

# SYNTHESIS OF CEADIR SERIES EVENTS: FEBRUARY 2015 - DECEMBER 2016 CEADIR



June 26, 2017

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*With:*  
Abt Associates Inc.

# SYNTHESIS OF CEADIR SERIES EVENTS: FEBRUARY 2015-DECEMBER 2016

## CEADIR

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### **DISCLAIMER**

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

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# ACRONYMS AND ABBREVIATIONS

<b>AD</b>	Adaptation
<b>CE</b>	Clean energy
<b>CEADIR</b>	Climate Economic Analysis for Development, Investment, and Resilience
<b>CEFF-CCA</b>	Clean Energy Finance Facility for the Caribbean and Central America
<b>COP</b>	Conference of Parties
<b>CPI</b>	Climate Policy Institute
<b>DCA</b>	Development Credit Authority (USAID)
<b>E3</b>	Bureau for Economic Growth, Education and Environment (USAID)
<b>GCC</b>	Global climate change (USAID)
<b>GCF</b>	Green Climate Fund
<b>GHGs</b>	Greenhouse gases
<b>GIZ</b>	Deutsche Gesellschaft für Internationale Zusammenarbeit (German development agency)
<b>ICLEI</b>	International Council for Local Environmental Initiatives
<b>IDB</b>	Inter-American Development Bank
<b>IFC</b>	International Finance Corporation (World Bank Group)
<b>IFIs</b>	International financial institutions
<b>IMF</b>	International Monetary Fund
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>KfW</b>	Kreditanstalt für Wiederaufbau (German government-owned development bank)
<b>LEDS</b>	Low Emission Development Strategies
<b>MDBs</b>	Multilateral development banks
<b>MCC</b>	Millennium Challenge Corporation (USG)
<b>MIGA</b>	Multilateral Investment Guarantee Agency (World Bank Group)
<b>NAP</b>	National adaptation plan
<b>NDCs</b>	Nationally determined contributions
<b>NREL</b>	National Renewable Energy Laboratory
<b>OPIC</b>	Overseas Private Investment Corporation (USG)
<b>PwC</b>	PricewaterhouseCoopers
<b>RDMA</b>	Regional Mission for Development in Asia (USAID/Asia)
<b>REDD+</b>	Reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries
<b>SE4All</b>	Sustainable Energy For All
<b>SL</b>	Sustainable landscapes
<b>TA</b>	Technical assistance
<b>TFCD</b>	Task Force on Climate Related Financial Disclosure
<b>UNEP</b>	United Nations Environmental Program
<b>UNFCCC</b>	United Nations Convention on Climate Change
<b>USAID</b>	United State Agency for International Development (USG)
<b>USEPA</b>	U.S. Environmental Protection Agency
<b>USG</b>	United States Government
<b>USTDA</b>	United States Trade Development Agency (USG)

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- Roseann Casey (USAID Power Africa Initiative)
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# I. INTRODUCTION

The USAID-funded Climate Economic Analysis for Development, Investment, and Resilience (CEADIR) activity helps governments, the private sector, and civil society in developing countries make the business and economic case for investing in climate change mitigation and adaptation. CEADIR investigates and disseminates international best practices and innovative tools for sound analysis of and investment in three major pillars: adaptation (AD), clean energy (CE, encompassing renewable energy and energy efficiency), and sustainable landscapes (SL).

CEADIR's monthly in-person and webinar discussion series, "Navigating the Climate Economy," focuses on assessments, economic analysis, planning, and mobilization of financing for low emission development strategies (LEDS) and National Adaptation Plans (NAPs). The series began with overviews of climate change economics and private investment and gradually shifted to address specific financial instruments and mechanisms, financing sources, and case studies.

This report covers the first 17 in-person and online webinar events in the CEADIR Series, which were held between February 2015 and December 2016. The 25 hours of these events featured 54 speakers, including the moderators. The presentations and question-and-answer sessions were recorded and are available along with the presentation slides on the ClimateLinks.org website:

[https://www.climatelinks.org/resources/field\\_resource\\_type/video-recorded-webinar-1/field\\_resource\\_projects/climate-economic-analysis-development-investment-and-resilience-ceadir-234](https://www.climatelinks.org/resources/field_resource_type/video-recorded-webinar-1/field_resource_projects/climate-economic-analysis-development-investment-and-resilience-ceadir-234)).

The CEADIR Series has emphasized the following themes:

1. **Importance of engaging the private sector;**
2. **The role of international and public climate finance;**
3. **Specific financial instruments;**
4. **Climate planning processes** at the national and subnational levels and inclusion of local civil society and vulnerable populations; and
5. **Financial and economic methods** for analyzing the benefits and costs of climate-related investments.

CEADIR brought in experts from USAID and other USG agencies, the World Bank Group and other development banks, private sector investors, and nongovernmental organizations. Discussions emphasized cutting-edge initiatives throughout the developing world.

## I.1 FRAMING THE ISSUES

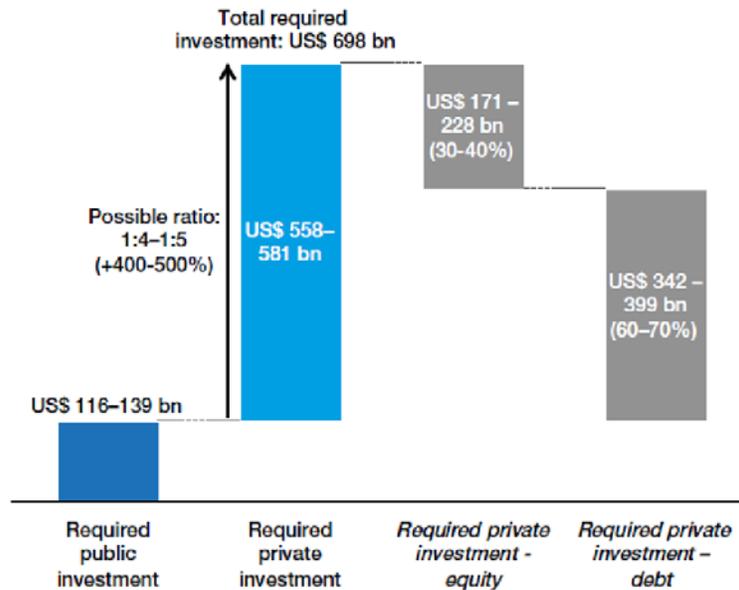
The first CEADIR webinar, held on February 10, 2015, provided an overview of context and issues in financing climate change mitigation and adaptation investments. **Alan Miller** (CEADIR) noted that various analyses have shown the substantial investments required for financing climate change mitigation and adaptation—estimated at an incremental \$40 trillion for mitigation (IEA 2015) and \$280 to \$500 billion per year for adaptation by 2050 (UNEP 2016). These cost estimates greatly exceed current and expected donor finance, highlighting the importance of private sector investment.

The challenge is not an absence of capital. Worldwide, pension funds, insurance companies, and sovereign wealth funds manage around \$100 trillion (UNDP and UNRISD 2017; Willis 2017). Currently, public sector subsidies, tax incentives, and investments still greatly favor fossil fuel production and use over renewable energy (Coady *et al.* 2015). The challenge, therefore, is to shift investment in a greener direction to align the financial system with sustainable development.

**James Close** (World Bank) spoke of international financial institution efforts to increase finance for climate-related investments through integration with other development concerns. He

observed that, “Climate actions designed well can leverage multiple local benefits such as improved air quality and health, agricultural productivity, jobs and other economic benefits.” **Zephyr Taylor** (USAID/Global Climate Change Office) noted that donor funds are important for de-risking to attract greater private sector investment. He also noted that USAID de-risking efforts include support for technical assistance, training, and other capacity development services; policy reforms, design of national financing programs; and local implementation of financial instruments.

**Figure 1: Potential Public-private Finance Mobilization to Close the Cost Gap for Climate-specific Investment**



## 2. ENGAGING THE PRIVATE SECTOR

The CEADIR Series featured a broad range of private sector actors. **Long-term asset managers** (pension funds, insurance companies, and sovereign wealth funds) are relatively untapped sources of potentially large amounts of long-tenor financing for climate mitigation and adaptation (OECD 2014). **Commercial banks** have shorter time horizons (often five years or less, but up to 30 years for real estate loans) and already play a critical role in renewable energy financing. **Project developers** are on the frontlines in taking risks and adopting innovative technologies, but depend on access to capital.

**Matt Arnold** (JPMorgan Chase) noted the importance of a large pipeline of investment-grade projects to attract the interest of major investors. **Vikram Widge** (International Finance Corporation—IFC) echoed the need for public sector involvement to reduce initial high risks, but recommended that the public sector step aside as private markets develop viable commercial solutions. **Dr. Noel Gurwick** (USAID) said that **local financial institutions** may be most effective in reaching reach small-scale farmers and other producers, especially in rural areas, often through microfinance institutions, cooperatives, producer associations, and credit unions that can help reduce transaction costs. **Investors** have been responding to renewable energy opportunities and, to a lesser extent, energy efficiency and sustainable landscapes. The business model for investors in climate adaptation may be more challenging. In summary, there is no one “private sector” for climate-related investments.

### 2.1 DE-RISKING AND INCENTIVES

Common themes in the CEADIR Series events included the factors that influence private financial decisions and ways to encourage greater investment in clean energy, sustainable landscapes, and adaptation. Speakers from financial institutions noted that commercial markets are generally agnostic to environmental and social objectives and are guided by risk/return considerations. One referred to a “cultural gulf” between banks and the climate experts/public sector planners that includes differences in acronyms and terms. However, impact investors are demonstrating increasing interest in climate-related investments. Progress on pricing, certification of green supply chains, and more climate-resilient infrastructure standards could have a big impact increasing mitigation and adaptation investments. Arnold described advocacy for investments with a greater sustainability focus as “the nudging business.” Widge commented that the efforts of international financial institutions (IFIs) and donor agencies have been relatively small in global financial terms, but can be disproportionately influential. Some investors are excited to tap opportunities that combine desired returns with environmental and social benefits, such as green bonds (see discussion in Section 4.2).

**Stacy Swann** (Climate Finance Advisors LLC) spoke about the diverse investor requirements of pension funds, banks, and insurance companies. Their fiduciary obligations, regulatory oversight, risk/return expectations, and management strategies vary in ways that create different challenges for attracting investment. Domestic resources often constitute the dominant source of capital within countries and are often managed differently from resources originating outside the country. **Maria Netto** (Inter-American Development Bank) described how climate finance can de-risk investments and emphasized the need to tailor interventions to address specific barriers, (e.g., energy-saving insurance to reduce the risks of energy efficiency investments and resource-indexed insurance to reduce risks of renewable energy development).

Several speakers discussed the importance of engaging the private sector in adaptation, but noted the absence of good commercial models and some early-stage efforts to fill this gap with donor financing.

**Vikram Widge** (IFC) noted that private sector investments in adaptation are deterred by uncertainty about the future magnitude and local impacts of climate change and discounting of long-term impacts. He suggested that concerns over the insurability of infrastructure may become a major motivating factor for adaptation expenditures. Widge also noted the potential interest in “no-regrets” adaptation opportunities that increase productivity whether climate changes or variability occur or not (for example, investments in irrigated agriculture and more drought/temperature resistant crop types and varieties). Swann identified constraints from inadequate metrics for quantifying and communicating climate risks.

**Berit Lauridsen** (IFC) emphasized the importance of raising long-term asset managers’ awareness of climate risks. She discussed the Mercer Associates report done with support from IFC analyzing climate risks for investors by sector and asset class under a range of scenarios (Mercer Associates 2015). This study projected large potential reductions in share prices due to climate change in some industries. It also addressed how investors can protect themselves if they prepare a plan of action and shift investments to less carbon-intensive industries.

**Vladimir Stenek** (IFC) noted the potential for reductions in coastal property values due to increased flooding and storm surges; however, markets generally have yet to reflect these increasing risks.

**Anthony Socci** (U.S. Environmental Protection Agency—EPA) and **Hari Bansha Dulal** (Abt Associates) recommended greater attention to risks faced by low-income, urban populations who are often most vulnerable to climate change and underserved by adaptation efforts (Hallegatte 2016).

**Matt Arnold** (JPMorgan Chase) described a new international task force established by the G20 Financial Stability Board and chaired by Michael Bloomberg to address the need for better evaluation and reporting of climate risks for investors. Arnold is a member of the task force, which issued its first report in December 2016 (Task Force on Climate-Related Financial Disclosures 2016).

### Support for De-Risking Renewable Energy Projects

- **Allen Eisendrath** (USAID/Global Climate Change Office) noted that the greatest climate change mitigation opportunities are in countries with the potential for large-scale renewable energy developments that are already past the planning stage. He recommended resource mapping to identify new opportunities. Eisendrath discussed the benefits of RE zones that concentrate RE developments in areas with large resource potential, an approach that has been successful in Texas.
- **Marlena Hurley** of the Overseas Private Investment Corporation (OPIC) discussed approaches to address financing challenges for large renewable energy investments. Between 2010 and 2015, OPIC made commitments of at least \$1 billion annually for RE projects.
- **Andrew Gisselquist** described how the USAID Development Credit Authority (DCA) has used partial loan portfolio guarantees to encourage off-grid, renewable energy financing through risk sharing with private capital providers in Africa.

## 2.2 ENCOURAGING MARKET TRENDS

**Stephen Munro** (Bloomberg New Energy Finance/ClimateScope) noted the dramatic declines in the costs of large-scale, grid-connected renewable electric power generation. This trend resulted from technological and production improvements and procurement reforms, such as reverse auctions. Reverse auctions for renewable electric power capacity development have been successful in Brazil, China, Guatemala, India, Mexico, and Peru. Another important factor has been the increasing availability and reduced cost of existing and new types of financing for RE development and operations. BNEF (2017) contains projections of renewable energy use by country.

*The main options for increasing private sector climate-related investment are to: reduce actual and perceived risks and increase the returns by reducing costs or improving the success rate. Public sector interventions to achieve this include capacity development services; or reducing transaction costs, sharing investment development or implementation costs, creating a more favorable policy or regulatory environment (e.g., reverse auctions and sustainability certifications), helping to leverage financing, and reducing financing costs.*

# 3. ROLE OF CLIMATE FINANCE

The Climate Policy Institute produces an annual report on the landscape of climate finance that includes a widely cited diagram of climate finance sources and intermediaries, instruments, recipients, and uses.<sup>1</sup> Although CEADIR Series participants found this diagram useful in helping to identify financing gaps, they noted significant limitations in data availability on private sector investments and expenditures that increase resilience to climate change and variability. Participants also discussed implications of the Climate Policy Institute analysis—the importance of donor and public funds for de-risking climate projects, and the predominance of investment in high-income countries from domestic sources, including national development banks. In low-income countries, donors and international financial institutions have played a larger role in climate-related finance.

## 3.1 GREEN CLIMATE FUND

**Close, Widge, Swann, Bond and Netto** discussed the potential for increasing donor support for climate change resulting from the agreement by parties to the UNFCCC to mobilize \$100 billion per year by 2020 for climate-related support in developing countries.<sup>2</sup> This commitment was initially announced by developed countries in 2009 at the 15<sup>th</sup> Conference of the Parties in Copenhagen (OECD and CPI 2015). The Parties subsequently agreed to create a new funding mechanism, the Green Climate Fund (GCF) to help meet this target and administer funds for climate action. The GCF has six investment criteria for mitigation and adaptation projects (although the relevance of each may vary): impact potential; paradigm shift potential; sustainable development potential; needs of recipients; country ownership; and efficiency and effectiveness (GCF 2015).

**James Bond** (GCF) described some of the early policy decisions and aims of the GCF. One early decision was to aim for a balance between mitigation and adaptation funding. It was also decided that half of adaptation support should go to the poorest and most vulnerable countries, defined as Least Developed Countries, small island developing states, and African states. Bond also noted that the GCF is very interested in using its funds to attract greater private investment. As a result, the GCF decided to accredit implementing agents that include private banks and investment funds as well as national and international financial institutions with a private sector focus. Bond recommended innovative financial structures noting first-loss coverage for 10 percent of a climate fund could achieve leverage of 10:1. The Gates Foundation used this approach for a vaccine commercialization fund, and the IDB used it for an energy efficiency urban lighting fund.

There are now multiple climate funds in addition to the GCF (although most have very limited resources). The website [climatefundsupdate.org](http://climatefundsupdate.org) listed 22 multilateral climate funds and six bilateral climate funds and the resources in each as of October 2016 (Climate Funds Update 2016). The various climate funds have different scope, procedures, and approval criteria as described at the website. Some donors have supported climate finance readiness to help developing countries increase their capacity to obtain external financing and manage it more effectively, including compliance with fund management and reporting requirements. **Laura Wurtenberger** (GIZ) described her agency's support as one that “builds the base for efficient, effective, and transparent use of climate finance and leads to clear

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<sup>1</sup> The latest report was issued in 2016 and covers the period 2013-14 (<https://climatepolicyinitiative.org/publication/global-climate-finance-updated-view-2013-2014-flows/>).

<sup>2</sup> This is equivalent to two-thirds of the \$150 billion in total overseas development assistance for *all* purposes in 2015 (OECD 2017).

adaptation and mitigation results” as well as a basis for all sources of finance, national and international, public and private. **Arnold, Widge, Swann, and Netto** spoke of the challenge in moving from “billions to trillions” by broadening the focus to increasing private sector investments in climate mitigation and adaptation.

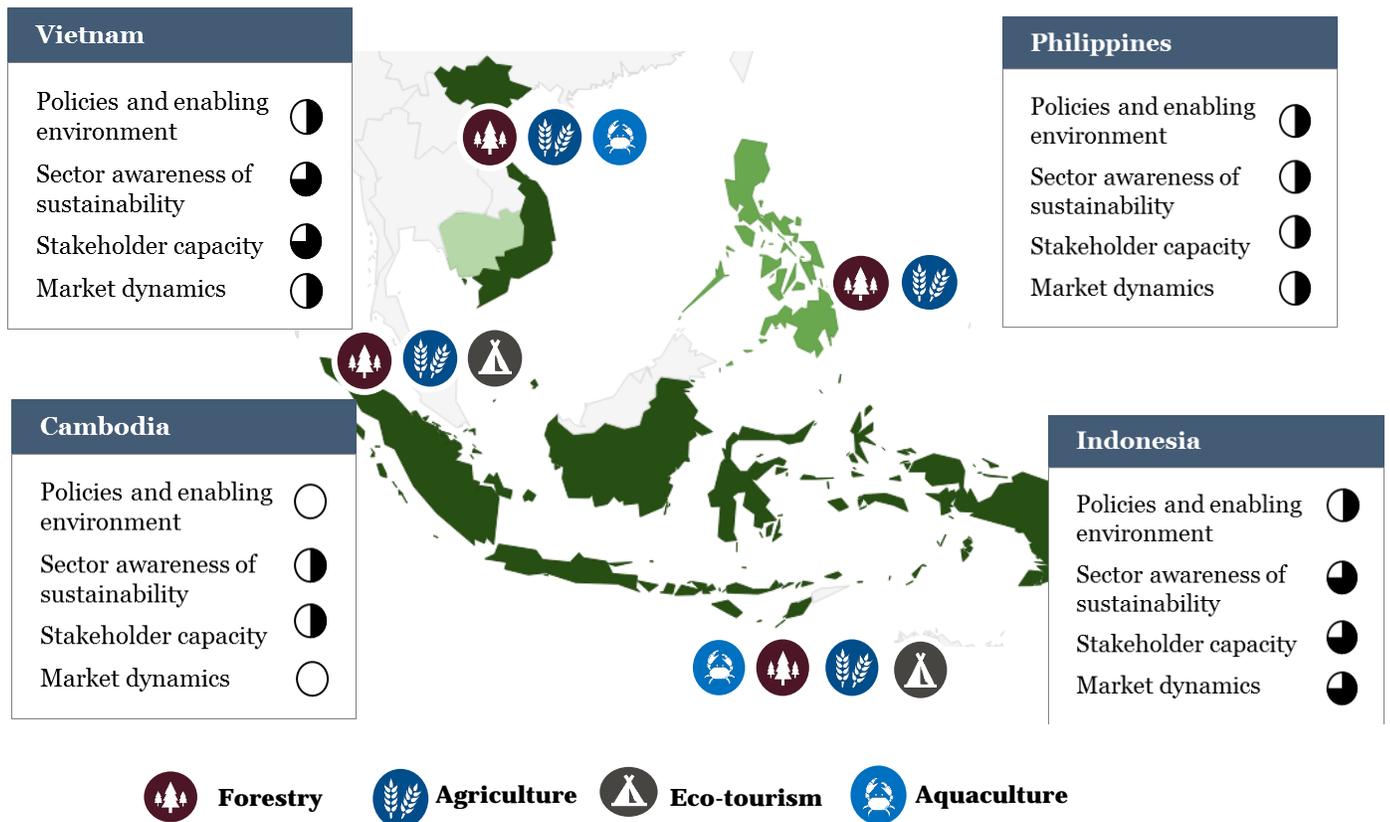
Carbon markets were previously seen as a promising source of capital for climate investments, but their potential has not been achieved due to poorly designed quotas or cap and trade systems, low carbon prices, and challenges in verification, monitoring, and reporting. **Aurelia Micko** (USAID/Asia) discussed the failure of the carbon market as a general setback for financing climate projects but particularly for sustainable landscape investments.

**Rajen Makhijani** (Dalberg Global Development Advisors) discussed opportunities for sustainable landscape projects that undertook a detailed look at a dozen business models in an effort to identify the most promising approaches (USAID 2016). In the most challenging markets, concessional donor support may be essential to attract private investment, especially for sustainable landscapes and adaptation.

### **INVESTORS IN SEARCH OF MORE INNOVATIVE CLIMATE FINANCE PROJECTS**

Founded in 2014, the Global Innovation Lab for Climate Finance explores more innovative ways to use public funds for climate projects. Members include the United States, United Kingdom, and various European governments, as well as private sector representatives. The Lab screens proposals for donor funding for climate mitigation and adaptation (<http://climatefinancelab.org/how-it-works/>). Lab support has been the basis for financial support from both Lab members and climate funds, including several concepts discussed during the CEADIR Series. India and Brazil have their own national climate innovation labs.

**Figure 2: Business Models for Sustainable Landscapes in Asia (USAID, 2016)**



## 3.2 INCLUSIVE FINANCING FOR VULNERABLE POPULATIONS AND LANDSCAPES

**Francisco Acuna** (InTrust Global Investments) described the INDI Fund as an example of how clean energy financing can promote community development and social change, expanding the scope of project beneficiaries to include lower income populations. This fund supports wind energy development in Mexico and Central America through a benefit sharing and education model. It works with rural educational professionals to make indigenous groups passive equity partners in return for land access for locating wind turbines and power lines. The model has shown it can increase local support, speed the approval process, and provide a sustainable income to communities and ultimately local populations. Although the process takes time and money, it helps to prevent social conflicts that have blocked wind power development in some areas of Mexico.

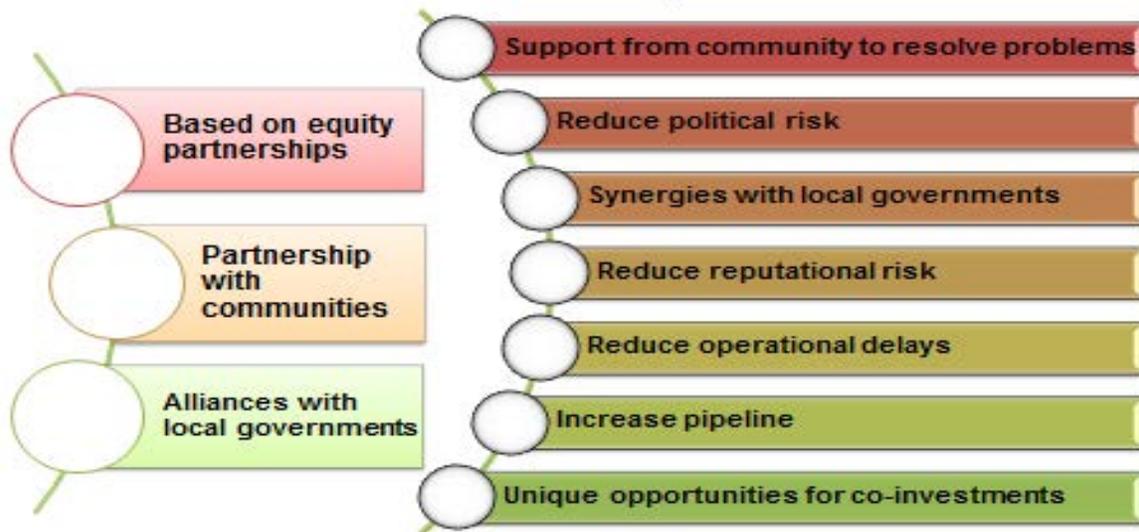
**Andrew Gisselquist** (USAID Development Credit Authority) and **Nadia Scharen-Guivel** (CEADIR) described efforts to increase bank lending to small and medium enterprises disseminating energy-efficient cook stoves and small solar devices for low-income rural populations in Africa. Loan guarantees can help de-risk this lending, but high transaction costs associated with small loans remain a challenge.

## CLIMATE FINANCE FOR SUSTAINABLE LANDSCAPES, AN ONGOING CHALLENGE

**Robert O'Sullivan** (Winrock International) and **Gordon Smith** (CEADIR) spoke about challenges in obtaining climate finance for sustainable landscapes. To achieve a 50 percent reduction in deforestation could cost \$15-\$35 billion per year. About \$9 billion of public funding has been pledged for sustainable landscapes to April 2015, including \$6.5 billion from climate funds as of 2014. However, a 2016 analysis by the Overseas Development Institute found that funding for reducing emissions from deforestation and forest degradation (REDD+)<sup>3</sup> has declined in recent years -- less than 1 percent of climate finance project approvals in 2016 was for REDD+ projects (Nakhoda, Watson, Schalatek 2016). Finding business models and commercial approaches to meet this need has proven difficult. Existing carbon markets have not provided a good incentive for REDD+ credits. O'Sullivan discussed an analysis that found that the demand for REDD+ credits was likely to be less than 20 percent of the potential supply (Linacre 2015). He concluded noting that other options will need to be explored to address deforestation including regulation, non-market payments, and ambitious market commitments.

**Figure 3: Benefits for Investors and Development (InTrust)**

The INDI Fund experience in Mexico and Central America illustrates the potential to link clean energy financing with community development and support for low income populations



<sup>3</sup> As originally adopted by the Parties to the UNFCCC, REDD referred only to reducing deforestation and forest degradation. The broader term “REDD+” was intended to recognize a wider range of initiatives including efforts to foster conservation, sustainable management of forests, and enhancement of forest carbon stocks and was formalized in the Bali Action Plan at COP 13 in 2007.

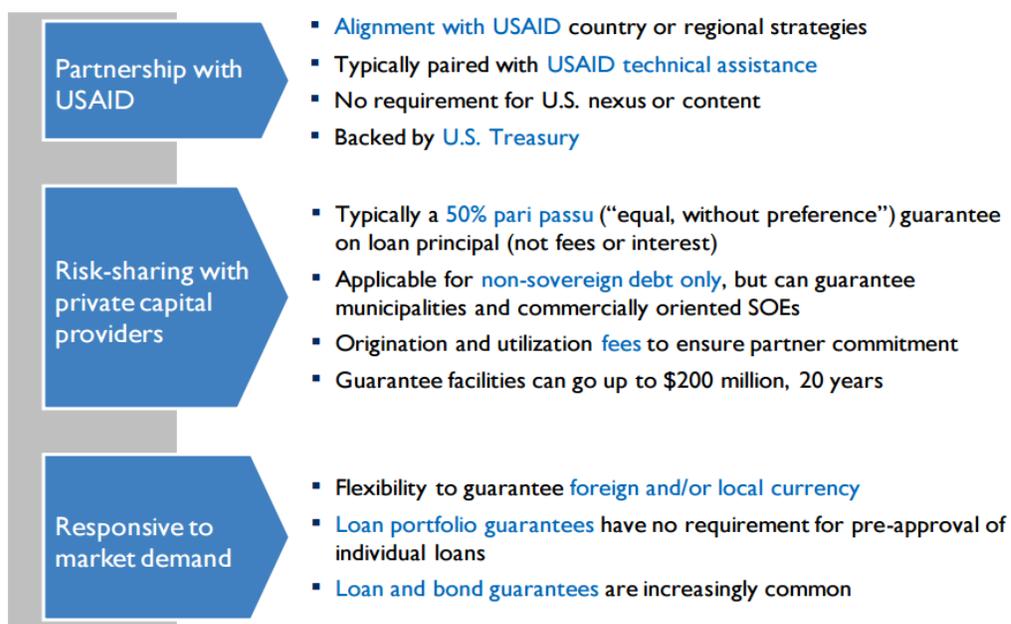
# 4. SPECIFIC FINANCIAL INSTRUMENTS

One of the common themes in the CEADIR Series has been the importance of private sector financial instruments, often in combination with some public finance and a favorable policy and regulatory environment. This chapter summarizes speaker insights with different types of financing instruments. CEADIR is preparing a Climate Finance Assessment that addresses financial instruments and mechanisms for clean energy, sustainable landscapes, and adaptation in greater detail (Anderson *et al.* 2017).

## 4.1 RISK MITIGANTS: LOAN GUARANTEES

Loan guarantees are one way to shift the risk/return calculation to encourage commercial banks to increase lending for specific purposes, client groups, and locations. **Marlena Hurley** from OPIC, a US agency supporting exports by US companies, and **Marcus Williams** from the World Bank Group's Multilateral Investment Guarantee Agency (MIGA), both described their role as issuers of political risk insurance. This term can encompass both expropriation of assets and the failure of governments to honor financial obligations. **Andrew Gisselquist** (USAID Development Credit Authority) described the use of loan guarantees to encourage lending for renewable energy directly with banks or through investment funds, an approach with considerable financial leverage. Figure 4 describes the DCA.

**Figure 4. Characteristics of USAID Development Credit Authority**



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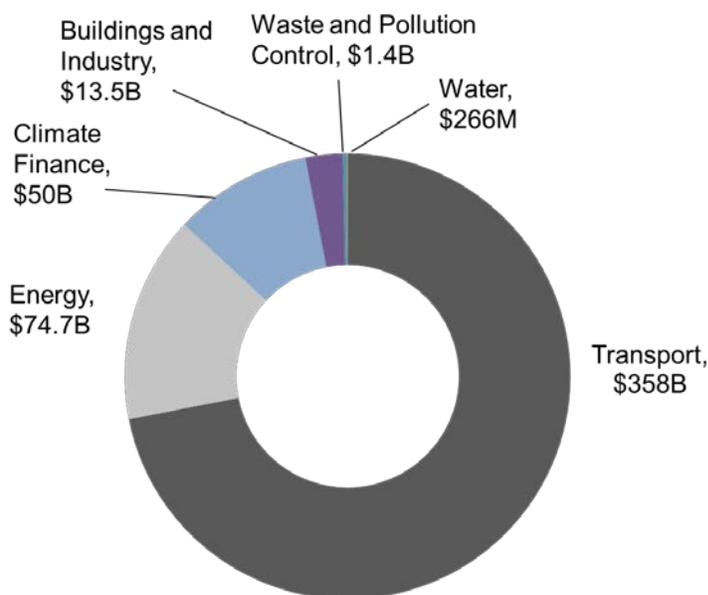
**Maria Netto** (Inter-American Development Bank, IDB) offered examples of how the IDB has used loan guarantees to reduce the risks of energy efficiency and renewable energy investments. An energy efficiency guarantee is an insurance product that reduces the risk that a buyer of energy efficiency services or equipment will not obtain the projected savings and thus fail to cover the added cost. Another IDB-backed insurance product offset the risk that power produced by geothermal resources will fail to meet projections and thus similarly fail to cover the financing costs of this highly capital-intensive renewable energy source.

## 4.2 DEBT: GREEN BONDS

**Michelle Laird** (CEADIR) gave a detailed presentation on **Green bonds**, securities with the proceeds devoted to one or more types of environmentally desirable purposes. The first bonds with a formal green certification were issued in 2007-2008. A minimum asset pool of \$100 million is typically necessary for a green bond (although this may be changing). With the rapid growth in green bond issuance in 2013, the instrument has become a substantial source of long-term capital for clean energy, primarily renewable energy projects. Since the global conventional bond market has a value of about \$100 trillion, attracting even a small share for climate-related investments could have an enormous impact (Bank for International Settlements 2017).

There have been large green bond issuances for renewable energy in India and China and prospects for new green bonds in these and other large developing countries are promising. In 2016, the global market for green bonds globally was about \$90 billion (Hirtenstein 2017). One limitation Arnold pointed out is that, to date, green bonds have not attracted lower interest rates than conventional bonds. To date, virtually all green bonds have been backed by the credit of the issuer, rather than project revenues. Project finance backed green bonds would be a significant step in the maturation of the market.

**Figure 5: Climate-Themed Bonds by Sector 2013/14 (Climate Bonds Initiative 2014)**



**Laird, Lauridsen, Widge, and Swann** discussed concerns regarding the environmental integrity behind green bonds—how to ensure that certification standards are met and avoid greenwashing using the label without substantial environmental benefits. The World Bank, IFC, and other international financial institutions have played a key role in developing the green bond instrument since developing the product in 2008, marketing them to other investors, and promoting standards. Since 2014, green bond standards and third-party verifiers have been helping to ensure bonds issued with a green label have environmental integrity (Kapur 2016).

**Anurag Mishra** (USAID/India) described efforts to expand the green bond market for renewable energy in India. The high interest rates on bank loans in India are a major barrier for many renewable energy investments and the bonds may be a partial answer. Domestic and international bond markets pose different opportunities and challenges. A major challenge for international bonds is currency risk and

relatively low credit ratings for many countries. The USAID project identified a combination of measures including partial risk guarantees and an exchange rate liquidity facility could, collectively, reduce costs by 1.5 to 2.5 percent, making green bonds attractive for project developers.

**Figure 6: Advantages and Disadvantages of Domestic and International Green Bonds**

	<b>Domestic Green Bonds</b>	<b>International Green Bonds</b>
<b>Advantages</b>	<ul style="list-style-type: none"> <li>• Easy to launch - no currency hedge required</li> <li>• No impact of country rating</li> <li>• Low risk of renewable energy projects becoming non-performing assets</li> </ul>	<ul style="list-style-type: none"> <li>• Leverage low cost funds from global capital market/s</li> <li>• Potential for arbitrage over successive issuances</li> </ul>
<b>Challenges</b>	<ul style="list-style-type: none"> <li>• Stretched domestic banking sector due to infra lending</li> <li>• Lack of depth and flexibility in Indian green bonds market limiting demand</li> <li>• Limited trading opportunities in domestic market</li> <li>• Limited possibility for arbitrage over successive issuances.</li> </ul>	<ul style="list-style-type: none"> <li>• Currency hedge required, can raise cost of bonds between 4-7%</li> <li>• External commercial borrowing guidelines pose challenges for usage of proceeds from green bonds</li> <li>• Double taxation</li> </ul>

The large minimum size for government bonds that carry the lowest interest rates remains a challenge. Multilateral development bank assistance has been able to finance the aggregation and warehousing of a sufficient volume of assets for some green bonds. **Widge** noted that the IFC has found it more efficient and effective to work through smaller investment funds to address the financing needs for aggregating smaller projects.<sup>4</sup>

### 4.3 EQUITY

In many developing countries, obtaining sufficient equity capital is a significant challenge for businesses. Equity is more flexible and may be longer term than debt, but is typically more expensive for the project developer over the long run. Equity investments can also help companies qualify for loans and attract additional equity investors (Shen 2016). However, there has been relatively little external equity for climate-related investment in developing countries due to perceptions of high risk and the need for specialized due diligence. This is changing with increased support for equity investments from the GCF, and impact investment funds willing to take greater risks for environmentally favorable investments and increasing support from international financial institutions. Speakers discussed challenges in making equity investments for businesses. **Acuna** noted the shortage of investors willing to accept the risks of equity investments in rural areas with vulnerable populations who often face high environmental risks

<sup>4</sup> One of the first Green Climate Fund projects was to support the Acumen Fund to invest in companies along the off-grid energy value chain to drive access to off-grid solar power in East Africa for low income consumers (GCF 2016). Finding ways to finance smaller renewable energy projects has been a major challenge for climate funds and a focus of the United Nations Initiative Sustainable Energy For All (SE4All, [www.SE4All.org](http://www.SE4All.org)).

and negative social impacts. Although these populations can form cooperatives or associations, they may need to be educated on the trade-offs between the alternatives of short-term, compensation payments and the long-term benefits of being an equity partner and the transaction costs may be high. **Laird** also noted the growing market for **yieldcos**, dividend growth-oriented public companies that bundle renewable long-term contracted operating assets to generate predictable cash flows. As much of the risk of renewable power projects is perceived to be up front in the permitting, contracting, and construction phases, these assets are usually perceived to be low risk (Urdanick 2014).

## 4.4 INSURANCE

**Mattias Jungen** of Swiss Re explained the importance of insurance backed by reinsurance for coverage of losses from hurricanes and other natural disasters, which result in annual payouts by insurers of about \$20 billion worldwide. Figure 7 summarizes the company’s climate change strategy which includes cooperation with climate experts in many fora, including the Working Group on the Economics of Climate Adaptation.<sup>5</sup> Swiss Re expects major increases in losses due to climate change, for example, a tripling of losses in New York City in coming decades due to sea level rise and more severe storms. Business interruption losses are often a large share of the total damages. However, most losses from natural disasters are not insured, especially in developing countries (Miller 2016).

**Figure 7: Swiss Re's Climate Change Strategy**



<sup>5</sup> A partnership between the Global Environment Facility, McKinsey & Company, the Rockefeller Foundation, ClimateWorks Foundation, the European Commission, Standard Chartered Bank and Swiss Re. See [http://www.swissre.com/eca/learn\\_about\\_the\\_ECA.html](http://www.swissre.com/eca/learn_about_the_ECA.html).

*Jungen* also described an important new type of product, resource indexed insurance, for renewable energy investments. Resource-indexed insurance is similar to the weather-indexed insurance for agriculture that has been supported by USAID, the World Bank, and UNDP to protect low-income farmers in developing countries from losses due to unusual weather.

Swiss Re has been selling resource-indexed insurance to reduce revenue losses when wind, solar, or hydropower resources decline below an agreed level based on a standard index. This coverage is typically sold for one year at a time and is intended to protect against occasional, unusual weather events, rather than typical weather. Pay-out amounts are specified in the contracts and based on the index levels, which eliminates the costs of estimating actual damages that have occurred. Expectations of climate change have increased the demand for these products. *Jungen* also noted that the pricing of these insurance products requires good projections of weather over a one-year period. These projections are derived from a small number of relatively opaque proprietary models that need further improvement.

## 4.5 TRANSACTION ENABLERS: CAPACITY DEVELOPMENT TO SUPPORT FINANCING<sup>6</sup>

Because of the complexities and country- and sector-specific issues in climate-related investment, customized capacity development support and policy and regulatory reforms are often critical to the ability to design climate-related investments and obtain and use financing effectively in developing countries. *Allen Eisendrath* and *Matthew Ogonowski* (USAID Global Climate Change Office) discussed the many benefits of renewable energy deployment and the opportunities created by falling technology prices and greater experience with RE investments around the world.

USAID has consolidated lessons from global experience scaling up renewable energy power generation under six major building blocks<sup>7</sup>:

- **RE targets and strategic energy planning.** Clear goals and strategic plans signal political commitment and give investors more confidence in the future.
- **Smart incentives.** Robust, transparent policies and incentives create the necessary enabling environment for scaling of cost-effective RE generation.
- **Grid integration.** High penetration of variable energy generation such as solar and wind through inter-connection to the grid can be promoted by increasing power system flexibility while maintaining and improving system reliability and economics.
- **Renewable energy zones.** Identifying areas of high RE resource potential, and planning transmission accordingly, supports cost-effective development of renewable resources and creates strong developer interest.
- **Competition in procurement.** Competition between power generators through processes such as auctions helps find the lowest price for power, including renewable electricity.
- **Finance.** Lowering the cost of RE financing—a major factor in project costs—is central to the successful scaling of RE generation.

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<sup>6</sup> For background on USAID capacity development, see [http://pdf.usaid.gov/pdf\\_docs/pa00mrj1.pdf](http://pdf.usaid.gov/pdf_docs/pa00mrj1.pdf)

<sup>7</sup> USAID, “Scaling Up Renewable Energy Fact Sheet”, <https://urban-links.org/resources/scaling-renewable-energy-factsheet/>

**David Ross** (U.S. Trade and Development Agency, USTDA) described USTDA's grants for early-stage investment planning and support for trade missions that bring foreign developers to the United States to explore partnerships. USTDA, USAID, the US Department of State, and OPIC are supporting a Clean Energy Finance Facility for the Caribbean and Central America (CEFF-CCA).

**Laura Kavanaugh** (ICLEI) described the importance of increasing the awareness and capacity of communities to create the foundation for local funding and implementation. She presented an example of resilient housing design and construction in Vietnam. **Gwen Andersen** (CEADIR) discussed an assessment of clean energy lending in El Salvador, Honduras, and Guatemala and use of a Clean Energy Lending Toolkit to help banks in these countries understand the technologies and business models, assess the market, design appropriate lending products, and increase outreach.

Mexico is a relatively large emitter of GHGs with ambitious climate change mitigation targets even though it is a major producer of petroleum products. **Claudio Alatorre** (IDB) described progress in wind power development in Mexico, which moved from the pilot project stage a decade ago to a mature industry no longer in need of concessional support. He noted the important contributions of multilateral development banks and concessional climate funds in reducing the risks of investing in new technologies (USAID and Evensen Dodge International 2013).<sup>8</sup>

**Santiago Enriquez** (CEADIR) reported on an assessment of opportunities and challenges for increasing energy efficiency and developing carbon markets in Mexico (Enriquez *et al.* 2016). The Government of Mexico has done detailed analysis of greenhouse gas emissions by sector and identified the most promising opportunities for reducing emissions by improving energy efficiency: for transport, promoting denser urban development and sustainable mobility alternatives; for industry, facilitating finance for efficiency investments; for municipalities, enhancing the capacity to finance and implement efficient lighting and waste to energy projects; and for buildings, implementing and enforcing energy efficient building codes and labels for appliances. The Mexican government is also exploring the possibility of joining California's carbon emission trading market.

**Lisa Viscidi** (Inter-American Dialogue) spoke about the need for a more effective system of support for innovative CE technologies in Mexico, and Latin America more broadly. She noted several key barriers including lack of access to capital, inadequate public incentives, and the absence of sufficient cooperation between industry and academia. Looking in more detail at the situation in Mexico, barriers included a lack of focus on marketable technologies in CE research; inadequate incentives, such as royalties, to focus research on commercial solutions; limited venture capital and financing for small-scale energy generation; and weak government regulations promoting demand for CE technologies. Viscidi had three recommendations for scaling up clean energy innovation in South American countries: improving links with international industry players; strengthening policies to boost domestic demand; and redirecting research and development efforts.

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<sup>8</sup> Mexico is also one focus of a Global Development Alliance (GDA) between Evensen Dodge International (EDI) and USAID focused on developing regional or domestic capital markets and the necessary links for national and subnational governments to access financing for clean energy.

# 5. PLANNING PROCESSES FOR CLIMATE CHANGE AND VARIABILITY

Improved planning is important to set targets, track, and report on greenhouse gas mitigation goals set by developing country governments and to increase the efficiency and effectiveness of measures to increase resilience to climate change and variability. These planning processes should

- Be integrated with other national development priorities, including energy, finance, agriculture, the environment, and poverty alleviation (UNDP 2016)<sup>9</sup>;
- facilitate leadership and commitment to climate strategies from the highest levels of government;
- Expand engagement with the private sector, civil society organizations, and communities; and
- Fulfill the requirements of donors, development assistance agencies, and public and private investment funds.

## 5.1 COUNTRY EXAMPLES

**Gwen Andersen** described two countries with relatively long-standing and well-developed climate change programs, the Philippines and Mexico. Both had systems for detailed tracking and reporting of data, high-level support, cross-agency collaboration, and some sophisticated analytical capacity. Both addressed adaptation and mitigation opportunities. Mexico’s planning process included extensive stakeholder consultations. Mexico had begun setting up a detailed inventory system for GHG emissions.

Bond noted that Indonesia set up climate planning processes, but found it difficult to secure sufficient resources to fully implement the plans.

Smaller and lower-income developing countries are likely to need more targeted capacity-development support to obtain financing and implement plans.

**Ron Benioff** (National Renewable Energy Laboratories, NREL) and

**Figure 8: LEDS Global Partnership**



<sup>9</sup> The link between climate projects and the Sustainable Development Goals is being increasingly recognized as reflected in GCF project approvals, which identify SDGs also expected to benefit from the project. UNDP has recently examined this connection in its climate portfolio.

**Matthew Ogonowski** (USAID) described US Government support for the Low Emission Development Strategies (LEDS). The network supports capacity development, analyses and information sharing, and financing for climate-related investments. The knowledge-sharing platform is the LEDS-Global Partnership ([www.ledsgp.org](http://www.ledsgp.org)).

**Benioff** described several approaches for climate planning in developing countries:

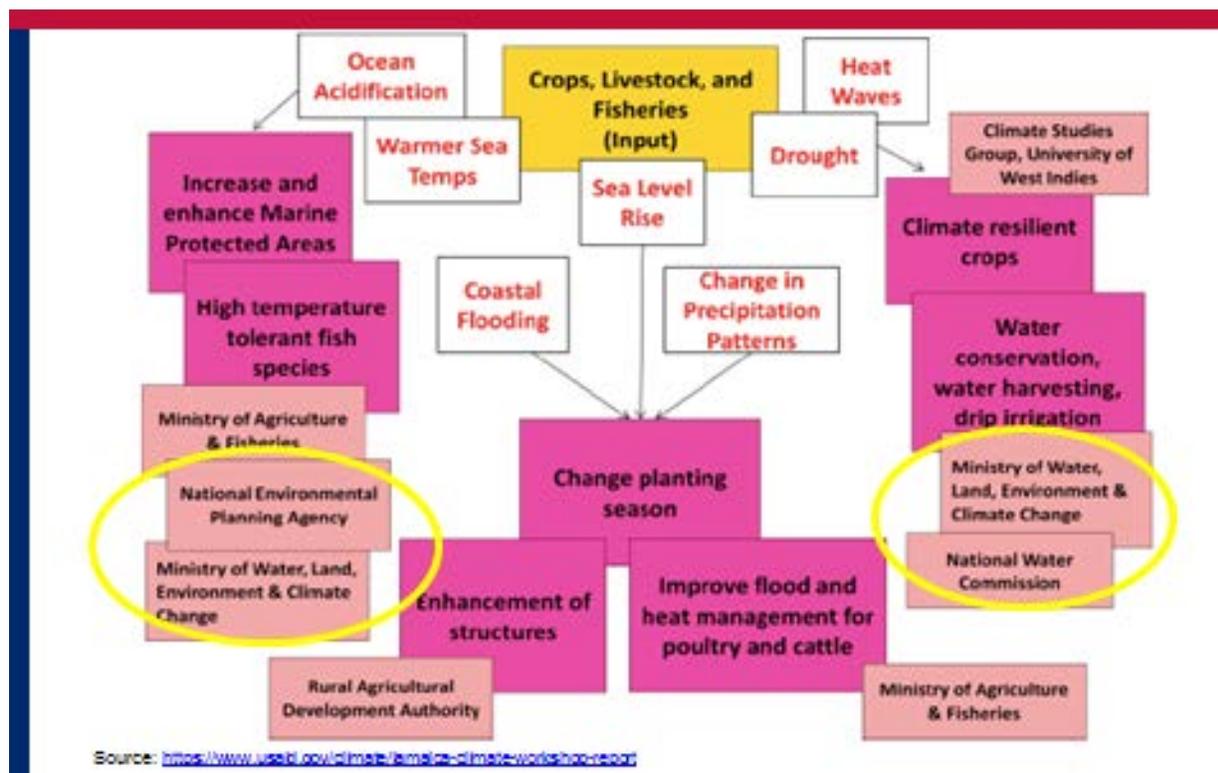
- High-level, national planning across ministries and sectors, including finance as well as energy and environment (Ethiopia and Mexico);
- Embedded climate change advisors in multiple government ministries (Colombia);
- Highly participatory process including subnational governments, civil society, and the private sector through public consultations (Kenya); and
- National government-driven within five-year development plans (Vietnam)

**Benioff** stated that the common foundations for successful climate planning are a supportive enabling environment within the government; existence of regulations and standards for energy consumption; provision of incentives (taxes, subsidies, and pricing); public budget support; and a clear exit strategy (e.g., the phase-out of feed-in-tariffs for renewable energy in Germany). He also noted the importance of allowing for experimentation.

## 5.2 NATIONAL ADAPTATION PLANS

National Adaptation Plans (NAPs) are the primary process for increasing climate resilience in developing countries. **John Furlow** (USAID/Global Climate Change Office) noted that the NAP process in Jamaica was successful because it considered climate risks in the key economic sectors, facilitated multi-agency

**Figure 9: Addressing Climate Risks in Jamaica's Agricultural Sector**



participation included opposition-party participation, and emphasized integration of adaptation goals with long-term national development priorities.

The NAP process in Jamaica helped identify weaknesses in existing capacity, for example, the local meteorological service did not provide sufficient high-quality data to support financial and economic analyses of climate risks. Experiences in various countries showed that greater donor coordination and sharing of information across developing countries was needed for effective climate adaptation planning. This realization led to the US Department of State and the German Federal Ministry for Economic Cooperation and Development to support establishment of the NAP Global Network ([napglobalnetwork.org](http://napglobalnetwork.org)). This network’s secretariat is hosted by the International Institute for Sustainable Development (IISD). **Wurtenberger** (GIZ) noted that the Green Climate Fund is also providing some capacity development support for adaptation planning.

### 5.3 ADAPTATION MEASURES TO REDUCE CLIMATE RISK TO VULNERABLE URBAN AND RURAL POPULATIONS

Urbanization rates in many developing countries are high and exceed population growth, although rates vary highly by region.<sup>10</sup> Many large cities are in coastal areas that are vulnerable to sea level rise, storm surges, and the high temperatures that can affect human health and safety. **Hari Dulal** (Abt Associates) reviewed flooding risks and response measures in major urban areas in selected Asian countries. Most of these cities focused more on disaster relief after floods than planning and development of infrastructure to reduce flood risks and increase resilience. **Dulal** recommended more support for capacity development and increasing access to financing for adaptation.

**Exposure to coastal flooding from sea-level rise and storms**

City	Country	Exposed Population (2008)	Exposed Population (2070)	Percent increase in 62 years
Kolkata	India	1,929,000	14,014,000	626
Mumbai	India	2,787,000	11,418,000	310
Dhaka	Bangladesh	844,000	11,135,000	1219
Guangzhou	China	2,718,000	10,333,000	280
Ho Chi Minh City	Vietnam	1,931,000	9,216,000	377
Shanghai	China	2,353,000	5,451,000	132
Bangkok	Thailand	907,000	5,138,000	466
Rangoon	Myanmar	510,000	4,965,000	874
Hai Phong	Vietnam	794,000	4,711,000	493
Tianjin	China	956,000	3,790,000	296
Chittagong	Bangladesh	255,000	2,866,000	1024
Jakarta	Indonesia	513,000	2,248,000	338

Particular attention is needed on the potential impacts of climate change on low-income populations and vulnerable groups. **Anthony Socci** (EPA) spoke of the need to reduce climate risks for the more than one billion people living in informal, urban settlements, often on vulnerable sites with limited access to various public services. He discussed the example of the Durban Adaptation Charter’s support for capacity development and knowledge sharing by local communities, which he said is a model for participatory strategy development and a Pan-African network.

**Christopher Bessenecker** of Project Concern International discussed a pilot activity to increase the resilience of vulnerable, nomadic pastoralists threatened by droughts and temperature extremes. The pilot Satellite Assisted Pastoralist Resource Management Project (SAPARM) in Ethiopia and Tanzania

<sup>10</sup>Projections for 2050 indicate that the urban share of the population will reach 55 percent in Africa, 64 percent in Asia, and 86 percent in Latin America (Sow 2015).

used remote-sensing data to provide pastoralists with vegetative cover maps to enable them to make timely, data-drive decisions on where to move their herds for grazing. Initial results were highly promising with herd mortality rates reduced by almost 50 percent and a cost-benefit ratio of almost 50:1.



There are also many “negative net cost” options from an economic perspective due to major co-benefits for human health and safety and improved environmental quality (New Climate Economy 2016).<sup>11</sup> Although there are some approaches to valuing these co-benefits in monetary terms, they often have limitations and underestimate the actual benefits, but may be better than leaving them out of economic analyses (which assigns them zero value). In some cases, however, marginal abatement cost curves can identify what appears to be “low-hanging fruit”, but might not be easily realized due to political economy or institutional barriers to reforms and investments.

**Dr. Noel Gurwick** (USAID/Global Climate Change Office) noted the inherent uncertainty of projecting impacts on future climate and agriculture that are without precedent in human experience. **Dr. Tulika Narayan** (CEADIR) discussed the importance of location-specific studies of how various farming practices affect GHG emissions and considering the impacts of changing farming practices on farm labor requirements, costs, and complexity of management as well as yields. **Narayan** cited the example of a multi-donor funded study on alternative rice cultivation methods in Vietnam with the objective of increasing yields and reducing GHG emissions<sup>12</sup>. She also presented an example from Bangladesh where bus rapid transport had local economic benefits as well as contributions to health and air quality.

**Anita Campion** (Connexus) discussed work with small-scale coffee farmers to reduce the risks of coffee rust disease (increasing due to climate change) while also helping them qualifying for fair trade or organic certifications that can bring them higher unit prices. These productivity gains can only be achieved if investments are made in organizing and training small-scale farmers, covering certification costs, and financing improved farm inputs.

*Campion* also described a project that sold drip-irrigation systems to Kenyan farmers and provided training on how to use the systems most effectively. The training cost was built into the equipment price. Participants obtained up to fourfold increases in crop yields with less water and fertilizer.

Forest preservation and reforestation has important climate change mitigation and biodiversity benefits in addition to resilience benefits for watershed management and soil conservation beyond the forest areas. Sustainably managed forestry may take many years to generate profits and it is often difficult to obtain financing with sufficiently long tenors to match the cashflows. The costs of effective reforestation and forest protection

**Figure 11: Indicative Returns by Land Use**

Use	Financial Return (\$/ha-yr)
Household consumption	0
Pasture, Acre, Brazil	1-7 <sup>1</sup>
REDD credits (Kenya, Cameroon, Peru, Cambodia)	5-20 <sup>2</sup>
Extensive forestry, tropical	8-16 <sup>3</sup>
Forest plantation, US conifer	50-263 <sup>3</sup>
Forest plantation, tropical	77-266 <sup>3</sup>
Agriculture, soy, Mato Grosso, Brazil	0-130 <sup>4</sup>
Agriculture, oil palm, Malaysia	400-1000 <sup>5</sup>

<sup>11</sup> Reductions in air pollution are among the largest and most often cited co-benefits of policies to reduce GHG emissions, particularly in China and India where severe health problems have resulted from poorly regulated burning of coal for electric power and other uses.

<sup>12</sup> The Vietnam example was one of several pilot projects evaluated testing the use of “pull mechanisms” to incentivize private sector involvement in markets, and address market failures impeding the development of markets to serve smallholder farmers. - See <http://www.abtassociates.com/NewsReleases/2015/Abt-Associates-Expands-Work-Evaluating-New-Agricul.aspx#sthash.OKOXm5sN.dpuf>

programs in remote, rural areas may be especially difficult for many developing country governments to afford on their own.

The international benefits and difficulty in obtaining domestic financing or commercially viable profitability provides a good rationale for REDD+ support, but the amounts provided to date have been far less than the need and many potential projects have not been able to access expected amounts of REDD+ funding or had difficulty meeting the additionality and monitoring, reporting, and verification requirements. Narayan presented a detailed case study from projects to reduce deforestation in Indonesia; many of the benefits such as protecting biological diversity and the ecosystem have no direct economic value. The distribution of benefits is also an issue as a substantial component accrue to small shareholders who have less negotiating power and high implicit discount rates. Many efforts have been made to design sustainable approaches to payments for environmental services, although to date few that can be characterized as clear examples of success (GEF 2014; UNDP 2015).

Systems for collection and dissemination of weather, climate and hydrological (hydromet) data are inadequate in many developing countries and some local areas are particularly underserved. One reasons for this problem is the small number of good cost-benefit analyses of the value of these services for helping people adapt to weather variability and climate change. Another reason is the shortage of skilled staff. John Furlow (USAID GCC) noted that a good case can be made that public hydromet services contribute to other development goals and the value of improved dissemination of weather information has not received enough attention.

**Glen Anderson** (CEADIR) described the climate services “value chain” and a set of cost-benefit analyses on hydromet services making a strong case for greater public investment in such systems (WMO 2015). **Tauhid Rahman** and **Jim Buizer** (University of Arizona) presented a case study from Jamaica, which shows high returns to agriculture from climate information services and considerable willingness to pay by farmers. The study focused on the value of disseminating information to small farmers concerning drought risks, as well as the relative effectiveness of alternative means of communication, including text messages and farmer forums. The study found that the information service had a significant impact on the agricultural productivity of the farmers faced with the uncertainty of rainfall and drought, and also contributed to agricultural production by influencing farming and management decisions

# 7. SUMMARY AND CONCLUSIONS

This synthesis report only provides a brief overview of some of the highlights from 25 hours of presentations. More detailed information on the topics can be obtained from the full set of presentations and recordings available on the CEADIR Series page at [climatelinks.org](http://climatelinks.org). Some of the common themes in the presentations are listed below:

- **Climate-related investment has been rising**, but is still far short of the demand for both mitigation and adaptation investments, particularly in developing countries.
- **There is now a greater recognition of the importance of engaging the private sector** as an active partner, as a source of investment capital and also for its ability to design and implement climate actions. This recognition is extending beyond renewable energy and energy efficiency to include agriculture, forests, and other land uses and climate change adaptation.
- **Public financial institutions and international funds** are essential sources of climate finance. These include multilateral development banks, the Green Climate Fund, and bilateral and multilateral loan guarantee and trade insurance programs for de-risk private sector investments. Although a small share of the global financial system, these efforts constitute can help leverage much larger amounts from commercial sources of financing.
- **Impact investors and private foundations** are playing an increasing role in climate-related finance. They are often willing to accept lower financial returns for investments with significant environmental or social benefits.
- **Long-term asset managers** (such as pension funds and insurance companies) could be potential sources of large amounts of additional capital for climate change mitigation and adaptation, but ways of attracting their interest are still to be fully tested and implemented.
- **Blended finance** that mixes grants or concessional financing with market rate financing has become increasingly significant. Over time, private sector investors are likely to provide an increasing share of climate-related financing.
- **Creative financing approaches** have been evolving to address the gaps between the demand and supply of capital for climate change mitigation and adaptation. Examples of these innovations include green bonds, weather or resource-indexed insurance, and equity funds for renewable energy entrepreneurs.
- **Finance alone often is not enough to bring about climate investments.** Other barriers also need to be addressed, such as unfavorable policy and regulatory environments, the shortage of qualified developers, and risks unrelated to the project or technology, such as currency risks. These issues vary by region and country, and often require time and patience to resolve.
- **Purely commercial approaches have not succeeded in addressing climate targets for and other land uses.** A mix of international and domestic public sector resources and private sector efforts that address the needs of resource users and local communities are needed.
- **Private sector activity has been much slower for adaptation to climate change and investment has lagged relative to mitigation.** However, awareness of the need to take climate risks into account has spread rapidly within the financial community, as reflected in the first Report of the Task Force on Climate Related Financial Disclosure (Task Force on Climate-Related Financial Disclosures 2016).
- **Many developing countries have demonstrated high-level commitments to climate change mitigation and/or adaptation, but implementation is lagging in some countries due to resource and capacity constraints.** Outreach and consultation with a wide range of stakeholders including the private sector, local governments, and civil society is also essential.

- **More attention should be paid to the impacts of climate change on the poorest and most vulnerable** populations and groups. This includes rapidly growing cities in coastal locations as well as rural populations in remote areas. Finding workable solutions for these groups is complex and intertwined with other development challenges.
- **Many banking and investment management companies are paying increasing attention to climate risks** that may affect their portfolios (Fouche 2017).
- **The increasing role of subnational governments**, particularly cities, in obtaining climate-related financing and more generally as advocates and implementers of climate policies<sup>13</sup>

Change is occurring rapidly in planning and financing of climate change mitigation and adaptation. Some of these recent developments listed below could be covered in events organized by CEADIR or other activities supported by donors, development banks, commercial financial institutions, foundations, or nongovernmental organizations:

- The Intergovernmental Panel on Climate Change (IPCC) is producing a background paper on climate risks;
- A major new report on engaging the private sector in adaptation finance (UNEP and German Federal Ministry for Economic Cooperation and Development 2016) analyzed the market barriers that inhibit investments in adaptation, from the perspectives of both the private enterprise investing in adaptation and the private financial institution financing such investment, and provides practical policy solutions to remove the barriers and scale-up the volume of financial flows for adaptation;
- An international development organization issued a major report recommending greater use of insurance mechanisms for more efficient and effective responses to natural disasters (Center for Global Development 2017);
- Climate Policy Initiative's productivity-based approach to measure the climate and economic benefits of energy investments by international financial institutions (Hallmeyer 2017);
- UNEP Inquiry on Design of a Sustainable Financial System's review of international financial standards for sustainable development (UNEP 2017);
- PricewaterhouseCoopers' business guide to navigating the sustainable development goals (PWC 2016); and
- Potential for scaling up RE generation due to declining costs of battery storage (Ryan and Eckhouse 2017).

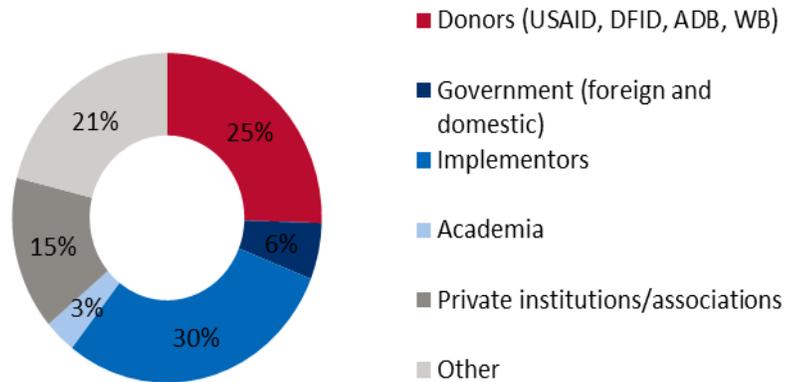
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<sup>13</sup> The C40 Cities initiative is bringing together city leaders with a shared interest in climate change policies([www.c40.org](http://www.c40.org)).

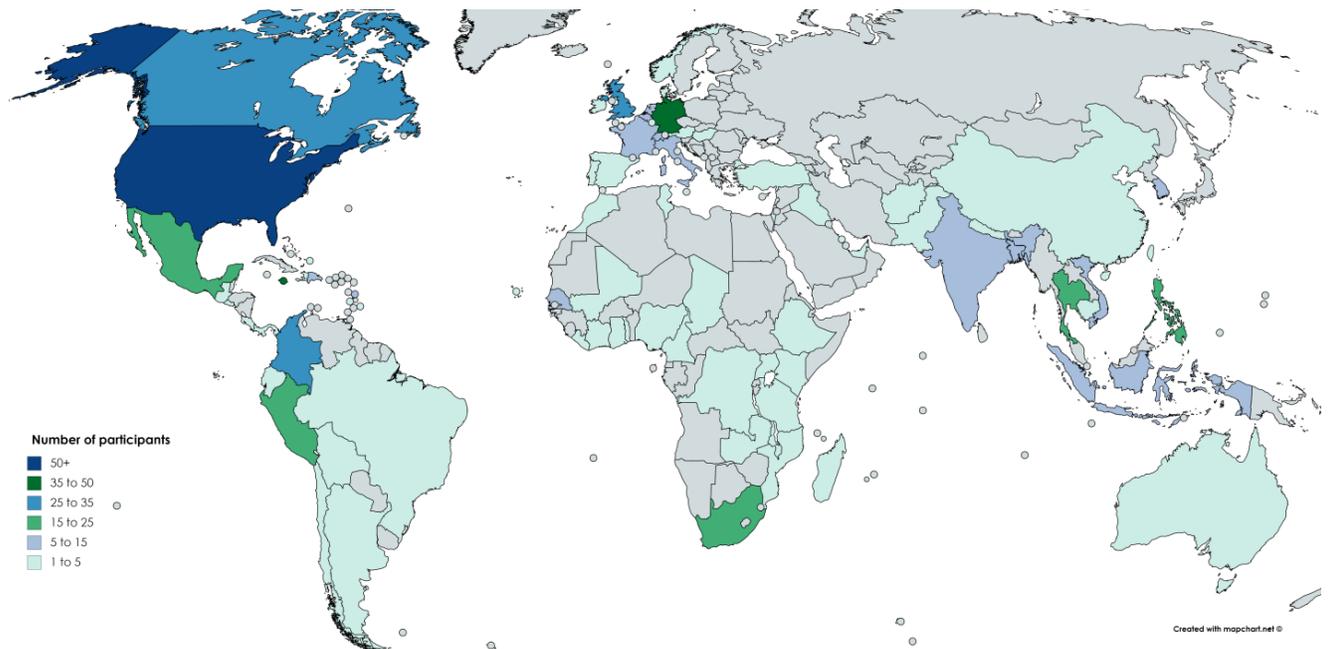
# ANNEX A: CEADIR SERIES AUDIENCE ANALYSIS

An average of 70 people from 79 countries attended the 17 CEADIR events in-person or online (Figure 12 and Figure 13). Participants included representatives from governments, nongovernmental organizations, investors, private industry, and civil society. The in-person and webinar format allowed people in many countries to participate (see list).

**Figure 12: CEADIR Series Attendees by Affiliation, 2015-16**



**Figure 13: CEADIR Series Attendance by Country**



## List of Countries with Participants in CEADIR Series Events

Afghanistan  
Argentina  
Australia  
Austria  
Bahrain  
Bangladesh  
Barbados  
Belgium  
Bolivia  
Brazil  
Cambodia  
Cameroon  
Canada  
Cape Verde  
Chad  
Chile  
Colombia  
Costa Rica  
Democratic Republic of the Congo  
Denmark  
Dominica  
Dominican Republic  
Ecuador  
El Salvador  
Ethiopia  
France  
Georgia  
Germany  
Ghana  
Guatemala  
Haiti  
Hong Kong  
Hungary  
India  
Indonesia  
Iraq  
Ireland  
Israel  
Italy  
Ivory Coast  
Jamaica  
Kenya  
Liberia  
Luxembourg  
Madagascar  
Malawi  
Mali  
Mexico  
Morocco

Mozambique  
Nepal  
Netherlands  
Nigeria  
Northern Ireland  
Norway  
Pakistan  
Panama  
Peru  
Philippines  
Portugal  
Saint Lucia  
Senegal  
South Africa  
South Korea  
Spain  
Switzerland  
Taiwan  
Tanzania  
Thailand  
Togo  
Tunisia  
Turkey  
Turks and Caicos  
UAE  
Uganda  
UK  
Vietnam  
Zambia

# ANNEX B: CEADIR DISCUSSION SERIES EVENTS, FEBRUARY 2015-DECEMBER 2016

Climate Change Investment Focus	Title	Date	Geographic Scope	Moderator	Speakers
Clean Energy	Aligning Public and Private Climate Finance	February 10, 2015	Global	Alan Miller (CEADIR)	<ul style="list-style-type: none"> <li>James Close (World Bank)</li> <li>Zephyr Taylor (USAID/Global Climate Change Office)</li> </ul>
Clean Energy	Scaling Up Private Financing	March 10, 2015	Africa, Caribbean, India, Mexico, and South America,	Marcia Trump (CEADIR)	<ul style="list-style-type: none"> <li>Dr. Allen Eisendrath (USAID/Global Climate Change Office)</li> <li>Stephen Munro (Bloomberg New Energy Finance)</li> </ul>
Sustainable Landscapes	Financing Innovations in Sustainable Landscapes	April 14, 2015	Brazil, Indonesia	Dr. Eric Hyman (USAID/Economic Policy Office)	<ul style="list-style-type: none"> <li>J.P. Gibbons (USAID Development Credit Authority)</li> <li>Bob O'Sullivan (Winrock International)</li> <li>Gordon Smith (CEADIR)</li> </ul>
Sustainable Landscapes	How Co-Benefits Have Unlocked Climate Financing	May 12, 2015	Bangladesh, Indonesia, Vietnam	Dr. Eric Hyman (USAID/Economic Policy Office)	<ul style="list-style-type: none"> <li>Tulika Narayan (CEADIR)</li> </ul>
Clean Energy	Green Bonds and Innovative Climate Financing Mechanisms	June 9, 2015	Chile, India	Michele Laird (CEADIR)	<ul style="list-style-type: none"> <li>Berit Lindholdt-Lauridsen (International Finance Corporation)</li> <li>Anurag Mishra (USAID/India)</li> </ul>

Low Emissions Development Strategies	Accelerating LEDS Development and Implementation	July 14, 2015	Philippines, Mexico, Ethiopia, Colombia, Kenya, Vietnam, Gabon	Matthew Ogonowski (USAID/Global Climate Change Office)	<ul style="list-style-type: none"> <li>• Gwendolyn Andersen (CEADIR)</li> <li>• Ron Benioff (National Renewable Energy Laboratory)</li> </ul>
Sustainable Landscapes	Implementing and Financing Climate Smart Agriculture	September 13, 2015	South Sudan, Mali, Vietnam, Colombia, Kenya	Dr. Noel Gurwick (USAID/Global Climate Change Office)	<ul style="list-style-type: none"> <li>• Anita Campion (Connexus)</li> <li>• Michael Godfrey (Abt Associates)</li> </ul>
Clean Energy	Effective Financial Instruments, Post Paris	October 22, 2015	Global with focus on Latin America: Bolivia, Colombia, Mexico,	Alan Miller (CEADIR)	<ul style="list-style-type: none"> <li>• Maria Netto (Inter-American Development Bank)</li> <li>• Stacy Swann (Climate Finance Advisors)</li> </ul>
Adaptation	Planning and Financing Adaptation in Vulnerable Countries	November 10, 2015	Jamaica	Mikell O'Mealy (CEADIR)	<ul style="list-style-type: none"> <li>• James Bond (Green Climate Fund)</li> <li>• Jonathan Cook (USAID/Global Climate Change Office)</li> <li>• John Furlow (USAID/Global Climate Change Office)</li> <li>• Laura Wuertenberger (Deutsche Gesellschaft für Internationale Zusammenarbeit)</li> </ul>

Clean Energy, Sustainable Landscapes	Reality Check: Investor Perspectives on Climate Finance	February 5, 2016	Global	Eric Haxthausen (USAID/Global Climate Change Office)	<ul style="list-style-type: none"> <li>• Matt Arnold (JPMorgan Chase)</li> <li>• Vikram Widge (World Bank)</li> </ul>
Sustainable Landscapes, Adaptation	Socioeconomic Benefits of Climate Services	February 18, 2016	Ethiopia, Jamaica, Tanzania	John Furlow (USAID/Global Climate Change Office)	<ul style="list-style-type: none"> <li>• Glen Anderson (CEADIR)</li> <li>• Christopher Bessenecker (Project Concern International)</li> <li>• Jim Buizer (University of Arizona)</li> <li>• Tauhid Rahman (University of Arizona)</li> <li>• Jennifer Waugaman (Project Concern International)</li> </ul>
Clean Energy	Private Sector Investment in Clean Energy in Central America	March 24, 2016	Caribbean, Central America, El Salvador, Guatemala, Honduras, Mexico	David Ross (U.S. Trade and Development Agency)	<ul style="list-style-type: none"> <li>• Francisco Acuna (InTrust Global Investments)</li> <li>• Gwendolyn Andersen (CEADIR)</li> </ul>
Clean Energy	Unlocking Investment for Mexico's Clean Energy Goals	April 12, 2016	Mexico	Santiago Enriquez (CEADIR)	<ul style="list-style-type: none"> <li>• Claudio Alatorre (Inter-American Development Bank)</li> <li>• Lisa Viscidi (Inter-American Dialogue)</li> </ul>
Clean Energy	Climate Change Financial Risks to Infrastructure Investments	July 14, 2016	Sub-Saharan Africa, Zambia, Colombia	Matt Austin (USAID/Office of Private Capital and Microenterprise)	<ul style="list-style-type: none"> <li>• Roseann Casey (USAID Power Africa Initiative)</li> <li>• Mathias Jungen (Swiss Re Group)</li> <li>• Vladimir Stenek (International Finance Corporation)</li> </ul>
	Climate Change Adaptation Planning for Low-Income Urban Populations	September 20, 2016	Africa (cities); South Africa (Durban); Asia; Vietnam	Darren Manning (USAID/Office of Energy and Infrastructure)	<ul style="list-style-type: none"> <li>• Hari Dulal (Abt Associates)</li> <li>• Laura Kavanaugh (ICLEI, Local Governments for Sustainability)</li> <li>• Anthony Socci (U.S. Environmental Protection Agency)</li> </ul>

Sustainable Landscapes	Assessing Business Models for Sustainable Landscapes in Asia	October 27, 2016	Asia; Cambodia, Indonesia, Philippines, Vietnam	Mikell O'Mealy (CEADIR)	<ul style="list-style-type: none"> <li>• Rajen Makhijani (Dalberg Global Development)</li> <li>• Aurelia Micko (USAID/Asia)</li> </ul>
Clean Energy	Political and Credit Guarantees to Boost Clean Energy Financing in Africa	December 6, 2016	Senegal, Nigeria, Zambia, South Africa, Kenya, Uganda	Nadia Scharen-Guivel (CEADIR)	<ul style="list-style-type: none"> <li>• Andrew Gisselquist (USAID Development Credit Authority)</li> <li>• Marlena Hurley (U.S. Overseas Private Investment Corporation)</li> <li>• Marcus Williams (World Bank Group's Multilateral Investment Guarantee Agency)</li> </ul>

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