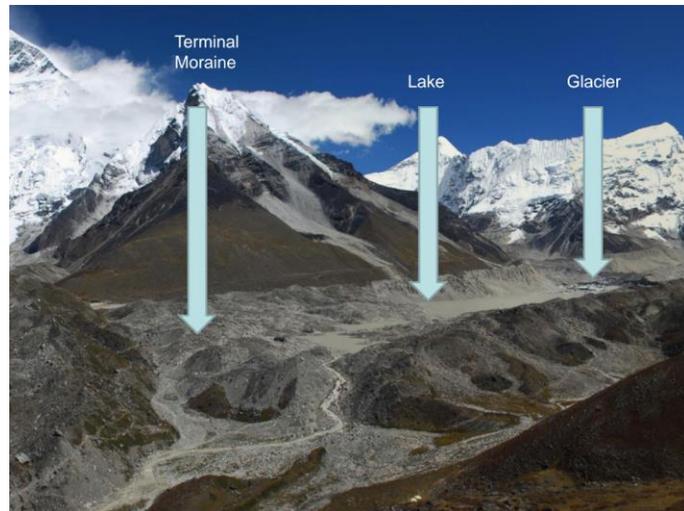


**John Furlow, USAID, opens the Cosmos Club session on the High Mountains Adaptation Partnership.** Photo credit: Jamie Carson.

***An Introduction to the High Mountains Adaptation Partnership.*** Alton Byers, **The Mountain Institute.** Alton Byers continued the discussion about the HiMAP program, which is implemented by TMI and the University of Texas at Austin. HiMAP activities are conducted in the rural and remote mountains in the Khumbu (Mt. Everest) region of Nepal and in the Cordillera Blanca region of Peru, which is an urban mountain range. Glaciers are melting rapidly in these two areas and the rate appears to be accelerating. Figure 2 illustrates the potential danger of glacial lakes. As the glacier melts, the level of the lake rises, and the terminal moraine is all that holds the water in the lake. GLOFs can occur when an earthquake, storm, or other stressor breaks open the moraine or causes the lake water to overflow its banks. Nepal began to visibly lose ice in the 1960s; by the 1980s and 1990s, melting glaciers increased the danger of floods.

Peru has a longer history of experiences with damaging GLOFs. The country suffered three catastrophic lake outbursts in the 1940s in the Cordillera Blanca Mountains, including a GLOF in Lake Palcacocha that killed 6,000 people. Today, because of the growth of the lake and urbanization in the Lake Palcacocha area, approximately 35,000 people could be killed if a glacial flood were to occur. In the 1950s, after the three major GLOFs, Peru conducted a survey of mountain lakes. Experts identified 35 dangerous lakes and are working to decrease risk through a variety of methods ranging from reinforcing terminal moraines to implementing more highly technical approaches to mitigate the risk.

Peru shared its glacial lake management experience with the Nepalese at the September 2011 workshop, *Andean-Asian Mountains: Global Knowledge Exchange on Glaciers, Glacial Lakes, Water, and Hazard Management*, where 35 Peruvian scientists traveled to Imja Lake in the Khumbu region in Nepal to share experiences in research methods and risk reduction. *The Glacial Lake Handbook: Reducing Risk from Dangerous Glacial Lakes in the Cordillera Blanca, Peru*, presents lessons learned by Peruvian engineers covering more than 70 years on glacial lake management (<https://goo.gl/obDCN0>). The workshop achieved several important objectives. It sparked essential knowledge exchange and collaboration between Nepal and Peru. In addition, it engaged the local people, who were knowledgeable about Lake Imja and frustrated that scientists had previously excluded them from dialogue about their glacial lake concerns. HiMAP was initiated six months after the workshop, with the objective of integrating glacial science into the community engagement process.



**Figure 2. Depiction of a glacial lake.**  
Source: Alton Byers, *An Introduction to the High Mountains Adaptation Partnership*, p. 5. (<https://goo.gl/umfRsK>).

A third workshop was held in Peru in July 2013. The *Glacial Flooding and Disaster Risk Management Knowledge Exchange and Field Training Workshop* brought scientists, social scientists, and development practitioners from Nepal and other Asian countries to Peru to see firsthand Peru's glacial lake control projects at Lake Palcacocha.

Dr. Byers described other key aspects of HiMAP. The climber-scientist small grants provided funding to researchers whose projects engaged local stakeholders, involved work on the ground, and entailed high-technology scientific modeling. He pointed out that there is little information in the current literature about high mountains, glacial lakes, and adaptation efforts. Consequently, another important aspect of HiMAP is to publish the knowledge learned during the program in both peer-reviewed and popular literature.

The HiMAP team has conducted considerable state-of-the-art field research to help determine how communities can adapt to glacial melting. Its glacial lake rapid reconnaissance team conducted research to help them collect information needed to analyze the glacial lakes. The team conducted bathymetric surveys to measure the depth, volume, and topography of the lakes to determine how to reduce lake levels (e.g., by dredging a channel). The team also conducted ground-penetrating radar studies to determine if a moraine contains ice – if so, digging into the moraine to create a drainage system could cause the moraine to collapse. The team routinely consults and shares findings with the community.

The results from the HiMAP fieldwork in Nepal were fed into Local Adaptation Plans of Action (LAPAs). USAID and Engility trained local staff and nongovernmental organizations (NGOs) on how to conduct the process in Peru, where two key stakeholder groups were identified: (1) rural residents, or *campesinos*, who live above the glacial lake and are concerned about water supply; and (2) urban populations who live below the lake and are concerned about GLOFs. Dr. Byers stated that local populations were fully engaged in the LAPA process, especially in terms of integrating the science they

learned from the HiMAP research into their adaptation planning and decision-making. He also pointed out that their work led to funding opportunities for priority interventions, such as early warning systems, and that the current President of Peru is committed to finding funds to lower the level of Lake Palcacocha.

Dr. Byers identified the following important lessons learned from the HiMAP program and LAPAs:

- Build relationships with government and community partners before the LAPA process begins.
- Tailor the LAPA process to community needs.
- Include on-site information exchange across the different CCRD programs. An interdisciplinary and collaborative approach across field sites, laboratories, and communities is the way forward.

See presentation at: <https://goo.gl/uPmB4Q>.



**From left, Michael Cote, Engility Corporation; Cesar Portocarrero and Alton Byers, The Mountain Institute; Ulyana Horodyskyj, University of Colorado-Boulder; Gregory Leonard, University of Arizona; John Furlow, USAID; and Jonathan Cook, USAID. Photo credit: Jamie Carson.**

*(See next page for post-event update on the HiMAP program)*

## Post-Symposium HiMAP Update:

On April 25, 2015, a magnitude 7.8 earthquake struck central Nepal, causing more than 8,000 deaths throughout the country. Two weeks later, a magnitude 7.3 aftershock caused further damage and uncertainty.

Massive landslides wiped out entire villages, rivers were dammed by landslides, and the geologic and geomorphic integrity of high altitude mountains and glaciers was destabilized. Scientists throughout the world began to worry that the seismic activity could also result in new glacial lake outburst floods (GLOFs) through the weakening of terminal moraines and destabilization of potential triggers, such as overhanging ice and landslides. Only one of Nepal's 21 potentially dangerous glacial lakes burst out during the earthquake, possibly related to the fact that most were all frozen at the time. However, in order to fully understand what the impacts of the earthquake were on lake stability, the High Mountains Adaptation Partnership ([www.highmountains.org](http://www.highmountains.org)) fielded a volunteer group of U.S. and Nepali scientists and researchers to conduct detailed remote sensing and field-based assessments of three of Nepal's most dangerous glacial lakes—Imja Lake (in the Mt. Everest region), Tsho Rolpa Lake (Rowaling region), and Thulagi Lake (Manaslu region).

**See the assessment report on the USAID Development Experience Clearinghouse (DEC) at:**

**<https://goo.gl/qgCpNP>**

Field costs were funded by USAID's Climate Change Resilient Development project with co-financing from the American Society of Civil Engineers, The University of Texas at Austin, Xylem Inc., and US21 Inc.

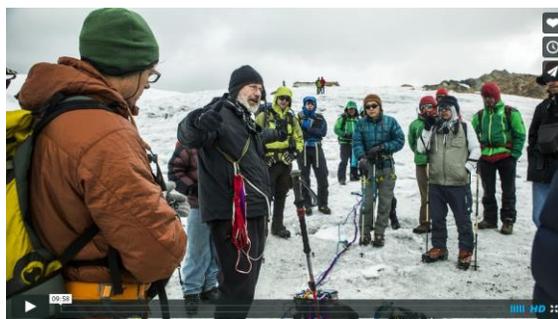


**Imja Lake in Nepal.** Photo credit: The Mountain Institute.

**Reflecting on Local Adaptation Plans of Action (LAPAs): Jonathan Cook, USAID.** Jonathan Cook presented a more in-depth look at the LAPAs in Peru and Nepal. His talk focused on the lessons learned from these LAPAs:

- LAPAs are not just plans – it is also a process. As such, they are an important vehicle for building capacity, incorporating local knowledge, and aligning different perspectives. Although it was important that the plans were produced, the journey itself was also critical.
- Identify stakeholders with a focus on vulnerable populations. Getting to the local level is essential for understanding vulnerabilities and identifying priorities. It also builds climate-related awareness and capacity.
- Connect autonomous adaptation with planned adaptation because both perspectives are important.
- Local adaptation planning informs national planning and creates opportunities for implementation.
- Work through recognized processes. HiMAP used the LAPA process that already existed in Nepal. A formal LAPA framework did not exist in Peru, but HiMAP was able to link to other national and municipal institutions to validate the process.
- Link science with community approaches. Connect cutting-edge science with bottom-up community perspectives and integrate both perspectives into adaptation planning.
- Use a development-first approach to local adaptation planning: start with development goals, identify community priorities, and *then* focus on vulnerabilities.
- Mainstreaming and sustainability are important ways to ensure the plan results in action and implementation. In Nepal, the team worked closely with the national park and used the buffer zone plan for the park to help embed some of the results of the planning process into a recognized document and source of funds. This involved working with different districts across different political and ecological units. In Peru, two cities that had not worked together were joined as a commonwealth to access public investment funding.

**The High Mountains Adaptation Partnership – Peru Climate Workshop 2013**



This HiMAP video describes the July 2013 workshop held in Peru, *The Glacial Flooding and Disaster Risk Management Knowledge Exchange and Field Training Workshop*. It illustrates the Nepal-Peru collaboration and exchange and highlights the similarities in glacial lake issues in the Andes and in the Himalayas.

**Watch video:** <https://vimeo.com/77387853>

Mr. Cook stated that the HiMAP team’s experience with the two LAPAs helped produce a replicable model on how to conduct bottom-up adaption planning with good scientific inputs, indicating that USAID could apply this approach in other countries and share it with other offices and programs.

See presentation at: <https://goo.gl/NYXo0x>.

***Risk Reduction in the Dangerous Glacial Lakes as an Adaptation Process in Peru: Cesar Portocarrero, The Mountain Institute.*** Cesar Portocarrero spoke about his work on glacial lakes in the Cordillera Blanca. The Cordillera Blanca is the largest of 19 glaciated areas in the Peruvian Andes. In 1970, there were about 723 square kilometers (km<sup>2</sup>) of glaciers in the Cordillera Blanca; in 2003, the glaciated area was just over 500 km<sup>2</sup>. After the catastrophic Palcacocha Lake outburst in 1947, the Peruvian government created a lake control office that identified the following hazard factors for glacial lakes: (1) hanging glaciers that can create avalanches into the lake, (2) increases in air and land temperatures, (3) increases in glacial lake volume, and (4) the structure and quality of the lake dam. The government developed a risk-reduction methodology that entails:

1. *Reducing the volume of the lake.* Computer models can identify the amount of water that needs to be drained. For lakes with moraine dams, the drainage process entails making a v-shaped cut in the dam. For rock dams, it involves drilling a tunnel.
2. *Building a reinforced pipe* to drain the lake to keep the water level from rising.
3. *Restoring the structure and quality of the dam* so that it can withstand waves produced by ice and rock avalanches into the lake.

Figure 3 shows examples of structural work in several lakes in the Peruvian Andes.

Dr. Portocarrero outlined two important lessons learned from Peru's work on dangerous glacial lakes:

- Glacial lake management in Peru must involve risk reduction and integrated water resources management.
- Communities must be involved in glacial lake management projects.

See presentation at: <https://goo.gl/j7rMQk>.



**Figure 3. Examples of civil engineering work conducted in three glacial lakes in Peru. From left, Lake Shallap, Lake Palcacocha, and Lake Llaca.**

**Source:** Cesar Portocarrero, *Risk Reduction in the Dangerous Glacial Lakes as an Adaptation Process in Peru*, p. 12, Available: <https://goo.gl/V12k58>.

**Climber-Scientist Grants.** The next two speakers described the research they are conducting in Nepal through their climber-scientist grants.

***Supraglacial Lake Evolution: Ngozumpa Glacier:* Ulyana Horodyski, University of Colorado, Boulder.** Ulyana Horodyski presented her work, which was supported by a climber-scientist small grant. The objectives of her project were to qualitatively and quantitatively document changes in the supraglacial lakes in the Ngozumpa glacier, located in the far eastern part of Nepal, through use of historical, time-lapse, and field photography; previous depth maps; and three-dimensional models of lake basins. Supraglacial lakes, which sit on the surface of a glacier, are often interconnected to each other. When the sun shines on the lakes, the warming effect accelerates the melting of glaciers and increases the potential for floods. The Ngozumpa glacier is held back by a moraine dam, which may have a core of ice. If it does have this ice, then the Sherpa villages below the lake are at even greater risk because the ice core could melt. Dr. Horodyski presented a time-lapse video that showed multiple drain and refill events during monsoon seasons, including a sudden catastrophic drainage. Her study findings include (1) satellite imagery of the area may underestimate the volume loss of lake drainage, (2) drainage can occur even during post-freeze months, (3) the end of the melt season may not mean the end of volume loss, (4) areas with bare ice may continue to deepen at faster rates, and (5) deepening is not a homogenous process.

See presentation at: <https://goo.gl/T7YzQz>.

***Seti River Flood: Gregory Leonard, University of Arizona.*** Gregory Leonard presented his team's research – supported by a climber-scientist small grant – on a flood in Nepal that occurred in May 2012. The flood caused loss of life; displacement of families; livelihood destruction; livestock losses; and destruction of infrastructure, including water supply pipes, roads, bridges, power lines, community buildings, and temples. Dr. Leonard and his colleagues studied the aftermath of the flood using a variety of techniques, including scientific research, socioeconomic surveys, and personal interviews. They found that the Seti River flood most likely occurred as a result of a gorge rockfall that blocked water flowing down the mountain, followed by a powerful rock, ice, and water avalanche that swept debris into the lake and ruptured the gorge dam. Although the flood was not caused by climate change, the researchers did determine that future outburst floods are likely. They also identified vulnerable sites in the Seti Valley, documented socioeconomic factors that contributed to human losses, and engaged with and earned the trust of people and communities affected by the flood. Among the lessons learned from this work: (1) the gorge area requires consistent monitoring, (2) solutions must accommodate relocation of the people who dwell on low terraces, (3) more high-mountain field work is needed to unravel complex Earth system phenomenon, and (4) intensified early engagement with local communities is essential to understanding natural and social links to human losses and to meeting community concerns and expectations.

See presentation at: <https://goo.gl/fiL7tK>.

#### 4.1.2. LESSONS LEARNED AND NEXT STEPS

The discussion session focused on several issues that the HiMAP program has tackled and lessons learned about these issues.

**A strong link exists between glacial lake management and integrated water resource management.** Work on glacial lake management requires consideration of water resource management: because glaciers will no longer provide a key source of water, it is essential to develop ways to capture, store, and manage rainwater properly. Dr. Pontocarrero said that he is often asked why the government is draining the lakes if people need water. One answer is that storing the water in the lake is more expensive than other storage systems. Another CCRD team member commented on the role of water in preserving glaciers by pointing out that ponds on the surface of glaciers act as heat sinks. Therefore, draining the water can help reduce glacier melting to some degree. There was discussion about interest in the use of hydropower and the need to consider this in conjunction with GLOFs and glacier lake locations.

**Communication with local communities is key.** An important lesson learned from the HiMAP program is the importance of community engagement and involvement. HiMAP staff included social scientists who worked with community stakeholders in a variety of ways to help gain their trust, learn about their needs, and share knowledge. In Nepal, social scientists facilitated the LAPAs and helped write lessons-learned documents. In Peru, an anthropologist worked with the two main stakeholder groups (*campesinos* and urban dwellers). Small grant recipients also noted the importance of early local engagement.

**Increasing awareness about climate change impacts is crucial.** One participant noted that the HiMAP team has been successful in calling attention to GLOFs, but wondered how to develop greater attention to related climate change impacts that have slower onsets. Several approaches were suggested, including:

- Use past natural disaster events to raise awareness.
- Conduct capacity-building with teachers and students.
- Work from the ground-up with local stakeholders who can help affect change.
- Tell stories (e.g., through the use of videos) that relate impacts back to something that people know and understand; visual stories can be more powerful than the written word.
- Do a better job of quantifying the damage of glacial lakes to show the impacts.
- Make the impacts of climate change clear to decision-makers.

Next steps for work in the high mountains include:

- In Peru, push the government to do more. Concern about water quantity and quality might serve as the next catalyst for action.
- In Nepal, the official number of dangerous lakes is 21. With the proper resources, HiMAP researchers could assess these lakes in three years and build capacity to address the identified challenges.

# 5. DAY 3: URBAN RESILIENCE – LESSONS LEARNED

**Urban Day: Adaptation Planning in Developing Cities**  
Wednesday, March 18, 2015, 9:00 a.m. – 2:30 p.m.  
Carnegie Endowment for International Peace

**Adaptation Planning in Cities (9:00 a.m.–10:20 a.m.)**

John Furlow, USAID, Opening remarks  
Glen Anderson, Engility Corporation, Opening remarks  
Charles Cadwell, The Urban Institute, Opening remarks and moderator  
Heather McGray, World Resources Institute (lead rapporteur)

Joanne Potter, ICF International, *Climate Resilient Infrastructure Services (CRIS) Program: Meeting Urban Challenges*  
Maria Sofia Dunin-Borkowski, Independent Consultant, *The CRIS Program in Piura – Peru*  
Monica Bansal, USAID, *CRIS Success in the Dominican Republic*  
Sierra Bainbridge, MASS Design Group, *Building Resistance*

**Applying Technical Research and Tools in Developing Cities (10:30 a.m.–12:00 p.m.)**

Charles Cadwell, The Urban Institute, Moderator  
Heather McGray, World Resources Institute (lead rapporteur)

Joanne Potter, ICF International, *Climate Resilient Infrastructure Services (CRIS) Program: Tools to Support City Action*  
Andrea Martin, Cascadia Consulting Group *Deploying the Climate Impacts Decision-Support Tool (CIMPACT-DST) in Vietnam: Introduction*  
Luu Duc Cuong, Vietnam Institute for Urban-Rural Planning, *Deploying the Climate Impacts Decision-Support Tool (CIMPACT-DST) in Vietnam: Vietnam CIMPACT-DST Use, Management, and Future Outlook*  
Ammar Malik, Urban Institute, *The Urban Service Delivery Assessment Framework*

**Rapporteur's Report**

Heather McGray, World Resources Institute

**Mainstreaming the CRD Framework into Development Planning in Macedonia (12:00–1:30 p.m.)**

John Furlow, USAID, Opening remarks  
Glen Anderson, Engility Corporation, Moderator

Aleksandar Karaev, Vladimir Ognjanovski, and Igor Slavkoski, Milieukontakt Macedonia, *Mainstreaming Climate Change into the Green Agenda Process in Macedonia*

**USAID Demo Session (1:30–2:30 p.m.)**

Rebecca Nicodemus and Kathryn Stratos, USAID, *Institutional Capacity Assessment*

## 5.1. URBAN ADAPTATION PLANNING, TECHNICAL RESEARCH, AND TOOLS

This session was referred to as “Urban Day,” since it focused on adaptation issues in cities and other local communities. During the morning sessions, topics related to adaptation planning in cities, focusing on infrastructure issues and application of tools used in urban adaptation planning (including the application of the Climate Impact Decision Support Tool [CIMPACT-DST] in Vietnam). The afternoon session covered work in Macedonia to mainstream the Climate-Resilient Development Framework into the “Green Agenda,” a local participatory process that includes developing a local action plan for climate change mitigation and adaptation. The day closed with a demonstration of a new USAID tool to assess institutional capacity to address climate change.

### Links to Key Resources

Symposium descriptions, presentations, and videos:  
<http://www.ccrdproject.com/acrd-symposium/acrd-day-3>

### 5.1.1. SUMMARY OF PRESENTATIONS AND DISCUSSIONS

#### ADAPTATION PLANNING IN CITIES

This session focused on how USAID’s Climate Resilient Infrastructure Services (CRIS) program staff and the MASS Design Group are working to improve adaptation planning in urban environments.

**Session Opening.** John Furlow introduced Glen Anderson, Chief of Party of the CCRD project. Dr. Anderson stated that climate change is a significant and increasing concern for cities that is exacerbated by demographic shifts from rural to urban areas, increasing population concentrations on the coasts, and emerging issues such as sea level rise and extreme events. CCRD developed its Climate Resilient Infrastructure Services (CRIS) program following the Adaptation Partnership workshop held in Bangkok in July/August 2012. Dr. Anderson then introduced Mr. Charles Cadwell, the moderator for Urban Day.

Mr. Cadwell stated that it is appropriate to have a day that focuses on urban resilience, describing the multiple challenges that urban leaders face, including poverty, increasing population, low levels of institutional development, and political issues. Urban leaders face additional pressures from two closing scissor blades: climate-accelerated stress on existing systems and accelerated service burdens from growing populations. He described some of the work that the Urban Institute has conducted to address climate change in urban areas, including: 1) producing a series of essays on models and policies to help rebuilding efforts in Gulf Coast cities in the wake of Hurricane Katrina; 2) helping with the Rebuild by Design effort after Hurricane Sandy (<http://www.rebuildbydesign.org/what-is-rebuild-by-design/>); with the support of the Rockefeller Foundation and in coordination with HUD’s Hurricane Sandy task force, 3) collaborating with the Rockefeller Foundation to monitor their 100 Resilient Cities initiative; (4) hosting



Charles “Chas” Cadwell, Urban Institute, and ACRD Symposium Urban Day moderator.

Photo credit: Jamie Carson.

an event on urban adaptation challenges; and (5) conducting a systematic review of the adaptation plans of 24 countries in the global south, focusing on identifying challenges and conducting planning, budgeting, implementation, and evaluation.



Urban Day, Adaptation Planning in Cities panel includes, from left, Sierra Bainbridge, MASS Design Group; Maria Sofia Dunin-Borkowski, independent consultant; Joanne Potter, ICF International; Moderator Charles Cadwell, Urban Institute; and Monica Bansal, USAID. Photo credit: Jamie Carson.

***Climate Resilient Infrastructure Services (CRIS) Program: Meeting Urban Challenges: Joanne Potter, ICF International.*** Ms. Potter introduced the CRIS program. She recapped the multiple challenges that cities face, including rapid growth, urgent demands for public services, strained financial resources, centralized governance with limited authority, weak enforcement capabilities, and limited staff capacity. Some of these challenges lead to increased demand for public services, and cities are struggling to provide reliable infrastructure services. She noted that because infrastructure is long lasting and expensive, it is important to “get it right” by designing it to be resilient under *future* conditions.

The CRIS program addressed infrastructure services issues through three components: pilot cities, small grants, and peer learning. This approach entailed tailoring the Climate-Resilient Development Framework into a work plan for each pilot city. The CRIS program also focused on building staff capacity, raising awareness about what climate change is, providing technical training for city staff, and implementing a small grants program that included training on improving capacity to secure funding. CRIS staff also developed vulnerability assessment and adaptation planning tools and approaches, helped implement resilient strategies, and shared lessons learned. Finally, the CRIS team helped the pilot cities develop action plans so that when the CRIS program ended, the cities could continue their work.

See presentation at: <https://goo.gl/jaaj1o>.

***CRIS activities in the pilot city of Nacala-Porto, Mozambique: Joanne Potter, ICF International.*** Ms. Potter briefly described the CRIS pilot in Nacala-Porto, Mozambique. A deepwater port subject to severe storms and cyclones, Nacala-Porto faces erosion, sedimentation, and flooding vulnerabilities. Its

development objectives are to combat erosion, improve municipal services, and implement an urban development master plan. The CRIS team identified local partners and helped expand their capacity through providing train-the-trainer programs on the Climate-Resilient Development Framework and climate change principles, developing tools, and providing related technical training. The CRIS team also held a “writeshop” to help city staff learn how to articulate their development goals and identify funding resources. Additional activities included sharing lessons learned through a study tour and developing an action plan.

See presentation at: <https://goo.gl/UZ6C6b>.

***CRIS pilot in Piura, Peru. Maria Sofia Dunin-Borkowski.*** Ms. Dunin-Borkowski described the pilot in Piura. Located in northern Peru, Piura is typically a dry area, with annual precipitation of 73 millimeters (mm) per year. Most city streets do not have drainage systems, and bridges are not constructed with flooding in mind. In 1983 and 1998, which were both El Niño years, Piura experienced 2,300 mm and 1,900 mm of precipitation, respectively; flooding was severe and bridges collapsed. After 1998, engineers began to design new infrastructure that could withstand dry and wet years. However, there had been insufficient coordination between the engineers and urban planners, and in July 2013, the CRIS team worked to increase collaboration between these city departments. The team developed a climate information database, vulnerability screening tool, and adaptation planning tool, as well as providing training for municipal staff and technicians. Ms. Dunin-Borkowski indicated that the CRIS approach can help local governments comply with new national guidance regarding climate risk: In 2014, the government issued guidance on requiring that climate change risks be incorporated in projects receiving public investment. As next steps, the CRIS team worked with staff in Piura to apply this national guidance in evaluating climate risk and adaptation options, and validated the methodology and tools developed through the CRIS program.

See presentation at: <https://goo.gl/jv66yk>.

***CRIS Pilot in the Dominican Republic. Monica Bansal, USAID.*** Ms. Bansal described the CRIS pilot in the Dominican Republic. This small country encompasses 32 provinces; there is little coordination between the national government and the country’s many provincial and city governments. Even within cities, there is limited coordination on individual issues. Ms. Bansal stressed the importance of this small, relatively short-term pilot and explained why it was a success. She explained that the CRIS pilot was conceived for the purpose of integration with the USAID Mission’s work in the Dominican Republic. The USAID work is focused on water provision and flooding impacts, and incorporates: 1) strengthening climate information, 2) integrating climate change into urban planning, and 3) supporting adaptation through sustainable project development and municipal financing.

The goal of the CRIS pilot was to incorporate climate resilience into the water utility’s new master plan for water infrastructure. Key issues – especially for the marginalized neighborhoods in Santo Domingo – included lack of maintenance, large amounts of water loss, and limited coordination between city and utility planning processes (e.g., resulting in new developments with no piped water). The CRIS team assembled a working group composed of key staff from the water utility, municipality, national meteorological office, and a local NGO, and worked with the group to identify and analyze vulnerabilities. The utility is implementing many of the group’s recommendations, including implementing infrastructure design changes and forming an internal utility climate change workgroup to screen new investments. Because of the success of this work, there is discussion of expanding this approach to other sectors, starting with the electricity sector.

Ms. Bansal’s key conclusion is that this pilot demonstrates that investing a small amount on a pilot that is tied to a larger, phased USAID project can be catalytic. The CRIS pilot provided the opportunity to

begin working on the “soft” issues that lay the groundwork for the larger USAID development program. This pilot was successful because of the continuity of the work, being that it was Mission-led (and USAID will continue to be involved in the future) and external continuity existed because it included many local champions who can continue to bring key partners into the project.

See presentation at: <https://goo.gl/QRHp09>.

***Building Resistance: Sierra Bainbridge, MASS Design Group.*** Sierra Bainbridge provided an architectural perspective on climate-resilient infrastructure. She described several hospitals and treatment centers that the MASS Design Group ([www.massdesigngroup.org](http://www.massdesigngroup.org)) has created in Rwanda, Haiti, and Liberia. One project focused on construction of a hospital in a rural area in northern Rwanda. Her team immersed itself in the area for one year to understand how the hospital system works in Rwanda and to build connections with the local community, including patients, clinicians, and local government staff. A key concern was how to ensure the hospital would be accessible to everyone in the area. The hospital incorporates many sustainable design features. For example, it was built on top of a hill to take advantage of natural systems, including cross ventilation (which is extremely useful when the power is off and ventilation systems are down); halls and waiting areas are on the exterior of the buildings to reduce cross-contamination; and it uses local materials that are easy to obtain. Ms. Bainbridge noted three important lessons learned from her work: 1) engage the community in both the design and construction phases of the project, 2) rely on natural building systems, and 3) be contextually responsive – there is no single solution to a problem.

See presentation at: <https://goo.gl/TrAovs>.

#### **APPLYING TECHNICAL RESEARCH AND TOOLS IN DEVELOPING CITIES**

This session provided a closer look at the various tools and approaches used in urban adaptation planning.



Urban Day, Applying Technical Research and Tools in Developing Cities panel includes, from left, Ammar Malik, Urban Institute; Luu Duc Coung, Viet Nam Institute for Urban-Rural Planning; Andrea Martin, Cascadia Consulting Group; Joanne Potter, ICF International; and Moderator Charles Cadwell, Urban Institute. Photo credit: Jamie Carson.

***Climate Resilient Infrastructure Services (CRIS) Program: Tools to Support City Action: Joanne Potter, ICF International.*** Ms. Potter began the session by describing five tools developed in partnership with the CRIS pilot cities:

- *Climate information database.* This Excel-based tool, created for the Piura pilot, provides decision-focused climate information organized by type of decision and user role. It provides a simple summary of climate trends and provides links to more detailed information. Piura municipal staff are responsible for maintaining the data.
- *CRIS sensitivity matrix for infrastructure.* Developed for the water treatment center in Santo Domingo, this reference guide summarizes the types of climate change stressors that can affect different types of infrastructure.
- *CRIS rapid assessment tool.* Developed for use in Nacala-Porto, this tool provides a series of questions to help users assess current vulnerability to erosion, precipitation, and sedimentation; consider the compounding impacts of development; and identify potential measures for reducing vulnerability.
- *Vulnerability assessment screening tool.* This Excel-based tool, used in Piura and Trujillo, leads users through the different characteristics of the projects they are considering and helps them assess current and future vulnerabilities. Outputs are presented in a color-coded matrix format that enables users to quickly identify vulnerable areas and decide which vulnerabilities to address.
- *Adaptation planning tool.* Local government staff in Piura and Trujillo use this tool to help them consider a full portfolio of adaptation strategies (including structural, capacity, policy, and best-management practices) to address the vulnerabilities identified through the vulnerability assessment screening tool.

Next steps in tool development include broader dissemination; training staff to use the tools and to train others in their use; and, in Peru, refining the tools to support national public investment program proposals under the Ministry of Finance.

See presentation at: <https://goo.gl/5iKCNI>.

***Introduction to the Climate Impacts Decision Support Tool (CIMPACT-DST): Andrea Martin, Cascadia Consulting Group.*** Ms. Martin described CIMPACT-DST, an Excel tool used for integrating climate change into urban planning decision-making. Cascadia staff customized their existing tool for use in Vietnam, starting with a pilot study in the city of Hue and then scaling it up for use at the national level. The tool contains embedded information on local climate projections, climate hazard maps, sector-specific impacts, and policy information. Users input additional information, including the project or plan lifespan, location, and sector. Based on these data, CIMPACT-DST provides three primary outputs: 1) a summary of the latest climate projections, 2) a summary of local impacts for specific sectors, and 3) sector-specific guidelines and recommendations.

The pilot study process started with meetings alongside local decision-makers to learn how they use climate information in their urban planning decisions. They identified a local champion, the Director of the Hue Planning Institute, as well as other local urban planners and stakeholders who would use and ultimately own the tool. Together, they collected and reviewed climate-relevant information. Based on Hue's needs and the information collected, the Cascadia team developed and tested a beta version of CIMPACT-DST for Hue, developed guidance, trained users, and transferred ownership to the Hue administrators. Based on this pilot study experience, Cascadia staff then worked with Vietnamese

planning organizations led by the Vietnam Institute for Urban-Rural Planning to develop an initial national-level tool, obtain feedback and refine the tool, and distribute it to the national government and other stakeholders.

See presentation at: <https://goo.gl/3yYdSy>.

***Deploying the Climate Impacts Decision-Support Tool (CIMPACT-DST) in Vietnam: Vietnam CIMPACT-DST Use, Management, and Future Outlook: Luu Duc Cuong, Vietnam Institute for Urban-Rural Planning.*** Luu Duc Cuong explained how Vietnam is using and managing the CIMPACT-DST tool and illustrated the importance of the tool to the country. Vietnam is one of the most climate-exposed countries in the world. More than 760 cities are affected by climate change impacts (e.g., extreme rainfall, flooding, landslides), with more than 100 cities directly affected by sea level rise and storm surge. Vietnam is experiencing rapid growth and transformation, with foreign and internal investment in new infrastructure. Consequently, now is the time for city planners to integrate climate information into urban designs and functions across the country. Hue planners used CIMPACT-DST to review four major regional economic plans, identify cities and key infrastructure that are threatened by sea level rise and other impacts, and adjust the plan accordingly. For example, in the Mekong Delta economic region, planners made three recommendations to protect national roads in certain provinces from sea level rise: 1) consider construction elevation relative to sea level rise scenarios, 2) construct coastal road(s) to serve as a sea dike, or levee, and 3) design and construct a drainage system along transport road(s).

Luu Duc Cuong stated that the main accomplishments from the CIMPACT-DST work include widespread support for the pilot and national versions of the tool, use of the tool to develop climate-resilient plans, effective technology transfer and training, successful awareness-raising and relationship-building, and information compilation and consolidation. Future challenges include 1) the need to develop local specificity by continuing to integrate available provincial climate action plans and local spatial data, 2) limited time and resources to continue to maintain and update the tool, and 3) limitations in the climate expertise and capacity limitations of the urban planners who need to update the tool. Next steps include expanding use and awareness of the tool to six new provinces, developing a tool sustainability plan and update mechanism, implementing the update mechanism through one supervised tool update, and monitoring and evaluating outcomes.

See presentation at: <https://goo.gl/a7FyTm>.

***Urban Service Delivery Assessment Framework: Ammar Malik, The Urban Institute.*** Ammar Malik described this Urban Institute framework used to evaluate the status of urban service delivery in 48 cities in 16 countries. The tool included 31 questions designed to measure performance in five areas: 1) effectiveness of functional assignments, 2) dynamism of the local political leadership, 3) degree of local control over administrative mechanisms, 4) degree of local fiscal autonomy, and 5) strength of local participation and accountability mechanisms. The questions cover three climate-sensitive urban services: sanitation, water supply, and solid waste management; the results offer a detailed analysis of how climate will affect service delivery.

See presentation at: <https://goo.gl/5nWlBz>.

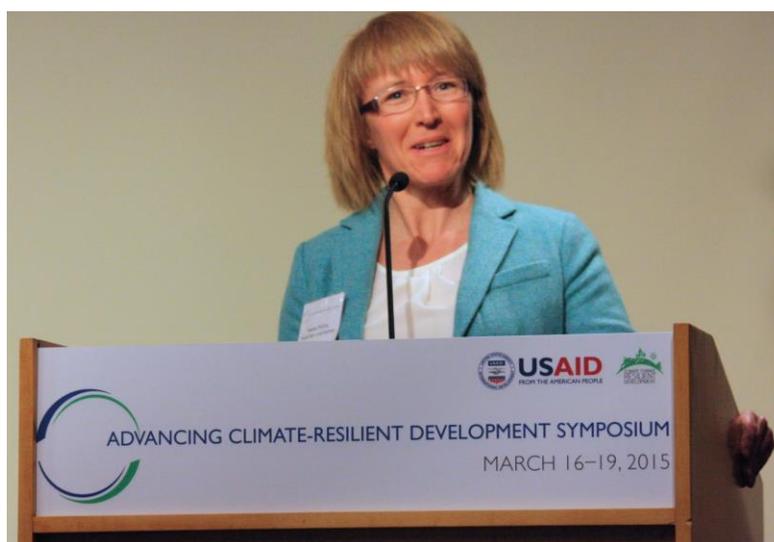
**Discussion.** Several themes emerged from this session's discussion. Speakers stressed that tools do not provide decisions; they help users identify issues and options for consideration. When designing CIMPACT-DST, the goal was to provide a tool that would be simple and easy to use that could motivate urban planners to conduct initial analyses and then look for more in-depth ways to integrate climate resilience into their development planning. A possible next step is to combine the CRIS focus on

infrastructure with an urban planning focus by integrating the use of CIMPACT-DST into other CRIS pilots.

## 5.2. RAPPORTEUR'S REPORT

Heather McGray of the World Resources Institute served as the rapporteur for the two preceding Urban Day sessions. She identified several themes and findings that emerged from the morning's presentations and discussions.

- *Integrating climate resilience into development.* This is a very practical approach; it is important to move away from business as usual by incorporating climate resilience issues into development decisions.
- *The Climate-Resilient Development Framework.* She noted that this framework was an important component of many of the projects presented in this session, and that it deserves to be widely used.



**Heather McGray, World Resources Institute and ACRD Symposium Urban Day Rapporteur.** Photo credit: Jamie Carson.

- *Tools.* It is important to consider important lessons learned regarding the creation and use of tools. How do we know that we have the right tool for the job? Is the tool usable? How do you balance usability with the technical applications of a tool?
- *Customization of tools.* Although customization is especially important when considering how to adapt to climate change, there is often insufficient time and resources to customize tools.
- *Working groups.* Working groups are an important form of stakeholder engagement. How do we engage people from a range of skills and professions? How can we use working groups most effectively?
- *Pilot projects.* It is important to learn to use pilot projects effectively. An issue to consider is when and why is it appropriate to conduct a pilot study? The choice to conduct a pilot might be based on practicality (e.g., it fits in with the Mission's interests) or on technical issues (e.g., climate conditions, size) that help us begin to scale up the project. Identifying champions and encouraging peer learning are both important aspects of continuing the work started in a pilot project.

See presentation video at: <https://goo.gl/2tNHgl>.

### 5.3. COMMUNITY ADAPTATION MEETING: MAINSTREAMING THE CRD FRAMEWORK INTO DEVELOPMENT PLANNING IN MACEDONIA

Glen Anderson opened this afternoon session by providing history about CCRD's activities in Macedonia. In September 2013, Milieukontakt Macedonia (MKM) invited CCRD staff to Macedonia to conduct climate-resilient development training for MKM trainers. Since then, CCRD staff have traveled to Macedonia to collaborate on integrating climate-resilient development into the Green Agenda, a municipal-level, participatory process that engages local stakeholders in developing a sustainable development plan that incorporates aspects of climate change adaptation and mitigation. This project offers a good opportunity for CCRD to test the adaptability of USAID's Climate-Resilient Development Framework in the context of Macedonia's unique challenges and opportunities.

***Mainstreaming Climate Change into the Green Agenda Process in Macedonia: Alex Karaev, Milieukontakt Macedonia (MKM).*** Mr. Karaev explained that MKM is part of the Milieukontakt Network, a nonprofit organization that is active in more than 20 European and Asian countries and that works on sustainable solutions for environmental problems. MKM Macedonia implements the USAID Municipal Climate Change

Strategies (MCCS) project, with the objective of increasing the country's capacity to adapt to climate change and to use climate change as a platform to improve local democratic processes. The project focuses on the Green Agenda, which Milieukontakt International has used in more than 10 countries in Europe and Asia. The Green Agenda is a participatory method that starts with identifying local values and stresses the importance of cooperation and public participation. It involves the development of a strategic

document that includes a local action plan for local climate change

mitigation and adaptation. CCRD staff have been providing training and working with MKM since 2013 on climate change adaptation and, more specifically, on how to integrate elements of the CCRD Climate-Resilient Development Framework into the Green Agenda process.



**From left, Vladimir Ognjanovski, Igor Slavkoski, and Aleksandar Karaev, Milieukontakt Macedonia.** Photo credit: Jamie Carson.

MKM has worked with local planners, scientists, decision-makers and others to implement a Green Agenda in eight municipalities, develop greenhouse gas inventories in 10 municipalities, and implement 10 pilot projects and urgent actions. Urgent actions entail quick-implementation projects (e.g., installing a filter in a drinking water purification station); pilot projects address bigger-picture solutions (e.g., improving water supply quality and enhancing the efficiency of the water supply management system).

MKM Macedonia has found that the size of the project is not important; small but tangible results will lead to larger activities. Other critical success factors include clear local ownership of the results, building trust and cooperation between the government and stakeholders, community involvement (which leads to commitment), and the identification of community champions and leaders. Four percent of

Macedonia's population has been involved in developing strategic Green Agenda plans – a large percentage for this type of action. Next steps include testing the new Green Agenda methodology for climate change in two Macedonian communities and in other countries in the Western Balkans.

See presentation at: <https://goo.gl/yHc8JV>.

**Discussion.** One participant asked the MKM representatives to explain how they have been able to secure a 4% participation rate during the Green Agenda planning process within the municipalities in which they have worked (typically, a small municipality has 4,000 residents). They responded that a key to success is to represent all stakeholders in the Green Agenda working groups. This includes local government staff, starting with the mayor, and other local stakeholders (e.g., staff from NGOs, private institutions, businesses). Once the Green Agenda has been approved by the municipal council, it is important to focus on implementation and to create a monitoring and evaluation group to assess effectiveness. Finding ways to finance Green Agenda projects is a challenge. Even though municipal governments have limited funds, MKM Macedonia has found that if a project is a high priority and the mayor is committed to the project, local governments can often find the needed money. For mitigation projects, it is often possible to reinvest savings from implementing energy efficiency measures into new projects. MKM also provides a team of experts who help municipalities find outside funding sources (e.g., GiZ and Swiss Development Corporation) and prepare grant proposals.

#### 5.4. INSTITUTIONAL CAPACITY ASSESSMENT

Rebecca Nicodemus and Kathryn Stratos of USAID demonstrated a new USAID tool for assessing institutional capacity to address climate change. The USAID Organizational Capacity Assessment (OCA) tool was developed to help assess local organizations that receive direct funding from USAID. The GCC assessment tool, informed by the OCA tool, was developed to monitor the effectiveness of USAID's climate change capacity-building efforts. The emphasis of this tool is on assessing organizations that are important for moving a country's or sector's climate change agenda forward. After demonstrating the tool, Ms. Nicodemus and Ms. Stratos led the Symposium participants in an exercise to apply the tool to their own organizations.

See presentation at: <https://goo.gl/Cftmp5>.



**Top photo:** Kathryn Stratos, USAID, presents the Institutional Capacity Assessment instructions.

**Bottom photo:** ACRD Symposium attendees participate in an Institutional Capacity Assessment group.

Photo credit: Jamie Carson.

# 6. DAY 4: CLIMATE SERVICES – LESSONS LEARNED

## **Climate Services**

**Thursday, March 19, 2015, 9:00 a.m. – 2:30 p.m.**

**Carnegie Endowment for International Peace**

### **Leadership Perspectives of Climate Services (9:00 a.m.–10:30 a.m.)**

Walter Baethgen, International Research Institute for Climate and Society, Opening keynote and moderator

Stephen Zebiak, International Research Institute for Climate and Society, *Climate Services Partnership*

Glenroy Brown, Jamaica Meteorological Service, *Climate Smart Products for Agriculture*

Lisa Goddard, International Research Institute for Climate and Society and James Buizer, University of Arizona, *Integrating Climate Information & Decision Processes for Regional Climate Resilience*

Jenny Frankel-Reed, USAID, *SERVIR*

### **Technical and Economic Assessments of Climate Services (10:30 a.m.–12:15 p.m.)**

Edward Carr, University of South Carolina, *The Evaluation of Climate Services: Challenges and Opportunities*

Sheila Navalia Onzere, University of South Carolina, *Evaluating Climate Services: Lessons from Assessing Mali's Agrometeorological Advisory Program*

Catherine Vaughan, International Research Institute for Climate and Society, *Learning about Best practices: An Update from the CSP Evaluation Group*

Glen Anderson, Engility Corporation, *Economic Valuation of Climate Services*

### **Rapporteur's Report for the Day**

James Buizer, University of Arizona

### **A Look Back at the Week – Advancing Climate-Resilient Development**

Lawrence Buja, National Center for Atmospheric Research

## **6.1. CLIMATE SERVICES**

The two climate services sessions – *Leadership Perspectives of Climate Services* and *Technical and Economic Assessments of Climate Services* – provided an overview of the production, delivery, and use of climate information and other decision-relevant services, tools, and products. The sessions described ongoing efforts to provide adaptation planners and user communities with better climate services and options for assessing technical, institutional, and economic aspects of climate services provision.

### 6.1.1. SUMMARY OF PRESENTATIONS AND DISCUSSIONS

*Session opening:* Walter Baethgen, International Research Institute for Climate and Society (IRI), Keynote Speaker and Moderator. Walter Baethgen delivered the keynote for the climate services sessions, during which he introduced the concept of a value chain linking production of services to the benefits resulting from climate-informed decision-making and climate-smart policy and planning. He touched on the role of research in climate services, illustrated the complexity of value chains, demonstrated the importance of translation and interpretation of climate services into actionable information, and noted the challenges faced by various user groups in understanding uncertainty and risk.



**Walter Baethgen, International Research Institute for Climate and Society, and ACRD Symposium Climate Services Day moderator.** Photo credit: Jamie Carson.

Dr. Baethgen used the example of a CAT scan to illustrate the role of fundamental, basic, and applied research played in the development of the CAT scanner technology, leading to the investment in and production of CAT scanners for medical applications. The doctor or neurologist is trained to interpret information provided by the CAT scan operator and provide patients with actionable information. The medical benefits of the CAT scan technology are not realized until the information is provided

to the patient, enabling the doctor and patient to respond to the information in a timely manner.

The complexity of information networks was demonstrated in an example for agriculture, where Dr. Baethgen noted the diversity of institutions that conduct basic and applied research in support of the production of climate, agricultural, and marketing information by meteorological services, agricultural extension services, and other advisory groups to assist farmers, agribusinesses, insurance companies, and financial services with decision-making.

#### Links to Key Resources

Symposium presentations:  
[www.ccrdproject.com/acrd-symposium/acrd-day-4](http://www.ccrdproject.com/acrd-symposium/acrd-day-4)

Climate Services website:  
[www.climateservices.org](http://www.climateservices.org)

### 6.2. LEADERSHIP PERSPECTIVES OF CLIMATE SERVICES

**Climate Services Partnership:** Steve Zebiak, International Research Institute for Climate and Society (IRI). Steve Zebiak provided an overview of the Climate Services Partnership (CSP). Participants at the first International Conference on Climate Services (ICCS) in 2011 agreed to establish the CSP as an informal interdisciplinary partnership committed to the production and delivery of new and improved climate services and the creation and sharing of knowledge and information resources. The CSP has more than 200 members and its activities have been coordinated by the CSP Secretariat, led by IRI with financial support from USAID through CCRD. Dr. Zebiak described CSP's activities as including knowledge capture, convening of annual conferences, working group activities, and knowledge exchange:

- Knowledge capture – CSP has developed and maintained an interactive database on current climate services, conducted assessments of climate services, and prepared case studies documenting implementation experience, lessons learned, and opportunities for improvement.

- Conferences – CSP has convened four annual ICCS events (2011-2014) that have attracted 600+ participants. The conferences fostered connections and collaborations among participants, facilitated sharing of experiences and lessons learned, identifies gaps and opportunities for new research and analysis, and catalyzed the formation and sustained activities of thematic working groups.
- CSP Working Groups – during the first ICCS, the Working Group on the economic valuation of climate services was established as well as the Developing Country Task Team. In subsequent ICCS events, additional working groups on evaluation, ethics and research priorities were established. Working groups have provided a forum and mechanism for advancing research, policy analysis, and knowledge management.
- Knowledge Exchange – the CSP connects members through a quarterly online newsletter, convenes webinars and online forums, and features stories and access to reports on the CSP website ([www.climate-services.org](http://www.climate-services.org)).



**Steve Zebiak, International Research Institute for Climate and Society.**

Photo credit: Jamie Carson.

Looking ahead, the CSP Secretariat will require new sustained financing to continue its convening and knowledge exchange functions. Closer collaboration with the Global Framework for Climate Services and the CSP membership is envisioned and has been discussed.

See presentation at: <https://goo.gl/y0G7NZ>.

***Climate Smart Products for Agriculture – The Jamaica Context: Glenroy Brown, Jamaica Meteorological Service.*** The IPCC considers small islands like Jamaica to be some of the most vulnerable to climate variability and change. The agricultural sector is particularly vulnerable because of open fields, the large number of small holdings, and reliance on rainfed crops. A working group on climate services in agriculture was organized in May 2013 to identify farmers’ priority needs, make plans to develop or improve climate services and tools, and arrange interactive training to ensure farmers can use these tools effectively. In farmer forum sessions convened by the working group, the greatest needs identified by farmers were early warning information on drought and real time weather forecasts.



**Glenroy Brown, Jamaica Meteorological Service.** Photo credit: Jamie Carson.

Over the last two years, the Jamaica Meteorological Service with working group partners representing the Jamaica Ministry of Agriculture, Jamaica Rural and Agricultural Development Agency, the Caribbean Agricultural Research and Development Institute, ACDI-VOCA, and IRI were successful in responding to farmers’ needs.

Specific successes included:

- Increased awareness of climate services products and services among farmers
- Web portal access to five-day weather forecast (with downscaling)
- Improved Monthly Farmer’s Bulletins in response to inputs from farmers
- Development of drought and precipitation monitoring and forecast tools, now being used across the Caribbean
- Database of contacts to receive SMS text messages for severe weather events
- Trained extension officers as well as post training review

See presentation at: <https://goo.gl/30fU8I>.

***Integrating Climate Information and Decision Processes for Regional Climate Resilience (IRAP): Lisa Goddard, IRI, and James Buizer, University of Arizona.***

IRAP (<http://irap.iri.columbia.edu/>) has goals similar to those of CCRD – foster adaptation and facilitate resilience of communities and sectors to climate change. However, IRAP focuses on the improved design, production, and delivery of user-relevant climate information for decision-making and risk management. The project’s approach emphasizes partnerships to determine needs and then engages IRAP’s multidisciplinary team (i.e., IRI, University of Arizona, regional partners) to develop climate information and products. There are five pillars of IRAP:

- *Pillar 1:* Identify vulnerabilities and opportunities in climate variability and change in collaboration with stakeholders
- *Pillar 2:* Understand, quantify and reduce uncertainties with climate information; many communities are data poor
- *Pillar 3:* Identify interventions like technology that reduces vulnerability – applications and training
- *Pillar 4:* Identify policies and interventions that reduce and/or transfer risks
- *Pillar 5:* Design evaluation at outset of targeted interventions and engagement. This needs to be done from the outset and from the outside; inform midterm adjustments

Under each of the five pillars, examples of IRAP work were provided. In terms of IRAP’s sector and thematic focus, the team will be working within the areas of water, disasters and extreme events, agriculture and food security, coastal issues, and economic development.

See presentation at: <https://goo.gl/ut57BC>.



***Top photo:*** Lisa Goddard, International Research Institute for Climate and Society.  
***Bottom photo:*** James Buizer, University of Arizona.

Photo credit: Jamie Carson.

**SERVIR: Jenny Frankel-Reed, USAID.** SERVIR, from the Spanish verb, “to serve” is a collaboration between USAID and the National Aeronautics and Space Administration (NASA). The organization’s mission is to provide climate information to decision-makers to improve development outcomes in agriculture, biodiversity, forests, health, disasters, and water. SERVIR started with a regional hub in Central America and now delivers information from 22 satellites via additional hubs in Bangkok (Asian Disaster Preparedness Center (ADPC)), Nairobi (Regional Center for Mapping of Resources for Development (RCMRD)) and Katmandu (International Centre for Integrated Mountain Development (ICIMOD)). Through this collaboration, NASA provides the science and data, and USAID and its support contractor, Development Alternatives Incorporated (DAI), connects the information to users. SERVIR strives to improve the capacity of analysts and decision-makers to use satellite data and geospatial information technologies and improve the awareness of, access to, and provision of geospatial data, products, and tools.



**Jenny Frankel-Reed, USAID.**  
Photo credit: Jamie Carson.

Under SERVIR, 62 decision support tools have been developed (see SERVIR product catalogue – [www.SERVIRcatalogue.net](http://www.SERVIRcatalogue.net)), more than 2,000 people have been trained and more than two million online map requests have been made (2013-2015). Ms. Frankel-Reed also provided detailed descriptions of two successful collaborations between SERVIR and partners. The Bangladesh Flood Forecast & Warning Centre (<http://www.ffwc.gov.bd>) produced a flood warning with only three days lead-time because India did not share upstream data. Working with SERVIR and the available satellite altimetry data, the Centre was able to increase the lead-time on flood warning forecasts to eight days, reducing flood deaths from thousands annually to 17 people. In Eastern Africa, night land surface temperatures can be used to map frost potential for coffee and tea farmers in East Africa. The insurance industry is now able to assess this frost forecast and provide a specific insurance package to farmers based on measuring potential damages.

### Lessons learned

- Satellite data can be a valuable part of climate decision support tools – free, public, global, variable resolution & frequency.
- Sustainable service provision requires adequate staff, time, and budgets for user engagement, science, product development and testing, data sharing, training, maintenance, monitoring, and evaluation.
- No single institution can develop and deliver climate services and decision support tools alone.
- We need better ways to replicate and scale successful products and tools.

See presentation at: <https://goo.gl/VJpqla>.

**Discussion.** Participants asked speakers a number of questions:

1. *Did the people in India find that their data is useless now that we have satellites?* Ms. Frankel-Reed responded that this may be a cautionary tale but she was unsure. The Bangladeshis were mainly concerned with accessing information that would allow them to improve their flood warning. We may see more knowledge accessibility in the future of data since stakeholders are starting to see they can get the needed data from other sources.
2. *Access to information vs. power of knowledge: How does this map with our development of communities and building local confidence?* Dr. Baethgen responded that when training communities, we need to use very simple information and communication with a common language. We need more emphasis on working with users (e.g., government, farmers, etc.). It does not need to be formal training; it can also just be interacting. Mr. Brown noted that it depends on the user. Jamaica was successful because we did not start with creating a tool but rather by conducting a needs assessment by working with farmers. We involved stakeholder input in the tool. It's easy for them to use the tool since they are the ones who helped create it.
3. *What do you do with unsuccessful tools or products that you developed?* Dr. Goddard indicated that they go back and figure out what is not connecting. Are there technical issues that can be overcome or is the audience just not considering it to be relevant? If it's not relevant, you need to go back to the drawing board and think again about designing the right tool to address that community.
4. *What do you see as the barriers of the different levels that this information will be used?* Dr. Baethgen responded, "We don't put enough effort in helping the users to use or understand the tools and applications. It depends on the user. We tried to go to the farming community first and look at their needs and input first instead of developing the tool and then going to them."

### 6.3. TECHNICAL AND ECONOMIC ASSESSMENTS OF CLIMATE SERVICES

*The Evaluation of Climate Services – Challenges and Opportunities:* Edward Carr, University of South Carolina. Dr. Carr

provided the context for a range of climate services evaluation activities that were undertaken by the CSP with financial support from USAID through CCRD. One of the key messages that emerged from the first International Conference on Climate Services in 2011 was that there was considerable demand for evidence to justify investments in climate services. He noted that the availability and quality of climate information has increased, but limited attention has been given to the important issues of whether the information is effectively communicated or responds to the needs of users.



**The Technical and Economic Assessments of Climate Services Panel includes, from left, Catherine Vaughan, International Research Institute for Climate and Society (IRI); Moderator Walter Baethgen, IRI; Edward Carr and Sheila Navalía Onzere, University of South Carolina; and Glen Anderson, Engility Corporation.**

Photo credit: Jamie Carson

Under CSP, a series of evaluation studies were undertaken to answer the following questions:

- What is the value of climate services?
- How effective are climate services?
- Why are they effective/ineffective?
- How do they work?
- How do we properly identify users?
- How do we conduct evaluations in a timely and affordable manner?

The CSP “evaluation team,” largely supported through CCRD, produced new evidence on evaluation methods, functions, impacts and efficacy. The team demonstrated methods for comprehensive as well as cost-constrained “medium-level” evaluations of climate services and supported new work on the socio-economic value of climate services.

See presentation at: <https://goo.gl/ifKQd9>.

***Evaluating Climate Services – Lessons from Assessing Mali’s Agrometeorological Advisory Program: Sheila Navalía Onzere, University of South Carolina.*** The Mali agro-meteorological program was started as an emergency measure to address food insecurity linked to droughts in the 1970s and 1980s. After the program produced promising results, it was decided it should be scaled up. Since its beginning, the goal of the program has been to assist rural farmers in making informed cropping decisions (e.g., planting time, crop selection, etc.).

The program had not been evaluated since the early 1980s. Under the CSP, with support from CCRD, scientific and field assessments of the Program were undertaken in 2012 to evaluate the technical quality of the program, its uptake by farmers, and impact on agricultural outcomes. The evaluation faced a number of challenges related to the lack of an assessment baseline and long time between the start of the program and the evaluation. One lesson learned is that it is important to build evaluation into the inception of the program.

Ms. Onzere focused the remainder of her presentation on the field assessment, led by Dr. Edward Carr. The field assessment included 33 villages in southern Mali spread across four agro-ecological zones, 640 structured interviews and 132 focus groups. During the assessment, the team discovered a number of additional villages that had formerly participated in the program. In the field assessment, the team analyzed data from farmer that are currently participating, formerly participated, and never participated.

Key findings of the assessment included:

- Low use of climate advisory; low female participation; and low influence of climate advisory on agriculture.
- Farmers that are using the advisory are using them fairly consistently
- Patterns of use reflect farmers’ ability to use rather than their trust in the service.
- Use of climate services depends on whether there is a need for climate information for farmer livelihoods.
- The team examined aspects of decision-making and influence on the use of the advisory service; findings included:

- Junior men have to wait on senior men's decisions. Ability of junior men to act on advisories is limited,
- Senior women have more autonomy over their decisions to their farms. But the advisories do not focus on the crops that the advisories grow so the advisories had limited utility for senior women,
- Married women have to wait on men's decisions. They have to wait to act on the climate advisories.

See presentation at: <https://goo.gl/LkOm06>.

***Learning about Best Practices: An Update from the CSP Evaluation Group: Catherine Vaughan, International Research Institute for Climate and Society (IRI).*** Following the first ICCS in 2011, conference participants volunteered to prepare case studies. 101 case studies were prepared, documenting more than 100 types of climate services. The preparation of these cases was managed by the CSP Evaluation Group. These were self-reported case studies prepared mostly by the providers of climate services and did not reflect the perspectives of users on the quality or value of the products described. The case studies were more descriptive than analytical and stopped short of assessing whether the services were successful.

In addition to the case studies, large-scale evaluations of climate services were undertaken in Mali (see Onzere's presentation above), India, and Senegal. These evaluations were tailored to the specific products and were costly to undertake in part because of the use of surveys and focus group meetings and interviews. The CSP Evaluation Group was challenged to develop a methodology for mid-level (cost and time) assessments. The Evaluation Group met at IRI in New York alongside a variety of stakeholders, who were there to help develop a protocol for evaluations. This was shared with evaluators prior to their preparation of mid-level evaluations in 2013. Mid-level evaluations were conducted for a variety of climate services and initiatives in South Africa, the Caribbean, Indonesia, Kazakhstan, and the State of Colorado. Overall, the feedback from evaluators regarding the methodology/protocol was mixed and the Evaluation Group has worked since on a revised protocol in response to evaluators' comments.

Lessons Learned:

- Evaluations need to focus on learning. We need to better understand whether we are implementing the correct actions, and how do we determine what is "correct". Additional opportunities are needed to conduct evaluations that are relevant to the paradigm shift to demand-driven rather than supply-driven services.
- Ask the right questions to understand who uses the services, their needs, and the economic value they place on services.
- Monitoring and evaluation needs to be designed and implemented from the beginning to provide baselines for quality and use.
- Use climate services evaluations to explicate our own value judgments about things such as equity.
- Working collaboratively on climate services is important –additional efforts will be needed to determine what is needed and what isn't needed, as well as to understand the breadth of people using these sorts of services.

See presentation at: <https://goo.gl/jf0HqT>.

***Economic Valuation of Climate Services: Glen Anderson, Engility Corporation.*** Dr. Anderson provided the context for valuation, noting the decades of innovation and expansion of the types, coverage, and quality of services as well as the new methods for delivering these services. He noted that the CSP has taken a three-pronged approach to catalyzing diffusion: 1) sharing international knowledge and experiences; 2) assessing the quality of services from technical and institutional perspectives; and 3) assessing the economic and social value of climate services. Even though the annual global cost of providing services is only about \$10 billion, most service providers in developing and developed countries face challenges in securing stable and sustained funding to provide and improve their services. Thus, it may be useful to demonstrate the net benefits of climate service provision relative to other public services.

The CSP Working Group on the Economic Valuation of Climate Services formed in 2011 and supported several activities including a literature review of 140 economic valuation studies, only about 50 of which were completed in developing countries. The Working Group also collaborated with USAID, the World Meteorological Organization (WMO) and the World Bank to produce a primer on valuing meteorological and hydrological services, titled *Valuing Weather and Climate: Economic Assessment of Meteorological and Hydrological Services*. The book was published by WMO in May 2015; view it here: <http://www.wmo.int/gfcs/node/723>.

The purpose of the book is to help providers of climate services commission benefit-cost studies covering the assessment of current, new, or improved hydrological-meteorological (hydro-met) services and features the use of value chains to connect production and delivering of services to user decision-making and outcomes. The book also covers the various methods for valuing and comparing hydro-met benefits and costs of services, and provides suggestions for communicating the results of these studies.

CCRD, on behalf of the CSP, and WMO, with World Bank co-financing, convened a series of training workshops for climate services providers, which involved training and hands-on work on concept notes for benefit-cost studies of their products and services. With CCRD ending in October 2015, there is unfinished business: 1) how to sustain the training program; 2) the need to continue to build the case for climate services, especially in Asia and Africa; 3) the importance of continuing to update the literature and; 4) the role of conducting research and fostering a better understanding of how information is used in decision-making by users of climate services.

## Discussion

1. *What changes have occurred as a result of the evaluation?* Dr. Carr responded that the Mali evaluation is not yet complete. They are still sifting through observational data. They are working closely with the Mali met services and they know that this is an opportunity for them to identify gaps for other donors to help fund.
2. *One participant noted that four things are needed to evaluate climate services:* 1) something unusual needs to happen; 2) this unusual event was predicted; 3) people and/or businesses acted on the information; and 4) users achieved superior results. How often are all four elements observed? Can you evaluate services that have not been around for very long? This question engendered a number of responses from panelists.
  - Dr. Baethgen noted that successful examples of climate services may depend on factors unrelated to the four elements. For example, a change in administration that undervalues or terminates a particular service.

- Dr. Anderson provided a simple example where success was observed very early on: In Ethiopia, pastoralists were provided with geographic information system (GIS) maps of vegetation quality and were able to better plan the movement of their herds to better grazing areas. Herd mortality was reduced by 49% and these benefits could be readily valued in comparison to the costs. He also noted that the third element is particularly difficult to understand because the ability to take decisions requires skill, information and resources.



**CCRD Chief of Party Glen Anderson, Engility Corporation.**

Photo credit: Jamie Carson.

- Ms. Vaughan observed that we need to look at the entire value chain related to production, uptake, and decision-making on the information.
- Dr. Carr noted that it is not necessary to observe unusual events to understand the value of climate services. Instead, you need a very good understanding of how the users behave. In his work with Red Cross in Zambia, they observed that certain populations would not evacuate during the occasional serious floods. They learned that those that would not evacuate were wealthy cattle owners that could not be moved to safety with only one to two days lead-time. Cattle had immense value to their owner's status in the community and utility within the community, so the men would rather risk death and stay with their cattle than lose everything. He also noted another example where Senegalese farmers would risk planting peanuts early to access lucrative markets with Chinese buyers regardless of forecasts because they could absorb the costs if their crops failed.

3. *One participant asked which aspects of climate services are most actionable.* Dr Baethgen commented that the focus has to shift from a supply perspective – “what can we offer” to a demand perspective – “what problems are you facing and how can climate services help you with these problems?”

See presentation at: <https://goo.gl/98UebI>.

## 6.4. RAPPORTEUR'S REPORT

James Buizer, University of Arizona, served as the rapporteur for the two preceding climate services sessions. He thanked the presenters and summarized his thoughts on key points as well as highlighted themes that were raised by the presenters. He noted the importance of flexible approaches to climate service users and stressed the critical importance of understanding user needs if providers are to be effective and responsive to users. He cited the methodology that is being utilized by IRAP in terms of scoping of problems and referred to the work IRAP is doing in Jamaica with coffee growers. He noted that Dr. Carr and others recognized the variation among stakeholders in terms of decision-making and the ways that climate services are used.

An important element in uptake of services is the challenge of communicating uncertainty to users, who in turn must often make decisions that affect their safety and livelihoods. In addition, climate service providers can benefit from partnerships with other organizations that may be effective in connecting with users. This point was emphasized in the presentation by Ms. Frankel-Reed where NASA, USAID, and regional organizations have worked together to take climate services to the development community with SERVIR.



**James Buizer, University of Arizona.** Photo credit: Jamie Carson.

Several points were made regarding evaluation of climate services. Mr. Buizer noted the good practice of building evaluation into the design of climate services and the multi-disciplinary nature of evaluation in terms of understanding decision-making behavior, theories of change, and role of social sciences in describing and valuing outcomes of climate service use.

See presentation at: <https://goo.gl/zVKcsD>.

# 7. A LOOK BACK AT THE WEEK: OVERALL RAPPOORTEUR'S REPORT

Lawrence Buja from the National Center for Atmospheric Research served as the lead rapporteur for the ACRD Symposium. He provided a thoughtful and detailed presentation-by-presentation summary of the proceedings. Overall, Mr. Buja offered the following conclusions:

- The Climate-Resilient Development Framework represents a big step forward in implementing adaptation projects, and is applicable across different scales, applications, and decision-making scenarios.
- Although the Climate-Resilient Development Framework was applied across many CCRD programs, this integration would be more cohesive if it could be applied to another round of programs.
- The use of pilot projects was a constant theme during the CCRD project. The value of pilot projects lies in ensuring that USAID does not go too far down the wrong road when implementing a new project, and emphasizes the importance of building communication linkages among project partners and stakeholders.
- A resounding take-away from the CCRD project is the importance of incorporating local engagement in any program or activity. Without local engagement, the outcome of a project cannot be successful.



**Lawrence Buja, National Center for Atmospheric Research.**

Photo credit: Jamie Carson.

Other thoughts that emerged from the discussion included:

- The framework was finalized about mid-way through the CCRD project, so it speaks to the strength of the framework that it could be applied to work that had already begun.
- The CCRD project focused on applying the Scoping and Design stages of the Climate-Resilient Development Framework. Other development practitioners have done a lot of work on the Assesstage, so the CCRD team did less in this area. In the future, more progress needs to be made on applying the Implementation and Evaluation stages of the framework.
- Other next steps in applying the framework entail bringing it to scale and developing the economic rationale – or the business case – for using the framework. It will be important to

become more efficient at using the framework. Overall, the hope is that the framework becomes something that development experts can include in all parts of their work.

- The CCRD project involved a process of learning over time. It is an evolutionary process, so there is still a lot to be learned going forward.

Watch video presentation at: <https://goo.gl/VxqInl>.

# 8. NEW DIRECTIONS FOR USAID SESSION

## New Directions for USAID

Thursday, March 19, 2:00–4:00 p.m.

Jonathan Cook, United States Agency for International Development (USAID), Moderator

Fabien Laurier, White House Office of Science and Technology Policy, *U.S. Climate Resilience*

Rick Driggers, Department of Homeland Security, *U.S. Climate Resilience*

Andre Mershon, USAID, *USAID Climate Change Adaptation, Thought Leadership, and Assessments (ATLAS) Project*

Becky Chacko, USAID, *Increased Focus on Climate Change Integration*

Amy Daniels, USAID, *Managing Climate Change Knowledge for Development*

## 8.1. NEW DIRECTIONS FOR USAID ON CLIMATE CHANGE ADAPTATION

The *New Directions* session included a summary of broader US government climate-resilience actions and offered a look ahead at USAID’s newest climate change adaptation initiatives, including the Adaptation, Thought Leadership, and Assessments (ATLAS) project; a public-private partnership on climate data and information; and Climatelinks, a new web portal launching in September 2015 for managing climate change knowledge for development ([www.climatelinks.org](http://www.climatelinks.org)).

### 8.1.1. SUMMARY OF PRESENTATIONS AND DISCUSSIONS

**Session opening: Jonathan Cook, USAID, Moderator.** Jonathan Cook described the Climate Change Resilient Development (CCRD) project as “the right project at the right time,” because it provided an opportunity to identify and test the innovative approaches that helped USAID develop the Climate-Resilient Development Framework. Mr. Cook highlighted the importance of pilot projects for helping practitioners identify successful approaches that produce development gains. USAID has witnessed regional and government partners in Vietnam, Jamaica, and other parts of the Caribbean take what they have learned from CCRD programs and expand on it in their own programming. One goal of USAID’s GCC Office is to continue this transfer of knowledge from successful CCRD projects to other USAID missions and partners on the ground worldwide.

#### Links to Key Resources

Symposium presentations:  
[www.ccrdproject.com/acrd-symposium/acrd-day-4](http://www.ccrdproject.com/acrd-symposium/acrd-day-4)

CCRD website: [www.ccrdproject.com/](http://www.ccrdproject.com/)

Climatelinks website:  
[www.climatelinks.org](http://www.climatelinks.org) (Launching September 2015)



The final ACRD Symposium session, *New Directions for USAID*, includes, from left, Jonathan Cook, André Mershon, Becky Chacko, Amy Daniels, USAID; Fabien Laurier, White House Office of Science and Technology Policy; and Rick Driggers, Department of Homeland Security. Photo credit: Jamie Carson.

***U.S. Climate Resilience: Fabien Laurier, White House Office of Science and Technology Policy, and Rick Driggers, Department of Homeland Security.*** Fabien Laurier introduced the President’s Climate Action Plan ([goo.gl/Q3BwHx](http://goo.gl/Q3BwHx)), which launched in June 2013 and calls for three deliverables: the Climate Data Initiative, the National Climate Assessment (NCA), and the Toolkit for Climate Resilience. The Climate Data Initiative ([www.data.gov/climate](http://www.data.gov/climate)) launched in June 2014, using open-source data to create innovative tools to solve climate problems. This initiative aims to engage the private sector and nongovernmental organizations to leverage an unprecedented amount of open-source federal data, and deploy tools and technology to support climate change planning. Another key goal of the Climate Data Initiative is to stimulate a marketplace around climate information that is similar to the existing market for weather information.

The NCA ([www.nca2014.globalchange.gov](http://www.nca2014.globalchange.gov)) is another major deliverable of the Climate Action Plan. The NCA is a quadrennial scientific report that highlights insights into our understanding of climate impacts and translates scientific insights into practical, actionable information that is relevant for decision-makers. The President’s climate team is now working to deploy a fully sustained NCA that ensures an ongoing synthesis of climate sciences, continues to identify knowledge gaps, and relies on a stakeholder engagement process to ensure its usability.



From left, Fabien Laurier and Rick Driggers, present the National Climate Assessment.

Photo credit: Jamie Carson.

Rick Driggers is leading the development of the Toolkit for Climate Resilience ([toolkit.climate.gov](http://toolkit.climate.gov)), in partnership with the National Oceanic and Atmospheric Administration (NOAA). The toolkit targets state and local planners and other decision-makers who would not otherwise visit climate science

websites, and it provides interlinked case studies, tools, and datasets. A geospatial viewer provides geographical overlays of climate stressor information with population density, transportation and other infrastructure, and additional community features. This allows planners to “see” how climate impacts affect their communities. Through these tools, the team plans to build a climate information enterprise that links critical planning data with an intuitive, navigable interface that supports on-the-ground decision-making. The team is also working with USAID and other agencies to develop a new international public-private partnership that will bring tools and information to developing countries and enhance their capacity to achieve development goals in a changing climate context.

***USAID Adaptation, Thought Leadership, and Assessments (ATLAS) Project: André Mershon, USAID.*** The goal of the ATLAS project is to build on the work of USAID’s CCRD and African and Latin American Resilience to Climate Change (ARCC) projects by helping USAID missions understand the climate change issues that could affect their projects, and integrate climate change into the early stages of their project designs. The ATLAS project reaches beyond climate change adaptation programs and leverages work in a larger arena of development by engaging missions in the food, nutrition, and health sectors. The ATLAS project seeks to improve the quality and effectiveness of USAID development programs by reducing climate risks through the planning process. ATLAS project deliverables will include:

- *Task 1 – Model Assessments and Options Analysis:*
  - Six model assessments: (1) climate change in environmental compliance guidance; (2) mission climate risk screening feeding into the country development cooperation strategy in Bangladesh; (3) assessment of climate risks to the Feed the Future program and conservation investments in Mozambique; (4) assessment of climate risks within the Food for Peace development portfolio; (5) analysis of climate trends in Mozambique; and (6) risks, opportunities, and capabilities for climate-resilient growth in Indonesia
  - One options analysis: adaptation options analysis in Ethiopia
- *Task 2 – Thought Leadership:* 12 to 15 thought leadership papers
- *Task 3 – Learning and Capacity Building:* five adaptation expert workshops in Washington, DC
- *Task 4 – Small grants:* funds to leverage strategic opportunities as they arise.

See presentation at: <https://goo.gl/2ip4kN>.



From left, André Mershon, Becky Chacko, and Amy Daniels, USAID. Photo credit: Jamie Carson.

***Increased Focus on Climate Change Integration: Becky Chacko, USAID.*** Many people still consider climate change to be an environmental problem, but Becky Chacko emphasized that climate change matters for all sectors of development. Integrating climate change into development programs will help practitioners achieve their development goals. USAID is conducting climate change integration sector-by-sector (e.g., agriculture, infrastructure, energy, health, humanitarian assistance), mission-by-mission (e.g., through agency-wide joint trainings on climate change and agriculture, economics, water), and project-by-project. USAID has trained staff in more than 60 missions, and 58% of country strategies now include climate change considerations. Ten climate change integration pilot projects are underway. USAID also has an initiative called indirect attribution to climate change, through which 400 projects have integrated climate change initiatives without drawing on USAID’s climate change funding.

Interdisciplinary project design teams also help ensure that solicitations are integrating climate change issues into new projects. An example of USAID’s integration efforts is the Ethiopia USAID Mission, which has integrated climate change into its Feed the Future program ([www.feedthefuture.gov](http://www.feedthefuture.gov)). One Feed the Future project addresses food security for rural farmers and pastoralists, and it has integrated climate change information, awareness, vulnerability assessments, and weather forecasts that fit local community needs. As a result, the project has improved water storage and animal nutrition, and has provided access to financial services such as insurance.

Climate change is a presidential and a USAID priority. In November 2013, an Executive Order called for U.S. government agencies to adapt to climate change; USAID developed an agency-wide adaptation plan that identified 35 priority actions for adaptation. Another Executive Order required agencies to integrate climate change risk issues into all international development work – to assess and evaluate climate resilience across all programs, and to adjust programs appropriately.

See presentation at: <https://goo.gl/NXHGV1>.

***Managing Climate Change Knowledge for Development: Amy Daniels, USAID.*** Amy Daniels presented a visual representation of the rapid proliferation of climate change information over the last few decades. To keep up with peer-reviewed publications on the topic of climate change, a person would need to read 29 pages of literature every day. Many professionals in the climate change field, including many of the ACRD symposium attendees, are not climate scientists, but have a primary discipline that has clear links to climate change. USAID's objective is to support the professional climate change community by making its climate change-related project information easy to find and navigate. USAID is developing a new climate change information portal at [Climatelinks.org](http://Climatelinks.org) (launching in September 2015), where readers can find weekly blogs, a global climate change events calendar, a resource library, and a Global Climate Change Program map, which shows USAID project sites and programs in each country. [Climatelinks.org](http://Climatelinks.org) visitors can participate in the soft launch of the portal by responding to polls on site usability and answering surveys about site content.



**Amy Daniels, USAID.** Photo credit: Jamie Carson.

USAID project sites and programs in each country. [Climatelinks.org](http://Climatelinks.org) visitors can participate in the soft launch of the portal by responding to polls on site usability and answering surveys about site content.

**Discussion.** Many of the audience's questions focused on identifying the value-added of USAID's next steps in climate change programming, and determining how USAID can be most effective in the crowded climate change field. Speakers highlighted some of the specific roles that USAID can play. For example, [Climatelinks.org](http://Climatelinks.org) organizes and provides a structure for all of USAID's climate change program information, and serves as a single resource for project implementers on-the-ground. ATLAS will carry forward the Climate-Resilient Development Framework by leveraging financing and providing economic analyses and planning as well as strategy development. USAID's strength is working at the local and regional levels and informing on-the-ground decision-making. Donor coordination remains a challenge, but USAID has identified opportunities to engage donors in the adaptation planning process at the mission level. One of the persistent challenges to USAID's integration efforts, and to climate change adaptation initiatives in general, is the siloed nature of program funding. Funders often earmark project money for very specific purposes, and it can be challenging to convince development practitioners that they need to address climate change impacts even if they do not have to report on climate change indicators to their funders. To address the challenges of funding adaptation projects, USAID relies on mission-level donor coordination and strategies that both leverage existing adaptation funding and help countries mobilize new financing.

See presentation at: <https://goo.gl/9mo85z>.

# 9. SYMPOSIUM CONCLUSIONS AND LESSONS LEARNED

The ACRD symposium provided a weeklong opportunity for adaptation and development experts and decision-makers to share knowledge and lessons about how to advance climate-resilient development in developing countries. The USAID CCRD project provided the focus for the event's discussions. This chapter summarizes the lessons learned from the CCRD project and other projects discussed at the symposium. USAID and other government agencies, missions, and offices as well as in-country practitioners can apply these lessons to their future work as they continue to advance climate-resilient development globally.

## 9.1. LESSONS LEARNED

ACRD symposium speakers and participants agreed that this four-year project has provided an important step forward in advancing both the theory and practice of climate-resilient development for developing nations. They concurred that it is essential to continue to apply and build on the Climate-Resilient Development Framework and other lessons learned that were shared at the symposium. Overall, there is still a lot to be learned – this is an evolving process that requires ongoing learning, evaluation, and implementation.

The CCRD project has covered a very broad range of climate-related topics (e.g., climate services, high mountains adaptation, climate-resilient infrastructure services, NAPs, LAPAs) and types of work (e.g., technical assistance and training, scientific and economic research, tool development, knowledge sharing and peer learning, communities of practice, pilot testing). The Climate-Resilient Development Framework, which is the centerpiece of the CCRD project, offers a flexible, development-first approach that can be adapted, as appropriate, to different countries and cultures, development goals, government levels, applications, and climate change scenarios. The framework takes a holistic approach to climate change adaptation that first focuses on identifying development goals and the inputs and enabling conditions needed to achieve these goals, and then assesses how both climate- and non-climate stressors affect these goals. This approach has shown positive results in many CCRD activities and offers an important step forward in understanding and implementing effective climate-resilient development in developing countries.

The CCRD activities and other projects discussed during the symposium have generated numerous lessons learned for future climate-resilient development work. The key lessons learned that cut across all the CCRD programs are summarized below.

- *Engage the local population.* A key finding that cuts across all programs and activities discussed at the symposium is the critical importance of engaging local people who are involved in development and/or climate change issues or who will be affected by the project. The local population has considerable knowledge to share about climate stressors, development concerns,

how decisions are made, and cultural practices. Their active engagement can help build support for adaptation activities, foster cooperation, and facilitate progress. Many CCRD activities worked with local partners who are now able to carry the work forward and in some cases expand its use to other regions or countries. Identifying and working with local champions is essential for ensuring the continued success of a program after the donor organization leaves. A related lesson is the importance of having a clear understanding of the national, regional, and local context of the project. This entails understanding existing policy and planning processes, country dynamics, and cultural practices.

- *Workshops are an important part of stakeholder engagement and can be an effective way to share information and lessons learned about climate change adaptation planning and implementation.* Based on experience from the AP workshops, key ways to ensure their effectiveness include selecting workshop topics are relevant to participants, including and engaging local participants, giving participants a stake in the workshop outcomes, including on-site field trips (some things can only be learned in the field), engaging high-profile moderators, identifying champions who will be in a position to carry projects forward after the workshop, and producing useful outputs. Another important lesson learned is to find ways to fund the follow-up projects that emerge from the workshop, including bringing funders to the workshop. When participants know funding is available they will be more invested in the workshop process.
- *Use multi-sectoral, multi-stakeholder approaches.* No single organization can solve a country's or a region's climate-related concerns. Instead, it is necessary to work across development sectors, agencies, disciplines, and stakeholder groups to ensure broad engagement early in the development planning process. As one participant said, "developing partnerships increases learning and leveraging." This approach can reduce conflicts and improve program effectiveness. Symposium participants described several examples where work done by an organization responsible for one sector was in conflict with work conducted by an organization in a different sector, thereby minimizing or reducing the effectiveness of climate-resilient actions. Reaching across disciplines and stakeholder groups also provides the depth of knowledge necessary to implement climate-resilient development programs. For example, the HiMAP program involved scientists to conduct research on glacial melting, as well as social scientists and anthropologists to work with stakeholder groups. Development of the CIMPACT-DST tool required involvement of urban planners, scientists, and others. Many participants noted the value of interdisciplinary working groups in bringing together multiple stakeholders for effective, climate-aware decision-making.
- *Information-sharing is essential and multi-faceted.* Information sharing requires identifying the necessary types and levels of information that partners and stakeholders need as well as determining the best ways to share this information. CRIS program staff found that their pilot city stakeholders initially required "Climate 101" training to help build their understanding of basic climate change principles; over time, however, their information needs become more complex. Overall, CRIS program staff stress the importance of providing "decision-relevant" climate information. The Kazakhstan CRW program found that farmers need access to climate information; guidance on planting times, seed varieties, and crop selection; and access to market information. However, it is important to tailor this information for each audience (e.g., family farms vs. commercial farms). When providing this information it is important to consider the timescale, format (e.g.,

text, graphics, statistics, maps), and other ways to present information that is usable and understandable. CCRD programs employed a range of different information-sharing approaches. Knowledge exchange and peer learning occurred through most of the CCRD programs including, for example, through the AP workshops and HiMAP collaboration among scientists, decision-makers, and the local population in Peru and Nepal. Many of the CCRD programs provided training to build local capacity in climate-resilient development. CCRD staff found that people learn best from trusted voices, and that interactive training is effective. The Climate Services, HiMAP, and AP CoPs provide a way to continue to share project approaches, research results, and other information with a range of local, regional, and national level partners.

- *Pilot projects can be valuable.* Some participants expressed concern that pilot projects focus on small geographic areas but that it is becoming more important to scale projects – and get results – at a higher level. Findings from the CCRD project strongly suggest that when used appropriately pilot projects can serve essential functions for climate-resilient development. For example, based on CRIS program results, pilot projects provide an opportunity to learn and evaluate important lessons about how to implement a project, test innovative ideas, and build communication connections among partners. The project can lay the groundwork for larger development projects and can be scaled up to other sectors or to higher regional or national levels based on these lessons learned.
- *Tools do not provide answers; they help users identify issues, assess options, and make their own decisions.* When developing tools it is important to ensure that they are the correct tools for the users' needs. The tools developed for the CRIS pilot cities were relatively simple and easy to use while addressing local government needs (e.g., a database that provides climate information by type of decision and user role; a vulnerability assessment tool that presents information in a color-coded matrix format to enable users to quickly identify vulnerable areas; an adaptation planning tool). When developing or customizing tools it is essential to collaborate with local decision-makers who will be using the tool to ensure that it meets their needs, obtain their feedback on early versions of the tool, refine the tool based on this input, and provide training to potential users.
- *Financing is a common concern for stakeholders but is essential for effective implementation.* No one donor can fund the costs of adaptation; it is important to integrate public and private funding sources and to be aware of new finance initiatives such as the Green Climate Fund. Another approach is to align behind strategic priorities (e.g, NAPs and LAPAs) to help obtain support and future funding for adaptation. MKM Macedonia found that if a project is deemed to be high priority and the mayor is committed to it, local governments can often find the needed funding.

## 9.2. NEXT STEPS

It is essential to continue to mainstream climate-resilient development both within and outside of USAID. This will require answering difficult questions such as what opportunities exist? What institutional barriers need to be overcome? What partnerships can be used or developed? How can capacity be built? On the technical side, it will be important to assess and prioritize technical developments such as data collection, analysis, tool development, economic analysis, monitoring, evaluation, and adaptive management. More specifically, symposium speakers and participants identified the following next steps for advancing climate-resilient development:

- *Apply the Climate-Resilient Development Framework in more situations*, honing the application of the first two steps of the framework and conducting new work on applying the other three steps.
- *Pilot test the existing annexes to the Climate-Resilient Development Framework and develop new annexes on other sectors and issues.* The annexes already serve as an essential, living resource for USAID missions. It will be important to continue to train development practitioners on the use of the existing annexes and develop new ones, as appropriate.
- *Conduct analyses to make the economic case for climate-resilient development.* In most cases, practitioners and climate professionals still lack the information and data needed to justify adaptation actions. While it is possible to make a business case in the short term for some adaptation actions (e.g., marginal populations and extreme events), it is more difficult to do so for other cases (e.g., climate-resilient infrastructure) where the costs are incurred now and benefits are discounted into the future. Overall, we do not yet understand what the economic payoff will be given a highly varying climate.
- *Continue to develop new tools and disseminate existing tools.* We need more tools to help in decision-making, especially to prioritize climate and non-climate stressors, and assess and select adaptation options.
- *Work with staff of new USAID projects* such as ATLAS to provide the knowledge and lessons learned from the CCRD project and help carry these lessons forward in future work.
- *Ensure the information developed during the CCRD project is available to all audiences.* The CCRD project has amassed a huge volume of knowledge about climate-resilient development. It is essential to make this information accessible to all audiences – USAID headquarters and mission offices, development practitioners, scientists, researchers, academics, and others. One way to achieve this will be to provide content to [Climatelinks.org](http://Climatelinks.org) and the CCRD Resource Library ([www.ccrdproject.com/ccrd-library](http://www.ccrdproject.com/ccrd-library)). It will also be important to find other ways to disseminate CCRD knowledge directly to potential users – through, for example, providing key resources to mission staff, working with USAID ATLAS and other adaptation project staff, and distributing information about CCRD resources via on-line adaptation newsletters.

# APPENDIX A: SUMMARY OF ACRD SPEAKERS

Speaker Name, Title, Affiliation	Session Title	Date (2015)
Mary Ackley Conflict and Natural Resources Specialist, USAID	Lessons Learned from the Climate-Resilient Development Framework	March 16
Glen Anderson CCRD Chief of Party, Engility Corporation	Advancing Climate-Resilient Development Lessons Learned from the Climate-Resilient Development Framework Urban Day: Adaptation Planning in Cities (Opening Remarks) Mainstreaming the CRD Framework into Development Planning in Macedonia (Moderator, Speaker) Technical and Economic Assessment of Climate Services New Directions for USAID on Climate Change Adaptation	March 16 March 16 March 18 March 18 March 19 March 19
Rolf Anderson Foreign Service Environment Officer, USAID	Advancing Climate-Resilient Development (Opening Keynote)	March 16
Walter E. Baethgen Senior Research Scientist and the Head of the Regional and Sectoral Research Program, IRI	Leadership Perspectives of Climate Services (Opening Keynote and Moderator) Technical and Economic Assessments of Climate Services (Moderator)	March 19 March 19
Sierra Bainbridge Senior Director, MASS Design Group	Urban Day: Adaptation Planning in Cities	March 18
Monica Bansal Foreign Service Environment Officer, USAID	Urban Day: Adaptation Planning in Cities	March 18
Glenroy Brown Meteorologist, Jamaica Meteorological Service	Leadership Perspectives of Climate Services	March 19
James Buizer Professor, University of Arizona	Leadership Perspectives of Climate Services (Rapporteur) Technical and Economic Assessments of Climate Services (Rapporteur)	March 19 March 19
Lawrence Buja Director, Climate Science and Applications Program (CSAP), the National Center for Atmospheric Research	Lead Rapporteur A Look Back at the Week – Advancing Climate-Resilient Development	All days March 19
Alton C. Byers Director of Science and Exploration, The Mountain Institute	Lessons Learned from the Climate-Resilient Development Framework The Adaptation Partnership: A Model for Sustainable Program Design Lessons Learned from the High Mountains Adaptation Partnership	March 16 March 17 March 17
Charles Cadwell Director, The Urban Institute – Center on International Development and Governance	Urban Day: Adaptation Planning in Cities, Opening Remarks and Moderator	March 18

	Urban Day: Applying Technical Research and Tools in Developing Cities (Moderator)	March 18
Edward R. Carr Associate Professor, Department of Geography and Director, Humanitarian Response and Development Laboratory, University of South Carolina	Lessons Learned from the Climate-Resilient Development Framework	March 16
	Technical and Economic Assessments of Climate Services	March 19
Becky Chacko Senior Climate Change Integration Specialist, USAID	New Directions for USAID on Climate Change Adaptation	March 19
Jonathan Cook Climate Change Specialist, USAID	Lessons Learned from the Climate-Resilient Development Framework	March 16
	Lessons Learned from the High Mountains Adaptation Partnership	March 17
	New Directions for USAID on Climate Change Adaptation	March 19
Michael E. Cote Senior Climate Adaptation Specialist, Engility Corporation	Lessons Learned from the Climate-Resilient Development Framework	March 16
Amy Daniels Knowledge Management Lead, USAID	New Directions for USAID on Climate Change Adaptation	March 19
Roger-Mark De Souza Director of Population, Environmental Security and Resilience, Wilson Center	Advancing Climate-Resilient Development (Opening Remarks and Moderator)	March 16
Richard Driscoll Branch Chief, Office of Global Change, U.S. Department of State	The Adaptation Partnership: A Model for Sustainable Program Design (Opening Remarks)	March 17
Maria Sofia Dunin-Borkowski Forest Engineer, Independent Consultant	Urban Day: Adaptation Planning in Cities	March 18
Jenny Frankel-Reed Senior Climate Change Specialist, USAID	Lessons Learned from the Climate-Resilient Development Framework (Moderator)	March 16
	Leadership Perspectives of Climate Services	March 19
John Furlow Climate Change Specialist, USAID	Advancing Climate-Resilient Development	March 16
	The Adaptation Partnership: A Model for Sustainable Program Design (Moderator)	March 17
	Lessons Learned from the High Mountains Adaptation Partnership (Opening Remarks)	March 17
	Urban Day: Adaptation Planning in Cities (Opening Remarks)	March 18
	Mainstreaming the CRD Framework into Development Planning in Macedonia (Opening Remarks)	March 18
	New Directions for USAID on Climate Change Adaptation	March 19
Lisa Goddard Director, IRI	Leadership Perspectives of Climate Services	March 19
Alex Guerra Noriega Director, Instituto Privado de Investigación sobre Cambio Climático (ICC), Guatemala	The Adaptation Partnership: A Model for Sustainable Program Design	March 17
Ulyana N. Horodyskyj Ph.D. candidate, University of Colorado Boulder	Lessons Learned from the High Mountains Adaptation Partnership	March 17
Aleksandar Karaev Capacity Building Coordinator, Milieukontakt Macedonia	Mainstreaming the CRD Framework into Development Planning in Macedonia	March 18
Fabien Laurier White House Office of Science and	New Directions for USAID on Climate Change Adaptation	March 19

Technology Policy		
Gregory J. Leonard Research Scientist, University of Arizona	Lessons Learned from the High Mountains Adaptation Partnership	March 17
Luu Duc Cuong Deputy Director General, Viet Nam Institute for Urban-Rural Planning, Ministry of Construction	Urban Day: Applying Technical Research and Tools in Developing Cities	March 18
Charlotte Mack Manager, ICF International	Lessons Learned from the Climate-Resilient Development Framework	March 16
Ammar A. Malik Research Associate, Urban Institute	Urban Day: Applying Technical Research and Tools in Developing Cities	March 18
Andrea Martin Senior Associate, Cascadia Consulting Group, Inc.	Urban Day: Applying Technical Research and Tools in Developing Cities	March 18
Heather McGray Director – Vulnerability & Adaptation, World Resources Institute	Urban Day: Adaptation Planning in Cities and Applying Technical Research and Tools in Developing Cities (Rapporteur)	March 18
André Mershon Climate Change Specialist, USAID	New Directions for USAID on Climate Change Adaptation	March 19
Rebecca Nicodemus Climate Change Specialist, USAID	Institutional Capacity Assessment	March 18
Joyce-Lynn N. Njinga Senior Specialist, Engility Corporation	The Adaptation Partnership: A Model for Sustainable Program Design	March 17
Vladimir Ognjanovski Deputy Chief of Party and Pilot Project component coordinator on the USAID Municipal Climate Change Strategies Project implemented by MKM	Mainstreaming the CRD Framework into Development Planning in Macedonia	March 18
Sheila Navalía Onzere Research Associate, The Humanitarian Response and Development Laboratory, University of South Carolina	Technical and Economic Assessments of Climate Services	March 19
Cesar Portocarrero The Mountain Institute	Lessons Learned from the High Mountains Adaptation Partnership	March 17
Joanne Potter Principal, ICF International	Lessons Learned from the Climate-Resilient Development Framework The Adaptation Partnership: A Model for Sustainable Program Design Urban Day: Adaptation Planning in Cities Urban Day: Applying Technical Research and Tools in Developing Cities	March 16 March 17 March 18 March 18
Peter Schultz CCRD Deputy Chief of Party, ICF International	Advancing Climate-Resilient Development The Adaptation Partnership: A Model for Sustainable Program Design	March 16 March 17
Igor Slavkoski Executive Director, Milieukontakt Macedonia	Mainstreaming the CRD Framework into Development Planning in Macedonia	March 18
Joel B. Smith Principal, Stratus Consulting Inc.	Lessons Learned from the Climate-Resilient Development Framework	March 16
Kathryn Stratos Division Chief, USAID	Institutional Capacity Assessment	March 18
Pablo Suarez Associate Director for Research and Innovation, Red Cross Red Crescent Climate	Interactive Keynote	March 16

Centre		
Catherine Vaughan Senior Staff Associate, IRI	Technical and Economic Assessments of Climate Services	March 19
Jason Vogel Managing Analyst, Stratus Consulting Inc.	Lessons Learned from the Climate-Resilient Development Framework	March 16
Steve Zebiak Senior Research Scientist, IRI	The Adaptation Partnership: A Model for Sustainable Program Design Leadership Perspectives of Climate Services	March 17 March 19

# APPENDIX B: SUMMARY OF ACRD AGENDA

## SYMPOSIUM OVERVIEW

### MONDAY, MARCH 16, 2015

*Venue:* The Wilson Center, 1300 Pennsylvania Avenue NW (Nearest Metro: Federal Triangle)

#### **(9-11:45 a.m.) Opening Plenary – Advancing Climate-Resilient Development**

Roger-Mark De Souza, Wilson Center (opening remarks and moderator)

Rolf Anderson standing in for Kit Batten, USAID (opening plenary)

Lawrence Buja, National Center for Atmospheric Research (lead rapporteur)

#### *Speakers:*

Glen Anderson, Engility Corporation

Peter Schultz, ICF International

John Furlow, USAID

#### **(Noon-1:15 p.m.) Interactive Lunch Keynote**

Pablo Suarez, Red Cross/Red Crescent Climate Centre

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**(1:30-4:30 p.m.) Panels – Lessons Learned from the Climate-Resilient Development Framework and its Annexes I and II**

Jenny Frankel-Reed, USAID (moderator)

Lawrence Buja, National Center for Atmospheric Research (lead rapporteur)

*Speakers:*

Mary A. Ackley, USAID

Glen Anderson, Engility Corporation

Alton Byers, The Mountain Institute

Edward R. Carr, University of South Carolina

Jonathan Cook, USAID

Michael Cote, Engility Corporation

Charlotte Mack, ICF International

Joanne Potter, ICF International

Joel Smith, Stratus Consulting

Jason Vogel, Stratus Consulting

**(4:30 p.m.) Reception – Celebrating Four Years of the Climate-Resilient Development Project**

Rolf Anderson, USAID (opening remarks)

**TUESDAY, MARCH 17, 2015**

*AM Venue:* U.S. Department of State, 320 21st Street NW

(Nearest Metro: Foggy Bottom GWU)

IMPORTANT NOTE: Identification required for all upon checking in. Anyone who is not a U.S. Government employee, must go through security at the visitor's entrance, where a badge will be provided at the front desk. All non-USG participants must be escorted by a State Department employee throughout the entire event; there will be assigned escorts available for this Symposium session.

*PM Venue:* Cosmos Club, 2121 Massachusetts Avenue NW (Nearest Metro: Dupont Circle)

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**(9-10:30 a.m.) The Adaptation Partnership: A Model for Sustainable Program Design**

Richard Driscoll, U.S. Department of State (opening remarks and rapporteur)

John Furlow, USAID (moderator)

*Speakers:*

Alton Byers, The Mountain Institute

Alex Guerra Noriega, Climate Change Research Institute, Guatemala

Joyce-Lynn Njinga, Engility Corporation

Joanne Potter, ICF International

Peter Schultz, ICF International

Stephen Zebiak, International Research Institute for Climate and Society

**(3-5 p.m.) Lessons Learned from the High Mountains Adaptation Partnership (HiMAP)**

John Furlow, USAID (moderator)

Lawrence Buja, National Center for Atmospheric Research (lead rapporteur)

*Speakers:*

Alton Byers, The Mountain Institute

Jonathan Cook, USAID

Ulyana Horodyskyj, University of Colorado

Gregory Leonard, University of Arizona

Cesar Portocarrero, The Mountain Institute

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## **WEDNESDAY, MARCH 18, 2015**

*Venue:* Carnegie Endowment for International Peace, 1779 Massachusetts Avenue NW  
(Nearest Metro: Dupont Circle)

### **(9-10:30 a.m.) Panel – Urban Day: Adaptation Planning in Developing Cities**

John Furlow, USAID (opening remarks)

Glen Anderson, Engility Corporation (opening remarks)

Charles Cadwell, The Urban Institute (opening remarks and moderator)

Heather McGray, World Resources Institute (lead rapporteur)

#### *Speakers:*

Sierra Bainbridge, MASS Design Group

Monica Bansal, USAID

Maria Sofia Dunin-Borkowski, Independent Consultant

Joanne Potter, ICF International

### **(10:30-Noon) Panel – Urban Day: Applying Technical Research and Tools in Developing Cities**

Charles Cadwell, The Urban Institute (moderator)

Heather McGray, World Resources Institute (lead rapporteur)

#### *Speakers:*

Luu Duc Cuong, Viet Nam Institute for Urban-Rural Planning

Ammar Malik, Urban Institute

Andrea Martin, Cascadia Consulting Group

Joanne Potter, ICF International

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**(Noon-1:30 p.m.) Panel and Lunch – USAID Adaptation Community Meeting – Mainstreaming the CRD Framework into Development Planning in Macedonia**

John Furlow, USAID (opening remarks)  
Glen Anderson, Engility Corporation (moderator)

*Speakers:*

Glen Anderson, Engility Corporation  
Aleksandar Karaev, Milieukontakt Macedonia  
Vladimir Ognjanovski, Milieukontakt Macedonia  
Igor Slavkoski, Milieukontakt Macedonia

**(1:30-2:30 p.m.) USAID Demo Session – Institutional Capacity Assessment**

*Speakers:*

Rebecca Nicodemus, USAID  
Kathryn Stratos, USAID

**THURSDAY, MARCH 19, 2015**

*Venue:* Carnegie Endowment for International Peace, 1779 Massachusetts Avenue NW  
(Nearest Metro: Dupont Circle)

**(9-10:30 a.m.) Panel – Leadership Perspectives of Climate Services**

Walter Baethgen, International Research Institute for Climate and Society (opening keynote and moderator)  
James Buizer, University of Arizona (rapporteur)

*Speakers:*

Glenroy Brown, Jamaica Meteorological Service  
Jenny Frankel-Reed, USAID  
Lisa Goddard, International Research Institute for Climate and Society  
Stephen Zebiak, International Research Institute for Climate and Society

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**(10:45 a.m.-12:15 p.m.) Panel – Technical and Economic Assessments of Climate Services**

Walter Baethgen, International Research Institute for Climate and Society (moderator)  
James Buizer, University of Arizona (rapporteur)

*Speakers:*

Glen Anderson, Engility Corporation  
Edward Carr, University of South Carolina  
Sheila Onzere, University of South Carolina  
Catherine Vaughan, International Research Institute for Climate and Society

**(12:15-1:45 p.m.) Rapporteur’s Report and Lunch – A Look Back at the Week – Advancing Climate-Resilient Development**

Lawrence Buja, National Center for Atmospheric Research (lead rapporteur)

**(2-3:30 p.m.) Panel – New Directions for USAID on Climate Change Adaptation**

*Speakers:*

Glen Anderson, Engility Corporation  
Becky Chacko, USAID  
Jonathan Cook, USAID  
Amy Daniels, USAID  
Rick Driggers, White House Office of Science and Technology Policy  
John Furlow, USAID  
Fabien Laurier, White House Office of Science and Technology Policy  
André Mershon, USAID

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