

RESOURCES TO ADVANCE LEDS IMPLEMENTATION

FINAL REPORT: 2014-2019



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RESOURCES TO ADVANCE
LEDS IMPLEMENTATION

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ACRONYMS AND ABBREVIATIONS

ACEF	Asia Clean Energy Forum
AFOLU	Agriculture, Forestry, and Other Land Use
C40	C40 Cities Climate Leadership Group
CDKN	Climate and Development Knowledge Network
CE	Clean Energy
CLEER	Clean Energy Emission Reduction
COP21	21st Conference of the Parties
COP23	23rd Conference of the Parties
EC-LEDS	Enhancing Capacity for Low Emission Development Strategies
EREA	Energy and Renewable Energy Authority (Vietnam)
FACTS	Foreign Assistance Coordination and Tracking System
FFS	Fossil Fuel Subsidies
FFSR	Fossil Fuel Subsidy Reform
FY	Fiscal Year
GCC	Global Climate Change
GGAP	Green Growth Action Plan
GGKP	Green Growth Knowledge Platform
GHG	Greenhouse Gas(es)
GHGMI	The Greenhouse Gas Management Institute
GIZ	Gesellschaft für Internationale Zusammenarbeit
GoB	Government of Bangladesh
GoC	Government of Colombia
ICAT	Initiative for Climate Action Transparency
IDEAM	Institute of Hydrology, Meteorology, and Environmental Studies
IP	Implementing Partner
INDC	Intended Nationally Determined Contribution
IPCC	Intergovernmental Panel on Climate Change
IRRP	Integrated Resource and Resilience Planning
LAC	Latin America and Caribbean



LEDS	Low Emission Development Strategies
LEDS GP	Low Emission Development Strategies Global Partnership
MADS	Ministry of Environment and Sustainable Development
M&E	Monitoring & Evaluation
MINAM	Ministry of Environment (Peru)
MoIT	Ministry of Industry and Trade (Vietnam)
MRV	Measurement, Reporting, and Verification
MW	Megawatt
NDC	Nationally Determined Contribution
NREL	National Renewable Energy Laboratory
OU	Operating Unit
QA/QC	Quality Assurance / Quality Control
PAPTA	The Partnership for Transparency on the Paris Agreement
PV	Photovoltaic
RALI	Resources to Advance LEDS Implementation
SINGEI	National System of GHG Inventories (Colombia)
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
USG	United States Government
WRI	World Resources Institute

EXECUTIVE SUMMARY

The Resources to Advance LEDS Implementation (RALI) project was designed by the United States Agency for International Development (USAID), in cooperation with ICF, to mitigate climate change and promote sustainable economic growth through low emissions development strategies (LEDS). RALI played an important role in advancing sustainable economic growth through development, deployment, and training on low emissions tools; identifying and sharing best practices and lessons learned; providing technical assistance for LEDS implementation; and contributing to the knowledge base for low emission development.

USAID partner countries are preparing to implement their Nationally Determined Contributions (NDCs) under the Paris Agreement but many still lack the technical capacity and foundational systems to accelerate their climate action and meet the increased rigor of the Enhanced Transparency Framework. To respond to these challenges, RALI has developed a number of tools, resources, and knowledge products that help countries interpret the requirements of the

Paris Agreement, capture the greenhouse gas (GHG) impacts of mitigation actions, and leverage existing tools and best practices in the low emissions development community. Key products that significantly increased the ability of USAID and partner countries to implement LEDS include:

- **The CLEER Protocol and CLEER Tool** enable USAID Missions to easily report GHG emissions reductions and are freely available online for LEDS implementers to use.
- **The RALI GHG MRV Harmonization Framework** provides a groundbreaking, step-by-step approach to harmonizing national and project-level GHG accounting, ensuring that countries can transparently report on progress made toward GHG commitments.
- **The NDC Toolbox** acts as a central repository of available tools, guidance documents, and case studies that can support countries in LEDS implementation and NDC enhancement.

RALI AT A GLANCE

- 5-year cooperative agreement (2014–2019)
- \$6.5 million funding
- Supported low-emissions development strategies and transparency
- Provided direct technical support to Colombia, Peru, Vietnam, and Bangladesh
- Developed globally applicable tools, resources, best practices, and case studies
- Collaborated with multiple organizations including UNFCCC, UNDP LEDS-GP, NDC Partnership, GIZ, WRI, NREL



RALI'S GUIDING PRINCIPLES

- Respond to real needs of stakeholders by adopting a demand-driven approach to ensure that project activities are of practical value;
- Form strong, collaborative partnerships to achieve common goals and enhance project sustainability; and
- Integrate capacity building across all activities to support USAID, USAID partners, and host-country governments.

- **The NDC Transparency Systems Framework** offer countries a road-map to develop sustainable, foundational systems that support the development of Biennial Transparency Reports (BTRs) under the Paris Agreement.

These innovative and cutting-edge products have substantially changed the way countries approach measuring, reporting, and verification (MRV) of GHG emissions. The CLEER Tool is used by all USAID Missions and by hundreds of LEDS implementers around the world. The GHG MRV Harmonization Framework has been showcased at multiple international conventions and conferences and has been adopted by the Government of Colombia. The NDC Toolbox has expanded to include nearly 600 resources and has been accessed by thousands of users across the globe.

RALI developed additional tools and resources to facilitate USAID and partner countries' efforts to implement LEDS. The project developed methodologies to quantify GHG reductions and other benefits, created user-friendly tools to apply the methodologies, and provided support for the use of these

tools as standard approaches to improve measuring and reporting of longer-term impacts and transformational outcomes of LEDS projects.

RALI supported countries through four primary activities:

- Developing **rigorous methodologies** for GHG MRV and related low emissions development planning and implementation
- Developing **technologies and tools** to quantify the benefits of low emission development
- Providing **technical assistance to countries** to build capacity, share resources, and create demand-driven solutions to problems countries faced in their LEDS and NDC planning and implementation
- Creating **resources** to foster effective thought leadership and disseminating information to support solutions to common challenges of countries and climate practitioners

PROJECT HIGHLIGHTS

Over its five-year lifetime, RALI helped establish a foundation for future emission reductions by building institutional capacity to quantify, plan, and reduce GHG emissions, and by creating an enabling environment for low emission development and clean, efficient energy. Some key projects and accomplishments are listed in the following section.

THE CLEER TOOL AND REPORTING SYSTEM

- CLEER was a cornerstone of the RALI project, providing a [Protocol](#) and [Tool](#) to help USAID Missions, offices, and programs quantify GHG emissions benefits from clean energy projects in a consistent, transparent, and accurate manner.
- CLEER is now used by all USAID Missions to report GHG impacts from their clean energy programs, and is freely available for the global community to use.
- CLEER addresses the needs of donors, development banks, country governments, and other stakeholders for an easy-to-use, standard methodology to calculate GHG emission reduction and energy impacts of their actions for 17 unique technology types.
- CLEER has been used by 18 USAID operating units (OUs) to model more than 4 million metric tons of CO2e reduced or avoided through clean energy actions reducing or avoiding GHG emissions.

MONITORING, REPORTING, AND VERIFICATION (MRV) HARMONIZATION FRAMEWORK

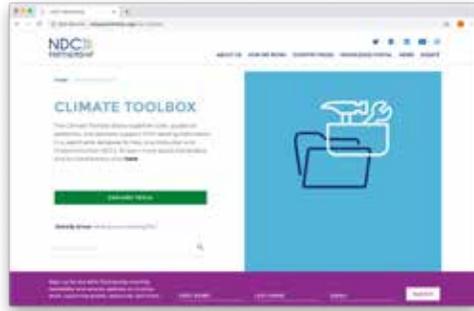


- RALI developed a first-of-its kind, step-by-step methodology for harmonizing country-level GHG emissions with project-level GHG accounting.
- The RALI GHG MRV Harmonization [Framework](#) and its supporting materials respond to a growing need for increased transparency in accounting for mitigation activities in national inventories and future BTRs.

TECHNOLOGY TYPES

General Renewables	Solar Photovoltaic	Solar Thermal	Wind Turbines
General Energy Efficiency	Geothermal Power Generation	Geothermal Direct Heat	Geothermal Heat Pumps
Fuel Switching	Hydroelectric	Biomass Energy	Anaerobic Digesters
Building Energy Efficiency	Stranded Natural Gas Capture	Appliance and Equipment Efficiency	T&D System Upgrades

NDC TOOLBOX NAVIGATOR



- RALI developed a curated web-based clearinghouse of existing tools and resources to support countries as they implement NDCs.
- At launch, the [Climate Toolbox](#) curated more than 250 tools; as of September 2019, it included nearly 600 resources.
- The Toolbox has been accessed by thousands of visitors.

DIRECT COUNTRY TECHNICAL ASSISTANCE



- RALI provided direct bilateral support to Colombia, Bangladesh, Peru, and Vietnam.
- Supporting activities focused on building capacity, sharing resources, developing practical new products, and finding solu-

tions to problems these countries faced in their planning and implementation of LEDS and NDCs.

- RALI's engagement in [Colombia](#) provided an opportunity to apply the GHG MRV Harmonization Approach and ultimately to develop the RALI GHG MRV Harmonization Framework, which can be used by other countries to improve their GHG MRV systems.

THOUGHT LEADERSHIP AND KNOWLEDGE DISSEMINATION



- RALI developed many case studies and white papers and hosted multiple webinars and trainings on topics relevant to stakeholders to expand the knowledge base of climate practitioners and increase access to that knowledge across countries and sectors.
- 31 papers and 38 blogposts were published as part of the [RALI Series](#).
- In the last six months of the RALI Series, over 3,000 users from more than 60 countries accessed the resources on the web page and made more than 1,200 downloads.

CHAPTER I: INTRODUCTION



I.1 RALI PROJECT OVERVIEW

Countries around the world are striving to develop economically while simultaneously reducing their GHG emissions, particularly after the Paris Climate Agreement. While many countries have outlined their NDCs under the agreement and have started on a low emission development path, they often lack the resources or capacity to plan and implement these strategies. To ensure continued support, these countries also may need to demonstrate the benefits of implementing LEDS and making progress on their NDCs. This task is complicated by a lack of rigor and consistency across the wide variety of approaches and tools offered by donors and other providers of international assistance.

In this context, USAID identified a common need across countries and its Missions for estimating, tracking, and documenting the impacts and outcomes of low emission development projects, policies, and capacity-building activities. USAID also noted a lack of technically rigorous approaches to low emissions development and NDC planning and implementation. While countries require approaches based on their needs and circumstances, the methods also must respond to United Nations Framework Convention on Climate Change (UNFCCC) reporting requirements and meet the needs of the global community for transparent, ambitious, and realistic commitments to GHG mitigation. Addressing these needs would contribute to the development and economic growth initiatives of developing country governments and implementers of USAID Global Climate Change (GCC)



Over the lifetime of the project (2014–2019), RALI’s mission was to accelerate developing countries’ transition to climate-resilient, low emission, and sustainable economic growth. RALI supported the technically rigorous development and implementation of LEDS by developing demand-driven tools and resources, providing technical assistance and direct country support, and forming strong partnerships that enabled tailored capacity building to support USAID staff, partners, and partner country governments. Identifying and sharing lessons learned and best practices furthered capacity-building efforts.

The standardized approaches, tools, and other outputs developed under RALI to measure and report long-term outcomes and benefits of LEDS have been adopted broadly and are publicly available for use by international climate practitioners. These resources facilitate the development of rigorous and defensible data that can be used to quantify outcomes, communicate the benefits of low emissions development, and help mobilize investments and initiatives. RALI’s efforts helped to establish the foundation for future emission reductions by building institutional capacity to quantify, plan, and reduce GHG emissions, and by creating an enabling environment for low emission development and clean, efficient energy. Ultimately, the RALI project produced transformational change and enhanced the sustainability of low emission development projects around the world.

To address these challenges, USAID and ICF initiated the Resources to Advance LEDS Implementation (RALI) project to identify the needs of USAID Missions, partner countries, and others involved in developing and implementing LEDS to better provide demand-driven technical assistance and to develop resources tailored to stakeholder needs. The project began with a focus on developing the Clean Energy Emission Reduction (CLEER) Protocol and Tool to assist USAID Missions with quantifying and reporting the benefits of their clean energy projects. Recognizing the growing interest in additional LEDS tools and resources, RALI evolved into a much broader undertaking.

I.2 RALI GUIDING PRINCIPLES

Applying a strategic and concerted approach to the design and implementation of all activities, the RALI team developed a set of guiding principles to direct its efforts and to ensure the anticipated outcomes were achieved:

- **Respond to real needs** of stakeholders by adopting a demand-driven approach to ensure that project activities are of practical value;
- **Forge collaborative partnerships** to achieve common goals and enhance project sustainability; and
- **Integrate capacity building** across all activities to support USAID, USAID partners, and host-country governments.

RESPOND TO REAL NEEDS

At its launch, RALI quickly engaged with global partnerships to understand country priority needs and the landscape of existing activities supporting LEDS. This defined the RALI engagements where the needs were best aligned with RALI's objectives, and where there was a gap in existing support.

By identifying user needs as a first step in the process of developing a product or service, the RALI team tailored its outputs to meet the demands of practitioners in the field. This significantly increased buy-in among stakeholders and partners, optimized the utility of

RALI products and services, and encouraged partnerships based on trust.

FORGE COLLABORATIVE PARTNERSHIPS

Strong, collaborative partnerships were critical to the RALI project's success. Developing long-term, effective working relationships helped the project instill trust and maintain engagement with stakeholders, contributing to greater impact and sustainability. RALI fostered these relationships through extensive consultation, stakeholder meetings, surveys, and other methods. Developing close partnerships not only allowed RALI and its partners to achieve common goals, but also offered—through the expanded expertise and perspectives of the RALI team and partners—new opportunities to pursue innovative and in-depth projects that would not have been possible otherwise.

BUILD SUSTAINED CAPACITY

RALI integrated capacity building and technical assistance across all activities to support USAID, its partners, and host-country governments. These efforts, informed by the needs expressed by partners and users of RALI products, covered activities ranging from technical training and knowledge dissemination to sharing of best practices. By offering direct support and training to partners, RALI helped local champions become LEDS experts, thereby advancing local ownership.



IMPACT

Applying RALI's three guiding principles helped catalyze LEDS implementation, enabling transformational change by empowering leaders and mobilizing communities to collaboratively envision and achieve a low emission future. RALI's principles prioritized evidence-based decision-making and increasing resources and capacity to ensure effective and lasting results. This collaborative, holistic, and multi-faceted approach allowed USAID, USAID partners, and host-country governments to enact LEDS confidently and effectively at multiple scales, and to great effect.

1.3 RALI ACTIVITIES: THE KEY PILLARS

THE RALI PILLARS

RALI's activities fell broadly into four categories: methodology development, technology and tool development, technical assistance to countries, and knowledge development and dissemination. These four "pillars" of activity encompass all the RALI project outcomes and formed the basis of support for LEDS development and implementation, as described below in the Results Framework. Chapter 2 provides detailed examples and results of activities under each pillar.

Methodology Development

Rigorous and consistent methods for GHG MRV and related low emissions development efforts are essential for effective LEDS planning and implementation. RALI's focus on methodologies originated with the development of the CLEER Protocol, which serves as a consistent, internationally accepted process for calculating GHG emissions benefits from clean energy projects. Recognizing an unmet need, and working in collaboration with practitioners in Colombia, RALI developed the MRV Harmonization Framework, a step-by-step methodology for harmonizing country-level GHG emissions with proj-

ect-level GHG accounting. RALI has broadly disseminated and promoted the use of these novel methodologies through case studies, training, and direct bilateral support to countries. These two methodologies played a central role in RALI's strategy to support low emissions development.

Technology and Tool Development

Due to RALI's focus on responding to the needs of GHG mitigation practitioners, the project developed many tools and technology platforms to address common needs and disseminated these tools to users worldwide. For the CLEER Protocol, for example, RALI developed a suite of Excel calculators and the online CLEER Tool to provide easy-to-use formats for data entry, review, and documentation of results. In addition to the CLEER Tool, the RALI team helped develop the NDC Toolbox in collaboration with the NDC Partnership and the LEDS Global Partnership (LEDS GP). The NDC Toolbox provides a searchable database of tools and guidance to support countries' NDC planning and implementation. In addition to these broad, publicly available online resources, the RALI team also developed additional, more targeted tools and calculators for quantifying the benefits of low emission development.

Technical Assistance to Countries

Direct interaction with practitioners and government staff in partner countries is often essential for building capacity, sharing resources, developing practical new products, and finding solutions to problems countries faced in their LEDS and NDC planning and implementation. RALI's most significant bilateral support was to the Government of Colombia. This year-long engagement provided an opportunity for the team to develop and test the RALI GHG MRV Harmonization Framework. It also provided mechanisms for representatives of the Government of Colombia to provide feedback throughout the methodology development process and



Figure 1. RALI's Global Engagement

encouraged ownership of the results of the collaboration. Additional bilateral support was provided to Bangladesh, Peru, and Vietnam. This work included supporting fossil fuel subsidy reform efforts in Bangladesh, reviewing and providing input on green growth and renewable energy plans in Vietnam, and applying the RALI Harmonization Framework to priority mitigation activities in Peru to ensure transparent reporting of progress toward national GHG mitigation targets. Each of these long-term engagements allowed the RALI team to build meaningful relationships with USAID staff and host-country representatives, enabling more effective implementation of activities and greater impact. Figure 1 shows RALI's broader engagement efforts across the globe. In addition to bilateral engagements, RALI offered direct technical assistance to many other countries for targeted, short-term needs.

Knowledge Development and Dissemination

The final pillar of activity under RALI involved fostering effective thought leadership

and disseminating information to support solutions to common challenges and to address questions from climate practitioners. Throughout the project, the RALI team developed many methodologies, tools, case studies, and white papers on topics that were relevant and of interest to stakeholders. These products were widely shared and promoted to USAID staff, government partners, and other stakeholders. In particular, the team developed and disseminated the RALI Series, a set of practice-based case studies and technical papers that shared examples and lessons from low emission development. In addition, the RALI team produced many knowledge products that were adopted broadly, including a paper analyzing U.S. jobs supported by the clean energy sector, fact sheets on power system resilience, and a Transparency Framework developed with input from the United Nations Development Programme (UNDP). RALI's work under this pillar expanded the knowledge base for climate practitioners and increase access to that knowledge across countries and sectors.

I.4 RESULTS FRAMEWORK AND INDICATORS OF SUCCESS

The strategy to achieve RALI’s specific objectives was grounded in the project’s Results Framework, a step-by-step framework outlining the logic to achieve the project’s highest-level goal over the span of the five-year project. RALI’s highest-level goal—the Strategic Objective in the Results Framework—was to improve USAID-supported and country-led LEDS outcomes in clean energy. The Results Framework was part of the Monitoring and Evaluation (M&E) Plan for the RALI project, which guided RALI’s

efforts and ensured the project delivered program results.

When developing RALI’s annual M&E Plan, the team struck a balance between selecting an exhaustive list of indicators requiring extensive data collection versus indicators that were simpler to track but still allowed robust evaluation of progress toward RALI’s objectives. Seven indicators were selected and tracked on a quarterly basis. Changes and improvements were documented throughout the lifetime of the project, providing ICF and USAID with a clear understanding of the results achieved as

the project progressed. Figure 2 illustrates how RALI’s pillars of work and guiding principles supported the project’s broader goals and strategic objective.



Figure 2. The Overarching RALI Framework

HIGHLIGHTS

TRAININGS

Number of USG and NON-USG staff or implementers trained in clean energy.*

GOAL

520
PEOPLE TRAINED

RESULTS

660
PEOPLE TRAINED

MATERIALS DEVELOPED

Number of Tools, Technologies, and Methodologies developed and adopted.*

GOAL

100 TOTAL
MATERIALS

RESULTS

102 TOTAL
MATERIALS

CAPACITY BUILT

Number of organizations with improved capacity to address climate change as a result of USG assistance.*

GOAL

32
ORGANIZATIONS

RESULTS

39
ORGANIZATIONS

*Results are current as of September 24, 2019.

HIGHLIGHTS

Over the course of the project, RALI exceeded its goals for the number of people trained; the number of case studies developed; the number of organizations with improved capacity; and the number of tools, technologies, and methodologies developed. Key project results based on RALI's indicators are shown below; a more detailed explanation of RALI's M&E Plan and Results Framework is provided in Chapter 4: Indicators and M&E.

1.5 RALI PROGRAM MANAGEMENT

The ICF RALI team was led by Project Director Marian Van Pelt and supported by John Venezia, deputy project director and GHG mitigation expert. Additional key staff included Derina Man (NDC Specialist), Craig Schultz (Clean Energy Expert), and Matt Boyer (International Operations Specialist). A number of technical experts and additional support staff contributed to RALI content development, project and partner support, training efforts, and other outcomes. The RALI team and organization are shown in Figure 3.

In addition to ICF staff, other stakeholders working on low emission development and NDCs were engaged for many of the RALI priorities, including the World Resources Institute (WRI), the NDC Partnership, the Initiative for Climate Action Transparency (ICAT), the C40 Cities Climate Leadership Group (C40), the Greenhouse Gas Management Institute (GHGMI), the National Renewable Energy Laboratory (NREL), Climate and Development Knowledge Network (CDKN), and LEDS GP. RALI worked with these groups to coordinate on activities, identify gaps that should be addressed, and leverage resources to ensure that project activities were pursued in a cost-effective manner.





Figure 3. RALI Organization Chart

CHAPTER 2: PROJECT ACTIVITIES AND RESULTS



As mentioned above, four pillars of work supported RALI’s strategic objective to improve USAID-supported and country-led LEADS outcomes in clean energy. This chapter describes the primary activities conducted under each pillar, including specific objectives, key impacts, future opportunities, and sustainability efforts.



2.1 METHODOLOGIES

SUMMARY

The methodologies that RALI developed formed the backbone of many strategies to support low emissions development. Through the development and adoption of the CLEER Protocol and MRV Harmonization Framework, RALI engaged with stakeholders, identified user needs, and addressed needs through developing materials for effective LEDS planning and implementation.

OBJECTIVES

- Address the need for user-friendly and accessible guidance documents and methodologies for MRV harmonization, GHG accounting, and air quality programming
- Engage with stakeholders during the developmental stages of these methodologies through trainings, conferences, presentations, and Spark Sessions to ensure accuracy and accelerate momentum for the widespread adoption of these resources

KEY IMPACTS

- The RALI GHG MRV Harmonization Framework and sector-specific documents respond to a growing need for increased transparency in accounting for mitigation activities in national inventories and future biennial transparency reports
- The CLEER Protocol provides a set of standardized methodologies and data sets for GHG accounting of 17 technologies
- RALI presented on the Harmonization Framework and CLEER Protocol at more than 10 trainings, conferences, and engagement opportunities
- The Air Quality “Building Blocks” provide a high-level foundational framework to support future USAID air pollution control programming

SUSTAINABILITY

- The long-term sustainability of the CLEER Protocol was enhanced by the expansion of the CLEER Protocol into a suite of CLEER Excel calculators and the web-based CLEER Tool. These resources made the Protocol more accessible, implementable, and customizable based on users’ needs
- Consistent engagement through trainings, conferences, and webinars, combined with RALI’s engagement with in-country implementers, has helped ensure the long-term sustainability of the MRV Harmonization Framework

MRV HARMONIZATION FRAMEWORK

As countries ramp up climate action, Parties will need to reconcile the various MRV systems being used for different policies and measures to ensure that emission reductions are captured in national GHG inventories. National inventory reports are the foundational instrument for tracking progress toward NDCs under the Paris Agreement; all countries will thus need to ensure that their GHG accounting is sufficiently rigorous to communicate mitigation results. If national inventories do not reflect the full extent of mitigation activities, national emission trajectories may not demonstrate progress toward a country’s NDC target (see Figure 5).

The RALI team, building on an engagement with the Government of Colombia, developed the [RALI GHG MRV Harmonization Framework](#) (“Harmonization Framework”), which provides comprehensive guidance for GHG inventory teams and mitigation project implementers. The Harmonization Framework is a six-step process that describes how a practitioner would align MRV methods for GHG mitigation activities (i.e., “bottom-up” GHG accounting) with national GHG emission inventories (i.e., “top-down” GHG accounting) (see Figure 4).

The Harmonization Framework describes an approach for users to identify accounting discrepancies, understand why these discrepancies are occurring, set priorities to address the most significant issues, and implement a plan to resolve these problems. Importantly, the Harmonization Framework is designed be a sustainable, “turn-key” approach that allows mitigation activity and emission inventory teams to continuously improve their GHG accounting.

After developing the Harmonization Framework, RALI created two supplementary documents that provide concrete examples of how to apply the Harmonization Framework to mitigation activities within the [Agriculture, Forestry, and Other Land Use \(AFOLU\) sector](#) and the [Energy sector](#).

Impact

The Harmonization Framework is informed by a variety of resources used to support GHG accounting, including the GHG Protocol’s Policy and Action Standard and Intergovernmental Panel on Climate Change (IPCC) Guidelines. However, because the Framework is a first-of-its kind approach (by linking MRV with national inventories), it is conceptually different from existing GHG MRV resources in the LEDS and NDC communities. This presented some expected

RALI partnered with the Government of Colombia to analyze its GHG MRV systems for livestock and renewable energy mitigation activities. RALI used this experience to refine the Harmonization Framework and develop guidance for its application by other countries seeking to improve their GHG MRV systems.



Figure 4: RALI GHG Harmonization Framework

developmental challenges as the RALI GHG accounting team thought through the design of the Framework. RALI leveraged its GHG accounting expertise and its on-the-ground experience in Colombia and other countries to surmount conceptual barriers and develop a technical guide that is instructive and general enough for a range of climate change practitioners and multiple applications.

The Harmonization Framework offers several advantages for decision-makers and climate change practitioners and has demonstrated its value through Colombia’s adoption. Among other benefits, the Framework positions countries to demonstrate progress toward their NDC target and meeting their reporting obligations under the Paris Agreement, improves the accuracy of GHG emissions reporting, supports increased access to financing for mitigation activities,

and enables decision-makers to prioritize mitigation investment and resources for MRV improvements.

Through stakeholder engagement, participation in international conferences, bilateral support to Colombia, and collaborations with other organizations, RALI identified common needs related to transparency and MRV harmonization. RALI responded to these demonstrated needs by developing and deploying the Harmonization Framework and sector-specific guidance documents, and by creating and presenting a descriptive [webinar](#). RALI has given presentations on the need for MRV harmonization at multiple events, including:

- Latin American and Caribbean Low Emissions Development Strategies (LAC LEDS) regional meeting in Mexico City, Mexico

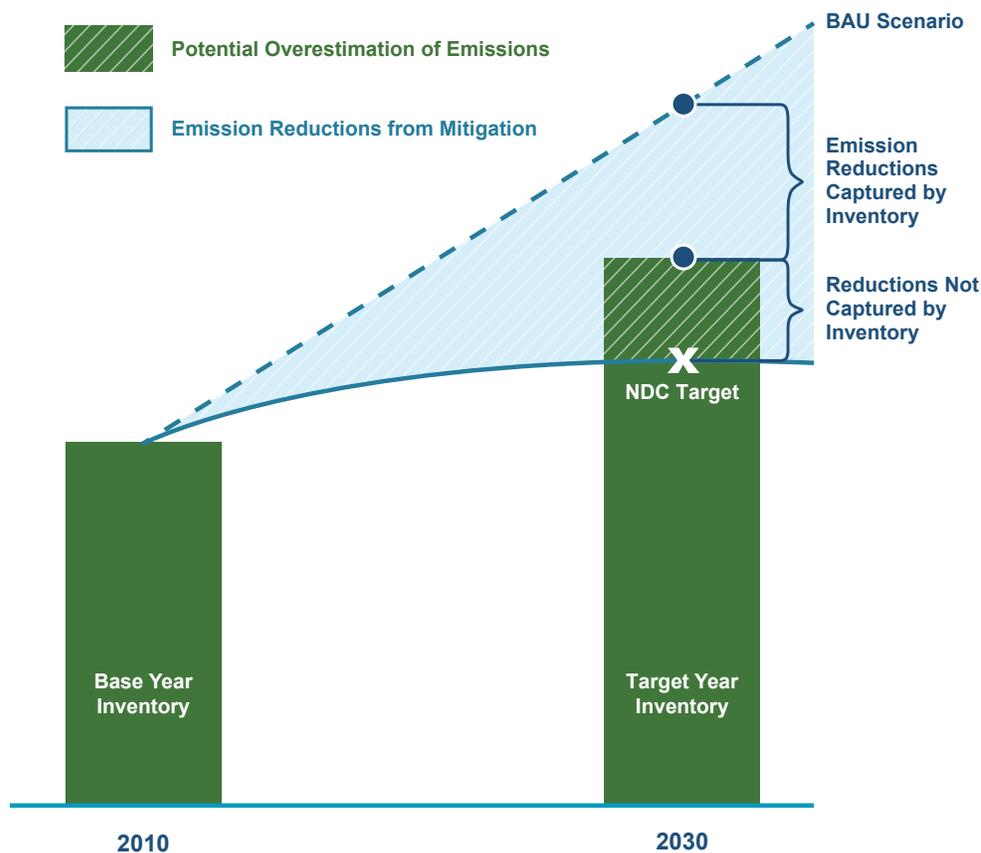


Figure 5: Capturing GHG Accounting Discrepancies

RALI developed English and Spanish versions of the Harmonization Framework, along with three sector-specific guidance documents for the Agriculture and Energy sectors and for subnational mitigation activities. These resources are located on <https://www.climatelinks.org/projects/rali>.

- Global NDC Conference in Bonn, Germany
- Conference of the Parties (COP23) in Bonn, Germany
- Pacific Alliance MRV Working Group meeting, in Santiago, Chile
- Low Emissions Development Strategies Global Partnership webinar

By showcasing the Framework at these events, many practitioners from many countries have been exposed to its benefits. These events also led to new direct country work with Peru.

RALI created two supplementary documents that provide concrete examples of how to apply the Harmonization Framework to mitigation activities within the Agriculture, Forestry, and Other Land Use and the Energy sectors. These supplements assist practitioners in implementing the Framework in their work, translating a concept into a tangible practice.

Future Opportunities

By raising awareness about the Harmonization Framework across multiple avenues, RALI has accelerated momentum for its incorporation among interested stakeholders. With the support of new donor funding, the Harmonization Framework can be applied in countries repeatedly after the RALI project concludes. For example, Colombia has incorporated the Framework as a primary methodology of its National Plan, which will propel the Framework's continued use in future years. Highlighting the success of the Framework in Colombia may lead to additional countries or organizations adopting the Framework. The ICF RALI team has also incorporated the Harmonization Framework in its proposals for future work that would continue after the conclusion of the RALI project.

Sustainability

The Harmonization Framework was designed to be a sustainable approach, as it allows inventory teams to continuously improve their GHG accounting without external support from RALI. Stakeholders can apply the Framework continually to improve the transparency, completeness, and accuracy of a national inventory; strengthen institutional arrangements with data providers; and establish institutional arrangements with MRV stakeholders to harmonize GHG accounting to demonstrate mitigation impacts through national inventory results.

RALI developed the Harmonization Framework using an interactive PDF, which provides a balance of interactive user experience with accessibility. The interactive PDF format provides navigation and tooltips in the document, which mimics the experience of a website, without the need for long-term web hosting. The PDF format also allows users to transmit and download the content, making it more accessible for users who may not have reliable internet access. The core RALI GHG MRV Harmonization Framework was also developed in Spanish to increase the accessibility of the product to the LAC region.

RALI has promoted the GHG MRV Harmonization Framework as a fundamental process for countries to implement in accounting for their mitigation actions in their national GHG inventories. RALI has presented the Harmonization Framework at events and promoted it through blogs, case studies, and webinars in networks such as the LEDS GP, NDC Partnership, Climatelinks, climate listservs, Asia LEDS, Africa LEDS, the Green Growth Knowledge Platform, The Partnership for Transparency on the Paris Agreement (PAPTA), and others.

LESSONS LEARNED AND RECOMMENDATIONS

MRV Harmonization Framework

RALI implemented a needs-driven approach by responding directly to country needs and building partnerships through robust stakeholder engagement. This approach drove the development, revision, and adoption of the MRV Harmonization Framework and has ensured that it will be an accessible resource for users. Finding an appropriate balance between a technically rigorous methodology and an easy-to-use framework was a design challenge, but through thoughtful stakeholder engagement and pilot-testing RALI was able to achieve both objectives. RALI recommends a similar approach when developing future tools or guidance documents to support GHG MRV.

CLEAN ENERGY EMISSION REDUCTION (CLEER) PROTOCOL

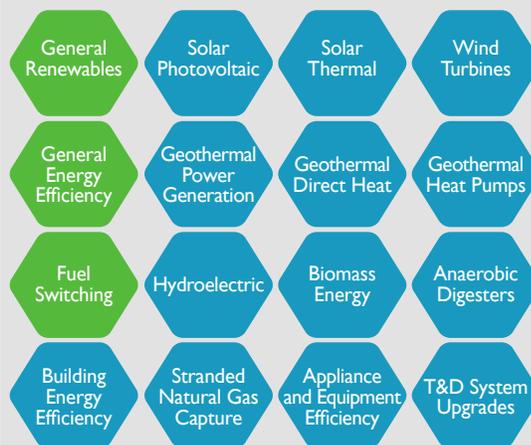
As one of the earliest priorities of the RALI project, the effort to develop the CLEER Protocol was a multi-year endeavor based on a need for user-friendly and accessible methodologies to estimate the GHG benefits of clean energy programs and projects. USAID developed the CLEER Protocol as a standardized set of guidelines for USAID Operating Units (OUs) to follow when reporting on climate change mitigation outcomes of their clean energy activities. The CLEER Protocol is aligned with rigorous international GHG accounting standards while facilitating straightforward implementation of GHG accounting.

The Protocol includes methodologies (focused on step-by-step processes and equations), emission factors, and default datasets to aid users in estimates the impacts of their projects. The Protocol includes three generalized methodologies for renewable energy, energy efficiency, and fuel switching, as well as 14 methodologies for specific technologies including:

- Solar photovoltaic (PV)
- Solar thermal
- Wind turbines
- Geothermal power generation
- Geothermal direct heat
- Geothermal heat pumps
- Hydroelectric
- Biomass energy
- Anaerobic digesters
- Building energy efficiency
- Appliance and equipment efficiency
- Standard natural gas capture
- Transmission and distribution upgrades
- Regularization of Unauthorized Electricity Connections

RALI obtained WRI's "Built on GHG Protocol" mark for the CLEER Protocol, signaling to the climate practitioner community that the methodologies and processes included in the Protocol were rigorously vetted by external experts.

TECHNOLOGY TYPES



Case studies featuring the use of the CLEER Protocol and Tool on projects such as anaerobic digesters in Mexico, industrial energy efficiency improvements in Bangladesh, and renewable energy in El Salvador are available on [Climatelinks](#).

The Protocol earned the WRI “Built on GHG Protocol” mark in 2016, which recognizes excellent GHG accounting resources development in conformance with the world’s most widely used GHG accounting standards.

Impact

The CLEER Protocol was developed in collaboration with USAID using a demand-driven approach to enable USAID programs and country partners to track GHG emissions benefits from USAID clean energy activities, while being applicable and comparable across project types, regions, and policy frameworks. The Protocol has succeeded in helping USAID and other stakeholders (such as donor organizations, researchers, and the private sector) streamline their GHG reporting, identify high-impact GHG activities, and reduce the burden of estimating the benefits of mitigation actions. More specifically, the CLEER Protocol has provided a consistent, accurate, and accessible process for USAID programs to monitor, evaluate, and report on their clean energy activities to support agency-wide indicator reporting. Development of the CLEER Protocol led to the creation of the CLEER Tool, which allows OUs and other users to easily apply the Protocol, and is discussed further in Section 2.2.

Finding an appropriate balance between a technically rigorous set of methodologies and an easy-to-use framework proved challenging, and demonstrating that the CLEER Protocol was consistent with applicable international standards required significant effort to ensure that the methodologies were accurate and to gain buy-in from stakeholders.

Sustainability

The original objective of the CLEER Protocol was to provide USAID OUs and their implementers with methodologies to help them to estimate and report current and future GHG impacts of clean energy activities in a consistent, transparent, and accurate manner. The long-term sustainability of the Protocol has been enhanced by two events: First, by earning the World Resources Institute’s “Built on GHG Protocol” mark in 2016, the CLEER Protocol was recognized for excellence and conformance with the world’s most widely used GHG accounting standards. Second, the adoption of the CLEER Tool within and outside USAID ensures that the Protocol will remain relevant, as it is the foundational reference document supporting the CLEER Tool.

LESSONS LEARNED AND RECOMMENDATIONS

CLEER Protocol

Adopting a user-driven approach allowed the RALI Team to focus on the areas that would be most impactful to USAID OUs and implementers: the technical quality of the GHG methodologies in the CLEER Protocol and the accessibility and user-friendliness that helped make GHG accounting something that could be accomplished by any program, within or outside of USAID. This approach also helped the RALI Team realize that the CLEER Protocol needed user-friendly tools to help stakeholders implement the Protocol’s methodologies. RALI recommends following a user-focused approach in developing future products and creating tools (when applicable).

AIR QUALITY BUILDING BLOCKS

In response to a request from USAID HQ, RALI developed a set of Air Quality Management Building Blocks, which describe foundational capacity, technology, and technical conditions that need to be in place for successful air quality management programs. The Building Blocks concept is based on similar, successful USAID efforts for renewable energy and energy efficiency programming and adopts a “theory of change” framework. The Building Blocks provide a framework for USAID Missions to engage in conversations with countries on potential interventions that USAID could support to advance air quality improvements.

Impact

RALI convened a facilitated workshop focused on defining USAID’s program objectives and needs. Building from this direction, RALI conducted research to understand what types of interventions can produce near-term air quality improvements that align with USAID’s objectives. Based on these findings, RALI developed Building Blocks that describe the foundational elements that a country would need to establish successful programs. These foundational elements provide USAID with potential points of intervention that could be considered, depending on the maturity of a country’s existing air quality programming. Although USAID has provided support on indoor air quality initiatives, there has been limited to no recent activity that encompasses both

indoor and ambient air quality issues and how they interact with human health. The Building Blocks provide a framework to guide mission discussions toward potential program design.

Future Opportunities

This air quality and human health request required cross-sectoral engagement both for USAID and the RALI team. Coordination across the multiple parties to brainstorm and collect the diversity of expertise and input was challenging and required multiple follow-up conversations. At the same time, the development of the Air Quality Management Building Blocks presented an opportunity to develop a framework for more holistic programming that goes beyond just GHGs to encompass quality of life and human health. Programming in this intersection presents the opportunity not only to address NDC targets, but also to help meet the UN’s Sustainable Development Goals.

Sustainability

RALI developed the foundational framework to be a starting point for USAID air quality programming efforts. The identified Building Blocks represent the initial conditions that should be considered regardless of the specific circumstances of USAID programming. Therefore, this framework can be continuously referenced and adapted by users without additional interventions by RALI. RALI developed the Building Blocks in close coordination with USAID; this co-creation approach helped ensure that the product was aligned with the needs of USAID and will continue to be used after the end of RALI.

RALI adopted a co-creation approach with USAID to developing the Air Quality Management Building Blocks. RALI engaged with the USAID team through meetings, phone conversations, and a Spark Session to define the program needs and ultimate output for this effort.

2.2 TECHNOLOGY AND TOOL DEVELOPMENT

SUMMARY

The development of technology and tools has been a key focus of RALI since its inception. Many of the methodologies described in the section above were transitioned into user-friendly tools, the largest of which was the CLEER Tool. Other tools, such as the NDC Toolbox, Barriers Approach, CEP Model, and Projections Calculator, are useful for climate practitioners working on low emission development strategies. The tools help with decision-making, planning, reporting, and knowledge sharing.

OBJECTIVES

- Develop demand-driven tools to ease the burden of low emission development strategy implementation for practitioners
- Provide user-friendly, technically rigorous methodologies and interfaces
- Develop tools to calculate GHG impacts of capacity building efforts, energy supply and demand scenarios, and long-term clean energy activities

KEY IMPACTS

- The online CLEER Tool includes 17 unique technology types for users to estimate GHG emissions reduced or avoided
- The NDC Toolbox Navigator aggregates existing resources and enables countries to better identify tools that will meet their needs
- The Barriers Approach, CEP Model, and Projections Calculator provide specialized calculations for calculating GHG emissions reduced or avoided from various types of activities

SUSTAINABILITY

- The CLEER Tool and NDC Toolbox were both developed with the long-term intention of being freely available online, including through partnerships with third parties such as the NDC Partnership for the Climate Toolbox
- Extensive efforts were undertaken to establish a long-term use base for the CLEER Tool

In 2019, the Power Africa team used the CLEER Tool to estimate that its projected emissions reduction from 2018 to 2030 (from 28 clean energy projects) was 54 million tons of CO₂e—roughly equivalent to taking 11.5 million cars off the road for one year.



POWER AFRICA TRAINING

The RALI Team conducted multiple meetings and trainings, including this one in South Africa, to provide tutorials on the CLEER Tool and discuss GHG tracking and indicator reporting.

CLEER TOOL

RALI developed the CLEER Tool to address challenges faced by USAID clean energy programs when estimating their GHG mitigation benefits. When programs used different methods to estimate mitigation benefits, it rendered comparisons across project types, regions, and policy frameworks challenging and ineffective. The CLEER Tool addressed these challenges by standardizing the methodology for estimating mitigation benefits from USAID clean energy programs.

The CLEER Tool is a user-friendly calculator that enables users to calculate emissions reduced or avoided from clean energy activities. The CLEER Tool is based on the CLEER Protocol and uses up-to-date methodologies and emissions factors from the IPCC, the GHG Protocol, and other internationally accepted guidance for estimating GHG emissions and reductions. The tool helps users to:

- Estimate, track, and report GHGs reduced or avoided from clean energy;
- Estimate and project the amount of energy generated or saved from clean energy activities;
- Identify high-impact activities with cost-effective GHG reductions;
- Evaluate the emissions reduction potential of planned activities and possible alternatives; and
- Estimate projected GHG emissions reduced or avoided to 2030.

Impacts

The tool currently includes 17 unique technology types for which users can estimate projected reductions or avoidance of GHG emissions through 2030. The CLEER Tool has been used by 18 USAID OUs to model more than 4 million metric

tons of CO₂e reduced or avoided through clean energy actions. RALI also developed and delivered the CLEER Tool Newsletter to nearly 400 recipients, including CLEER users, relevant stakeholders involved in low emissions development, and attendees of past webinars and trainings.

The development of the 17 technology-specific calculators required extensive stakeholder outreach, testing, and coordination. While beneficial, this level of stakeholder buy-in created challenges with determining priorities for functionality rollouts. Challenges with efficient web tool development in early months of the effort resulted in efficiency gains and lessons learned, which allowed for faster development and deployment of later technology workflows.

RALI engaged with several stakeholders and potential users of the CLEER Tool from Europe and Eurasia, Afghanistan, El Salvador, Peru, and Honduras who provided valuable feedback that informed new or revised requirements for the CLEER Web Tool and the Excel Calculators. This outreach resulted in overall improvements to the Tool's capabilities.

To support the use and reporting of the Tool and other RALI GHG accounting products, RALI trained 660 people in clean energy over the course of five years. Twenty-nine USAID Missions pilot-tested the CLEER Tool and 18 total USAID Missions used the CLEER Tool to report emissions.

Sustainability

Given the resources needed to build the CLEER Tool and the team's intention for the Tool to serve as a freely available resource for any stakeholders hoping to measure the GHG impacts of clean energy activities, long-term sustainability was a serious consideration.

Initial efforts to ensure sustainability of the CLEER Tool focused on building a strong, long-term user base that would continue to use the Tool for GHG accounting and project planning purposes long after the end of the RALI project. This user base currently consists of USAID stakeholders as well as non-profit, private sector, and university users. The RALI team also conducted outreach to build and strengthen the user base, including publishing user guides and case studies, targeting specific organizations

to advertise the CLEER Tool, and holding virtual trainings for users around the world.

In addition to building a user base, the team focused on ensuring that the CLEER Tool will always have a home as a publicly and freely available web tool, regardless of whether the tool continues to live with USAID, ICF, or a different partner. These efforts to secure long-term commitments and funding for the CLEER Tool aim to ensure that the tool can continue to provide positive impacts for users.

LESSONS LEARNED AND RECOMMENDATIONS

CLEER Tool

By engaging in stakeholder outreach the RALI team ended up having to manage and respond to multiple sources of feedback, which greatly expanded the original scope of the project. While gathering and analyzing extensive stakeholder feedback was complicated and finding the appropriate balance between a tool that was user-friendly yet technically rigorous was a challenge, these efforts resulted in a well-designed tool that achieves the needs of many various users. In the future, a standardized template for engaging stakeholders may be an effective way to minimize feedback review time. Furthermore, RALI recommends implementing a buffer in the timeline to conduct stakeholder outreach in future projects.

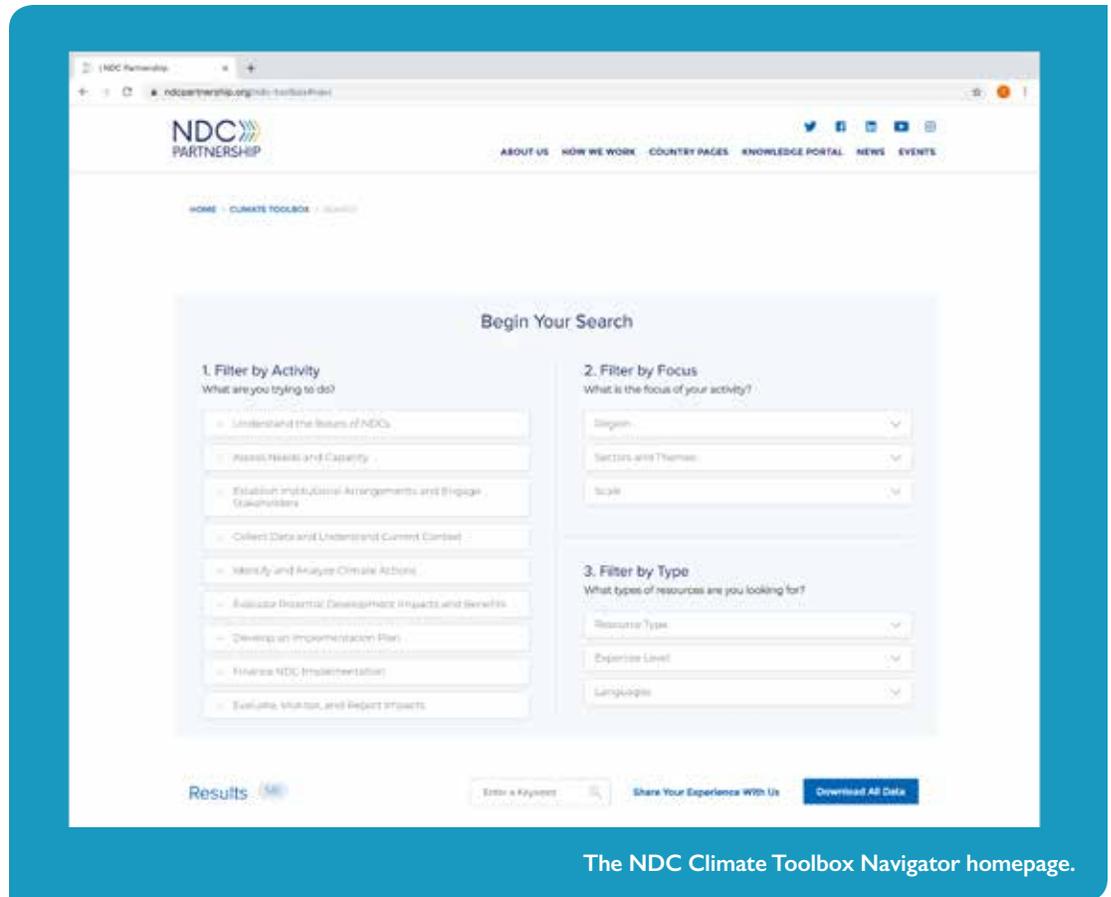
NDC TOOLBOX

In conjunction with the NDC Partnership—a collaborative initiative among countries, international institutions, and others to catalyze NDC support and implementation—RALI developed a curated web-based clearinghouse of existing tools and resources to support countries as they implement NDCs. RALI co-led the development of the NDC Toolbox Navigator by identifying relevant tools and resources, cross-cataloging for searchability based on potential country need, engaging stakeholders to provide input

on the draft tool and using this feedback to improve the Toolbox, and supporting stakeholders and developing country partners in using the Toolbox. RALI tested the Toolbox at COP22 in Marrakesh, Morocco in 2016 and officially launched it in May 2017.

The NDC Toolbox aggregates existing resources and enables countries to identify tools that will most effectively meet their needs across a variety of topics, including adaptation, mitigation, climate finance, co-benefits, and other cross-cutting topics related to NDCs.¹

¹Following its initial launch, the NDC Partnership rebranded the NDC Toolbox as the Climate Toolbox.



The NDC Climate Toolbox Navigator homepage.

Impact

The Toolbox enables users to explore the current landscape of tools by providing a curated set of tools and resources and connecting users to other existing knowledge platforms that have a regional, topical, or climate-related focus. Additionally, the Toolbox highlights sources of advisory support and expertise that can help practitioners learn how to use the tools. Finally, the Toolbox provides experience profiles (i.e., brief summaries) from individuals or organizations describing their experience using a specific tool or resource.

RALI relied on robust engagement with external partners, including through a Navigator Working Group, which included the following partners:

- NDC Partnership Support Unit, including:
 - German Federal Enterprise for International Cooperation (GIZ),
 - UNFCCC Secretariat, and
 - WRI
- Government of Morocco
- Low Emissions Development Strategies Global Partnership (LEDS GP)

This Working Group worked collaboratively to develop a comprehensive directory of resources for the Toolbox.

At launch, the Toolbox curated more than 250 tools. RALI also [introduced](#) the Toolbox during a webinar in June 2017. As of August 2019, the [Climate Toolbox](#) included 580 resources. In 2018, the Toolbox had 8,390

unique visitors from across the globe and 15,056 unique page views.

Sustainability

The NDC Partnership is a long-term initiative to provide countries with the resources they need to implement their NDCs. RALI worked collaboratively with the NDC Partnership to ensure that the NDC

Toolbox would continue to be maintained by the NDC Partnership as part of its Climate Toolbox after RALI involvement ended. Users can continue to submit additional tools or resources to be included in the Toolbox, ensuring the resource remains useful in informing future knowledge-sharing efforts.

LESSONS LEARNED AND RECOMMENDATIONS

NDC Toolbox

The primary challenge associated with developing the NDC Toolbox was identifying and accurately cataloguing all of the tools and resources available. RALI recommends that robust engagement with external partners be pursued when developing similar resources.

The NDC Toolbox project has been maintained and expanded absent additional interventions from RALI. This sustainability is particularly important given the constant development of new tools and resources to support countries as they implement their NDCs. For any similar project developed to catalogue resources in a rapidly evolving field, RALI recommends proactive planning to ensure funding and a process for updating the tool to include new developments.

BARRIERS APPROACH, CEP MODEL, & PROJECTIONS CALCULATOR

In addition to the methodologies and tools discussed above, the RALI team developed several smaller-scale but sophisticated Excel tools to help quantify the benefits of climate change mitigation activities to support low emissions development planning. These included the Barriers Approach, the Clean Energy Projections (CEP) Model, and the Projections Calculator. Each of these tools is described below.

Barriers Approach

The Barriers Approach is a guidance document and Excel tool that provides

USAID and other stakeholders with a methodology to help quantify the potential projected benefits of capacity-building efforts in the energy sector. It should be noted that confidently estimating future impacts from capacity-building activities is quite challenging; USAID and other donors have attempted to develop methods to do this for various types of programs, but it remains a nascent area. However, due to the extent to which many of USAID's clean energy programs include capacity building, there is a clear need to help practitioners understand the potential benefits.

The Barriers Approach guidance and tool were developed to support decision-making on program priorities, communicating

program benefits, and supporting USAID indicator reporting. A 2016 analysis by the RALI team determined that approximately one-third of USAID climate change activities centered around capacity building, but without any quantified impacts. The Barriers Approach served as an additional tool for RALI's climate practitioners' toolkit, which already included the CLEER Tool but did not have a standardized, simple tool for measuring difficult-to-quantify impacts. The Barriers Approach builds on concepts from the GIZ's Barriers-to-Objectives Weighting Model, which describes considerations

for accounting for the impacts of capacity building, but without a quantification of impacts.

Figure 6 below shows the basic methodology behind the Barriers Approach, as well as how it was applied to an example case study in Indonesia. The tool's methodology focuses on defining the barriers that are impeding a program goal, assigning each barrier a weight (up to 100 percent), and identifying which barriers the capacity-building activities helped to overcome (and by how much).

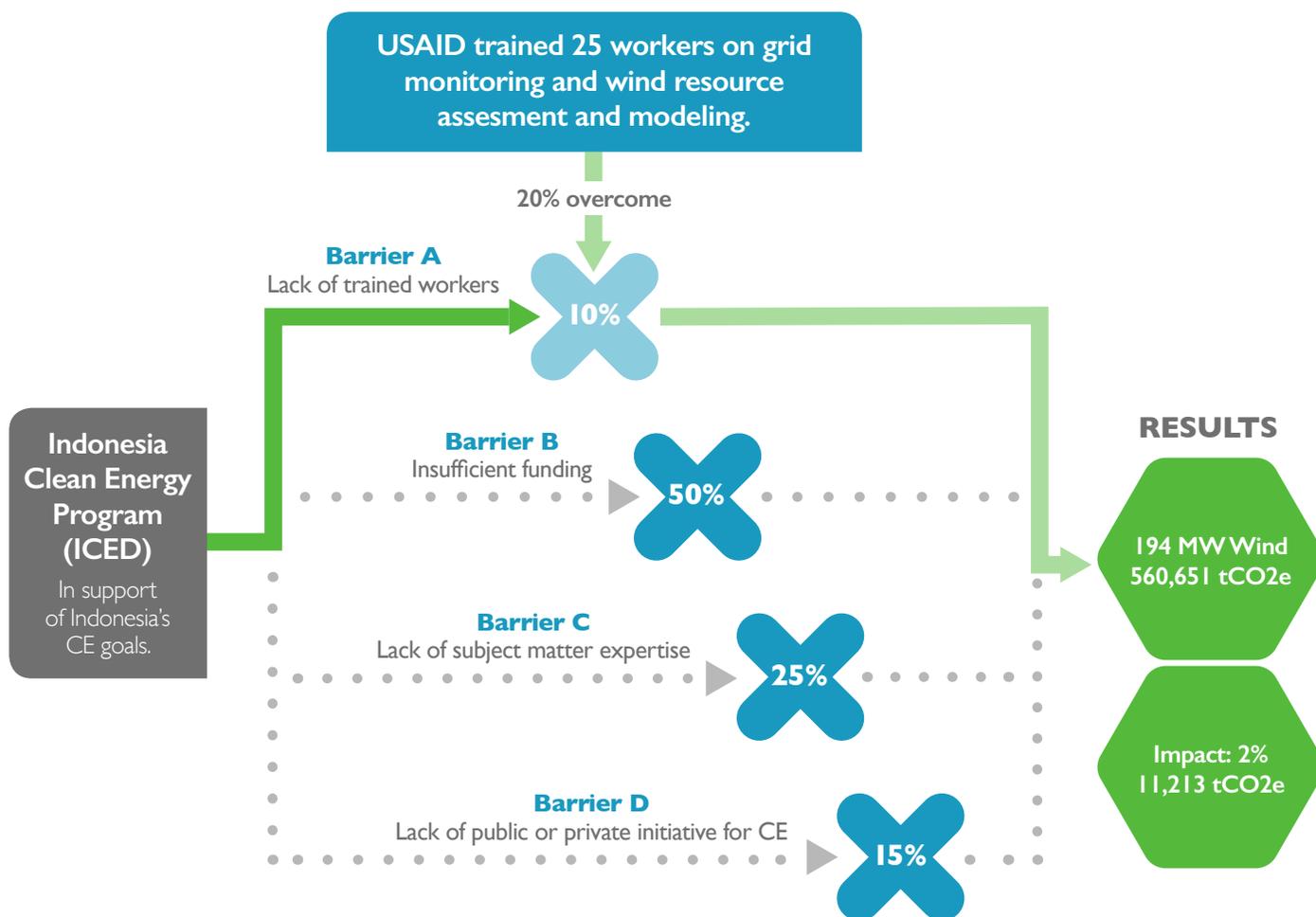


Figure 6: Barriers Approach Schematic for Indonesia

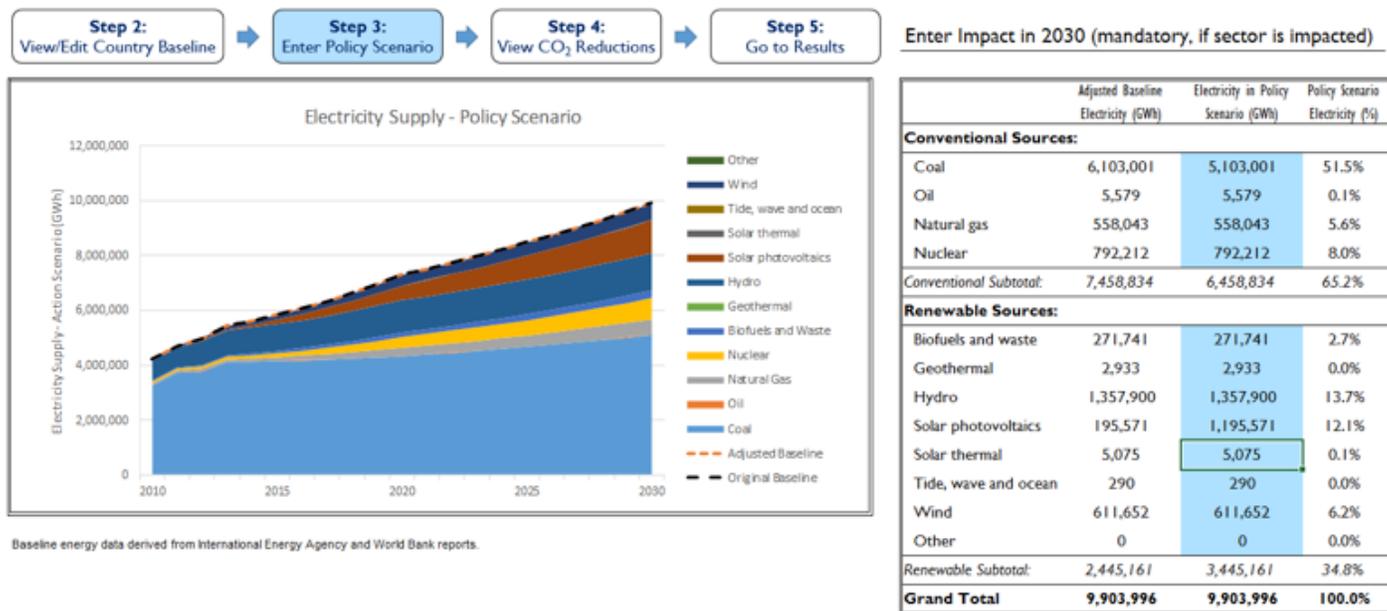


Figure 7: The CEP Model

CEP Model

The CEP Model (beta version) enables users to develop country-level energy supply and demand scenarios and to estimate projected GHG impacts through 2030 under a range of policy scenarios or GHG targets. The CEP Model was developed to assist USAID Missions and implementers that are considering which energy sectors to target with their programming and to help them understand the potential GHG and energy impacts of their policies and goals at the national level. The CEP Model provides users with projections of country-level energy supply in two sectors (electricity and heat), and energy demand in six sectors (industrial, transport, residential, commercial, agriculture, fishing and forestry, and other). The model benefits users by allowing them to quantify and compare the long-term GHG emissions impacts of different large-scale clean energy policies or goals (see Figure 7). This information allows policymakers to understand which policies would have the greatest impact, and make

informed decisions weighing those impacts against other considerations such as cost and effort.

CLEER Projections Calculator

The Projections Calculator was developed to help users quantify reduced and avoided long-term GHG emissions from investments in clean energy activities by USAID or other stakeholders. The tool supports ex-ante and ex-post decision-making, USAID indicator reporting, and communication of the long-term results of different programs. The Excel version of the tool can be used to calculate GHG emissions projections from renewable electricity generation, fuel switching, and energy efficiency activities; however, the web tool incorporates the projections functionality for all 17 technologies. Similar to the CLEER Tool, the Projections Calculator is technically rigorous and applies GHG accounting methodologies in line with international standards. Its front-end functionality matches the user-friendly design approach of the CLEER Excel tools.

The Projections Calculator formed the basis for the projections functionality in the CLEER Tool. This illustrates the coordinated interplay across tools developed by RALI, many of which were strongly related.

Impact

The Barriers Approach provides a framework for practitioners to consider the potential magnitude of impacts that capacity building could have, and enables practitioners to compare estimates of potential impacts of alternative interventions. As this is a nascent area, no approach or tool was available to allow users to do this type of assessment. Application of this approach and tool allows USAID to understand the potential GHG and energy impacts of capacity-building interventions, and inform decisions related to which types of programs or projects could have the greatest impact.

To better estimate and report the long-term benefits of clean energy projects, USAID established a new indicator, Indicator EG.12-7, which requires Missions to calculate the projected 30-year GHG emission reductions of projects. However, Missions did not have the means to estimate these long-term projections. To address this need, RALI provided methodologies (the CLEER Protocol) and tools (CLEER Tool) to help OUs and implementers generally, and the CLEER Projections Calculator specifically. Before the Projections Calculator was developed, no Missions were reporting on long-term GHG impacts; since its introduction the number of Missions reporting on Indicator EG.12-7 has grown to 15.

Future Opportunities

The Barriers Approach was a challenging tool to develop because its purpose is to help practitioners quantify the potential future GHG impacts of interventions that, by themselves, do not result in direct GHG emission reductions (e.g., training solar installers or increasing access to finance). As such, the Barriers Approach does not provide emission reduction estimates at the same level of technical rigor as the CLEER Tool and the results should not be used for official projected reductions. As noted above, this tool provides a foundation for USAID to begin to do these types of assessments and to compare potential future impacts across a range of potential interventions to inform decision making.

USAID OUs and in-country partners working on clean energy often need easy-to-use, high-level tools to help them identify which sectors offer the best opportunities to focus efforts and investments. The CEP Model provides these decision makers a tool to estimate future impacts of different energy policies at a broad, national scale. Currently, the CEP Model includes data for 18 countries; this could be expanded if there were demand from additional OUs. Other countries could use the model as a template for creating their own models, and adapt it to their specific needs and contexts.

Sustainability

Capacity building is a critical component to USAID engagements around the globe. To date, the future impacts of these engagements are rarely estimated quantitatively. The Barriers Approach not only gives the agency a methodology to do this for GHG and energy impacts related to clean energy programs, but the framework could be applied to other resource areas as well. Quantitative estimates can be particularly valuable for informing decision about the types of programs or investments to undertake, as well as M&E reporting to understand the potential impacts that the agency is having at a country level and worldwide.

The Projections Calculator was initially constrained by some of its features, but this constraint allowed the team to see that the calculator would be put to better use by the community if it were incorporated into the web-based CLEER Tool as a new functionality, allowing for both ex-ante and ex-post GHG calculations within the CLEER Tool. This example highlights how RALI continued to evolve and connect its work products and expand their functionality and power; it also emphasizes how future USAID programs can build on and connect seemingly distinct projects.

LESSONS LEARNED AND RECOMMENDATIONS

Barriers Approach, CEP Model, & Projections Calculator

As in many of RALI's other endeavors, listening to the needs of the community and following a demand-driven workplan allowed RALI to recognize when tools or activities would or would not benefit the low emission development community. RALI developed these tools to support community needs, but when it became clear that the relevant stakeholders needed something slightly different RALI shifted its focus to developing tools, methodologies, and support that low emission development community would more actively use and benefit from.

2.3 DIRECT TECHNICAL ASSISTANCE TO COUNTRIES

SUMMARY

Direct support to countries was a key component of the RALI project and was essential to building capacity, sharing resources, developing practical new products, and finding solutions to problems countries faced in their LEDS and NDC planning and implementation. RALI provided bilateral support to Colombia, Bangladesh, Peru, and Vietnam.

OBJECTIVES

- Facilitate interactions with government staff and other in-country stakeholders to develop sustainable solutions to problems these countries faced in their LEDS and NDC planning and implementation
- Forge strong, collaborative partnerships with in-country stakeholders

KEY IMPACTS

- A year-long engagement with the Government of Colombia to advance the country's GHG MRV systems
- An M&E framework for Vietnam's National Renewable Energy Development Strategy Action Plan (REDSAP) and a development framework for the Green Growth Action Plan (GGAP)
- An analysis of the impacts of fossil fuel subsidies, with a focus on their effects on clean energy deployment in Bangladesh
- Support to Peru in response to its direct request for MRV support to incrementally improve the country's national inventory and NDC reporting

SUSTAINABILITY

- Using the Harmonization Framework Guidance document and SINGEI prototype developed by RALI, the Government of Colombia will be able to continuously improve its GHG MRV Systems
- The M&E development frameworks and data collection resources developed for MoIT can be utilized further as the country advances renewable energy and sustainable development activities
- RALI's analysis of fossil fuel subsidies in Bangladesh can be integrated into future projects supporting clean energy development in the country
- RALI introduced Peru's Ministry of Environment to the principles and process of the GHG MRV Harmonization Framework by applying them to the agriculture and transportation sectors, allowing the ministry to apply these lessons to additional sectors of its national inventory

RALI wrote a [case study](#) based on its collaboration with the Government of Colombia. The case study describes the activities and lessons learned from RALI's engagement.



LACS LEDS REGIONAL MEETING

RALI presented on harmonizing GHG MRV with Laura Torres (MADS) at the LAC LEDS regional meeting in October 2017.

COLOMBIA

RALI worked with the Government of Colombia's Ministry of Environment and Sustainable Development (MADS) and Institute of Hydrology, Meteorology, and Environmental Studies (IDEAM) between December 2016 and July 2018 to support efforts to strengthen the country's MRV systems. This engagement included two workstreams: the RALI team (1) developed and applied the Harmonization Framework to support GHG accounting harmonization in Colombia, and (2) supported data platform development for the country's national inventory.

Impact

To support GHG accounting harmonization in Colombia, RALI conducted an analysis of the methodologies, data, and institutional processes used for conducting project-level MRV and for developing the national GHG inventory. Based on MADS and IDEAM's priorities, RALI then analyzed and harmonized the GHG MRV data associated with mitigation activities both from the livestock Nationally Appropriate Mitigation Actions and with increasing renewable energy in the national energy mix. As a result of this analysis, RALI identified MRV gaps and presented tangible recommendations for aligning the national GHG inventory by using appropriate mitigation data and methodologies. RALI also developed guidance and conducted capacity-building workshops that will allow Colombia's climate change practitioners to conduct similar analyses for other mitigation activities.

The RALI team also worked closely with stakeholders in Colombia to respond to a Government of Colombia (GoC)-defined need for a data management system that

centralizes, institutionalizes, and archives GHG data for the national inventory. The RALI team designed and prototyped the National System of GHG Inventories, (SINGEI), to improve the GoC's ability to develop periodic, robust national inventories, allowing it to respond more efficiently to international reporting obligations. In addition to the prototype of SINGEI as a proof-of-concept, RALI provided comprehensive documentation in the software requirements specification, which will allow the GoC to seamlessly transition the development of SINGEI to IDEAM or future implementers.

During its engagement, RALI also collaborated with the GoC to present best practices and lessons learned to government representatives from other countries, both in the region and globally. A list of conferences where RALI highlighted the GHG accounting harmonization in Colombia is shown in the MRV Harmonization Framework section.

Future Opportunities

RALI's engagement in Colombia provided the first opportunity to apply the Harmonization Framework. The volume of documentation and data that the RALI team was required to review to complete its analysis presented a challenge initially, but the team overcame it by systematizing its approach to reviewing information and actively working with stakeholders. The RALI team also benefited from multiple in-country missions where it could interact directly with stakeholders. RALI leveraged its experience applying the Framework to further refine its harmonization approach and ultimately to develop the RALI GHG MRV Harmonization Guidance [document](#), which can be used by other countries to improve their GHG MRV systems.



THE COLOMBIA GHG MRV TEAM

The team included representatives from MADS, IDEAM, USAID/Colombia, USAID RALI, and USAID Washington.

Sustainability

RALI, recognizing from the onset that the request from the GoC would require a longer engagement than could be provided under the RALI project timeline, designed the work plan and outputs with incrementalism and sustainability in mind. For the technical work, RALI conducted analysis and capacity-building efforts while developing documentation of activities and guidance for MADS and IDEAM to continue without RALI's technical support. This documentation is intended to provide a reference not only for current inventory teams that have received capacity-building support, but also future ones in case there is staff turnover. For the development of the SINGEI platform, RALI developed the initial prototype with a focus on the back-end data structure and on the software requirements specification.

This approach provided the GoC with a proof of concept to bolster political and user buy-in, as well as a road map that allows for continued development when additional funding is made available.

The GoC noted the need for ongoing MRV and SINGEI support in a concept note in August 2018. This mention of the need to continue activities initiated by the RALI team demonstrates strong institutionalization of the harmonization and SINGEI efforts. The RALI ICF team is continuing its engagement with Colombia over the 2019–2020 timeframe with additional funding support provided by the United Kingdom's International Climate Finance initiative. This engagement will build on RALI's past activities and continue the progress made under the RALI project.

LESSONS LEARNED AND RECOMMENDATIONS

Colombia

Establishing a thorough understanding of GHG MRV systems in Colombia and identifying areas of improvement was an initial step to support Colombia's efforts. RALI worked diligently with government officials to develop a comprehensive understanding of the landscape and to determine priority actions. RALI's engagement in Colombia demonstrates the importance of robust stakeholder engagement efforts, which allowed RALI to develop a strong understanding of the existing GHG MRV landscape and tailor solutions to meet Colombia's needs. Additionally, the development of the SINGEI prototype demonstrates the importance of robust data process mapping and stakeholder engagement for effective platform development. By working closely with stakeholders in Colombia, RALI developed a thorough understanding of the technology landscape and ensured that the proposed platform was compatible and interoperable with other IT systems and business processes. In the future, this will facilitate platform implementation and efficient data transfers.



JANUARY 2019
MISSION TRIP
PRESENTATION BY
JOHN VENEZIA

VIETNAM

RALI worked with the Government of Vietnam's Ministry of Industry and Trade (MoIT) and USAID's Vietnam Low Emission Energy Program (V-LEEP) between September 2018 and July 2019 to support two overarching streams of work, 1) the M&E framework for the National Renewable Energy Development Strategy Action Plan (REDSAP), and 2) the Green Growth Action Plan (GGAP).

For the activities under the REDSAP, RALI drafted and proposed an M&E Plan that included performance indicators; strategies for data collection, ownership, and sharing; roles and responsibilities; performance indicator reference sheets; and data collection templates. RALI drafted these materials after an extensive literature review on international best practices and thorough engagement with key stakeholders in Vietnam.

For the GGAP workstream, RALI helped MoIT create goals to further Vietnam's efforts to mitigate climate change and achieve green growth, and to develop strategies to accomplish those goals. Specifically, RALI proposed a framework for developing GGAP 2021–2030, based on relevant cases in developed countries, and participated in consultation workshops to disseminate the findings and discuss the vision with stakeholders. As part of this framework, RALI also evaluated current climate financing in Vietnam to identify potential next steps MoIT could take to leverage additional support in key sectors of interest.

Impact

RALI worked with MoIT's Energy and Renewable Energy Authority (ERA) to

develop an M&E framework and define indicators for the REDSAP from the onset of development. This will ensure that MoIT ERA can effectively track progress toward its core objectives from the outset of the REDSAP implementation. Although MoIT was receiving support from V-LEEP and other donors, understanding and developing the M&E framework was a major gap that RALI addressed. Because more countries will be developing similar clean energy development plans, the indicators RALI developed for MoIT may be relevant and applicable for other countries pursuing clean energy. The M&E Plan will be incorporated into the final REDSAP.

RALI worked on the GGAP in partnership with MoIT's Department of Energy Efficiency and Sustainable Development. To develop the GGAP development framework, RALI identified relevant case studies and best practices in developed countries (i.e., OECD members) and emerging countries in Asia for developing green growth or similar development plans. Because internationally derived principles and practices informed RALI's development of the GGAP framework, MoIT will be able to continue developing the GGAP in a way that benefits from the successes of both developed countries and Vietnam's regional peers. MoIT will incorporate RALI's GGAP framework into a larger development framework document.

Sustainability

The RALI team provided support to MoIT in developing the indicators to support M&E of their REDSAP. Although MoIT was developing a comprehensive strategy for increasing renewable energy in Vietnam, it had not considered how to track progress over the course of implementation. RALI,

working in conjunction with MoIT, helped establish indicators to promote measurability of the ministry's efforts, which will support long-term decision-making. These indicators are not specific to Vietnam; they can be adopted and applied by other countries that are scaling up renewable energy.

For Vietnam's GGAP, the best practices in green growth planning and the development framework were tailored to the Vietnamese

context. Nevertheless, they were based on a body of experience and theory at a depth and breadth that will permit the report, after only moderate customization, to serve the green growth planning needs of additional countries. It is in this manner that the report may contribute not only to the sustainability of Vietnam's green growth planning endeavors, but to those of other nations as well.

LESSONS LEARNED AND RECOMMENDATIONS

Vietnam

RALI encountered challenges in the REDS AP workstream caused by the simultaneous drafting of the REDS AP and the M&E Framework, which made it difficult to develop M&E indicators informed by key goals of the AP. RALI relied on thorough literature reviews and advice from the RALI renewable energy expert to develop indicators while the draft was incomplete.

Under the GGAP workstream, RALI had limited time to present an update on its progress and receive input from participants during its January 2019 mission trip. To profit from the mission, RALI substituted workshop time with a series of meetings with individuals and organizations identified as key stakeholders. RALI also encountered challenges with a change in leadership—and therefore priorities—within EESD. Because the new leadership was not briefed on the purpose of the January mission and the materials that RALI had developed, RALI experienced delays in receiving feedback on its reports. Although the change in leadership altered the priorities of the GGAP, RALI engaged with a variety of stakeholders during the mission and gained further experience in the MRV system and transparent GHG accounting, which has benefited other RALI bilateral support projects.

Informed by this experience, RALI recommends establishing a schedule of correspondence with the local partner consultant. More frequent conversation with V-LEEP could possibly have helped the RALI team foresee the challenge posed by leadership transitions at EESD. Additionally, it is highly advisable to hold an inaugural in-person meeting between consultants and stakeholders as early as possible, rather than to wait until several months into the project. This is especially true when a project involves non-local consultants who do not have the opportunity for frequent check-ins with the stakeholder, and who therefore must rely on a local intermediary to pass messages back and forth, a system that is prone to inefficiencies and misunderstandings.

BANGLADESH

In 2019, RALI provided technical support to the Government of Bangladesh (GoB) in analyzing the impacts of fossil fuel subsidies (FFS), with a focus on their effects on clean energy deployment in Bangladesh. To support the GoB, RALI identified potential inefficiencies in FFS in Bangladesh, potential solutions, and the effects of reforms on the country's power market. RALI's support for Bangladesh dovetailed with activities under NREL's Laboratory Technical Assistance for Scaling Up Clean Energy in Bangladesh project, which emphasizes financial solutions to clean energy barriers.

Impact

During a week-long mission in May 2019, RALI met with relevant stakeholders and developed an understanding of the level of FFS in Bangladesh. During the mission, RALI held meetings with the Ministry of Power, Energy, and Mineral Resources, and entities such as the Sustainable and Renewable Energy Development Authority, Bangladesh Power Development Board, and Bangladesh Energy Regulatory Commission. The purpose of these meetings was to understand their position on FFS and how their policies and actions may affect conditions for investments in clean energy generation such as wind.

Based on the outcomes of this mission, RALI identified ways in which inefficiencies in FFS

affect the Bangladesh energy market and how these inefficiencies can create an uneven playing field for clean energy developers. RALI leveraged the Power Sector Policy Analysis Model, developed under the USAID Catalyzing Clean Energy Bangladesh program, to quantify the effect of fossil fuel subsidy reform (FFSR) on the power market in Bangladesh.

RALI also performed a literature review of FFSR studies to identify how similar subsidies and their inefficiencies were analyzed in other countries and regions. Using this research, RALI developed a summary of lessons learned and best practices for FFSR based on an analysis of other activities in the region. RALI conducted a final briefing with relevant GoB and private sector stakeholders to disseminate its findings and analysis and support implementation of potential reforms.

Sustainability

The results of RALI's engagement can contribute to other efforts to promote clean energy development in Bangladesh. The activities undertaken by RALI dovetail with the FY2019 and FY2020 activities under NREL's project. Because part of NREL's project emphasizes financial solutions to barriers, RALI's parallel work on refining the market through FFSR can help those financial solutions be more effective. RALI's FFSR barrier analysis could also be integrated into NREL's in-country training series.

LESSONS LEARNED AND RECOMMENDATIONS

Bangladesh

Understanding the scope of FFS in Bangladesh required the RALI team to meet with a diverse set of stakeholders. These stakeholders often had differing viewpoints and understandings of subsidies. Given the project's limited timeline, RALI did not analyze all the areas of inquiry identified by stakeholders during the mission. This required RALI to select the most impactful areas of analysis it could complete given available data and time constraints

PERU

Following RALI's engagement with the Government of Colombia, the Government of Peru expressed that it had similar needs to improve the transparency of its GHG accounting. RALI worked with the Ministry of Environment (MINAM) to analyze the GHG MRV utilized for its livestock production mitigation activities and its planned integrated transport system. RALI, leveraging the MRV Harmonization Framework and experiences from Colombia, supported MINAM in reviewing its MRV and providing recommendations on strengthening the alignment of data elements to ensure that climate progress is reflected in its national reporting. The RALI team provided targeted support between January and August 2019.

Impact

The RALI team responded to a direct country request for MRV support to help Peru incrementally improve its national inventory and NDC reporting. RALI provided direct technical assistance and fostered sharing regional experiences to help advance transparency goals for Peru.

Future Opportunities

MINAM can improve the transparency of its GHG inventory for priority sectors by implementing the recommendations provided in the final deliverable from RALI. MINAM is now also familiar with the principles and process of the GHG MRV Harmonization Framework and can take the next step to apply to additional sectors as more mitigation activities are implemented.

2.4 KNOWLEDGE DEVELOPMENT & DISSEMINATION

SUMMARY

RALI promoted thought leadership and knowledge dissemination by developing many methodologies, tools, case studies, and white papers on topics that were relevant and of interest to stakeholders. In particular, the team developed and disseminated the RALI Series, a set of practice-based case studies and technical papers that shared examples and lessons from low emission development in practice. RALI also produced knowledge products, including a paper analyzing U.S. jobs supported by the clean energy sector; fact sheets on power system resilience, and a Transparency Framework. RALI's work under this activity pillar expanded the knowledge base of climate practitioners and increased access to that knowledge across countries and sectors.

OBJECTIVES

- Identify and share best practices
- Develop case studies to demonstrate LEDS applications
- Place resources in the hands of climate change practitioners

KEY IMPACTS

- The RALI Series published 31 papers and 38 blogposts on Climatelinks
- Conducted the American Clean Energy Jobs analysis, which projected global and regional clean energy markets and U.S. jobs
- Created many fact sheets to describe best practices and tools that can help build power sector resilience
- Developed the NDC Transparency Systems Framework to help users successfully collect, manage, and report on transparency requirements
- Profiled the INDCs of 37 countries submitted to the UNFCCC to better understand country and regional circumstances

SUSTAINABILITY

- Partnered with Climatelinks to establish a long-term web platform where resources will continue to be accessible after the project concludes

THE RALI SERIES

RALI established the RALI Series in 2017 to provide a regular series of short papers that broadly disseminate successes in LEDS implementation. The RALI Series featured practice-based case studies, tool applications, frameworks, and innovative new approaches to low emission development, highlighting user benefits and lessons learned. The RALI team partnered with Climatelinks to publish and promote these papers on the Climatelinks website.

Some of the major themes of the RALI Series included adaptation strategies, mitigation strategies, power system resilience, clean energy technologies, and GHG MRV harmonization. The table below lists the papers produced as part of the RALI Series,

as well as the region and themes covered. A full list of RALI Series papers, blogs, and other materials produced as part of RALI can be found in the Annex.

Impact

The RALI Series produced many papers that shared best practices, provided guidance, and disseminated knowledge. RALI also wrote blog posts that accompanied each paper to increase awareness of the paper and note key findings, and to make connections with related topics or current events. In all, 31 papers and 38 blogposts were published on Climatelinks.

In the final year of the RALI Series, over 3,000 users from more than 60 countries viewed RALI Series products online. Over the same time period, more than 1,200 products were downloaded.

31 papers and 38 blogposts were published under the RALI Series.

Over 2,000 users in more than 60 countries accessed RALI Series products.



BENEFITS OF LEDS: THE CASE OF KENYA'S LAKE TURKANA WIND POWER PROJECT

This case study analyzed Africa's largest wind farm to determine the multiple benefits of LEDS implementation and the lessons learned in the process.

RALI PRODUCT	REGION	THEME
<u>Market-Based Mechanisms to Reduce GHG Emissions in Asia</u>	Asia	Clean Energy, Climate Finance, Climate Policy, Mitigation
<u>Risky Business? Climate Change, Power Planning, and Resilience in Tanzania</u>	Africa	Adaptation, Clean Energy, Climate Risk, Power System Resilience
<u>Harmonization Recipe: Energy Sector</u>	Global	MRV, Energy
<u>Harmonization Recipe: AFOLU Sector</u>	Global	MRV, Agriculture
<u>RALI GHG MRV Harmonization Framework</u>	Global	M&E, Mitigation
<u>Power System and Municipal Resilience in the Dominican Republic: Learning in Real-Time Following Hurricanes Irma and Maria</u>	Latin America & Caribbean	Adaptation, Power System Resilience
<u>Supporting Low Emission Development by Generating Electricity from Biogas from Palm Oil Effluent: Costs, Benefits, and the Potential for Replication</u>	Asia	Mitigation
<u>Climate Risk Screening Tools for Low-Emission Energy Development</u>	Global	Climate Risk Management, Mitigation, M&E
<u>Strengthening Greenhouse Gas MRV Systems in Colombia: A RALI Engagement Case Study</u>	Latin America & Caribbean	Mitigation, M&E
<u>Benefits of Low Emission Development Strategies: The Case of Clean Energy Policies in Bangladesh</u>	Asia	Clean Energy, Climate Policy, Mitigation
<u>Addressing Climate Vulnerability for Power System Resilience and Energy Security: A Focus on Hydropower Resources</u>	Global	Clean Energy, Climate Risk, Power System Resilience
<u>Calculating Energy Saving and Projected Emissions Reduced</u>	Asia	Clean Energy, Mitigation, M&E
<u>Benefits of Low Emission Development Strategies: The Case of Kenya's Lake Turkana Wind Power Project</u>	Africa	Clean Energy, Mitigation
<u>Empowering Low Emission Development in the Pacific</u>	Asia	Clean Energy, Mitigation
<u>Bringing Harmony to GHG MRV</u>	Global	Clean Energy, Mitigation, M&E
<u>Using the US EPA's Workbook to Support Preparation of National GHG Inventories: The Experience of Bangladesh</u>	Asia	Emissions, Mitigation, M&E
<u>Calculating and Projecting Energy and GHG Benefits</u>	Latin America & Caribbean	Climate Finance, Mitigation, M&E

Women’s Leadership Is Necessary for the Clean Energy Transition	Global	Gender; Clean Energy
Gender Inclusive Recruitment and Selection:A Workbook for Clean Energy Incubators	Global	Gender; Clean Energy
Monitoring and Evaluation Framework for Gender Inclusive Recruitment and Selection	Global	Gender; Clean Energy
Women in the Clean Energy Transition	Global	Gender; Clean Energy

The RALI Series delivered an array of informational and practical papers that provided partner countries and climate change practitioners with accessible and tangible low emission development strategies. RALI developed and published 12 case studies on various topics, highlighting real-world examples in countries around the globe, including Bangladesh, Colombia, the Dominican Republic, Indonesia, Kenya, the Pacific Islands, and Tanzania. For example, the [Empowering Low Emission Development in the Pacific case study](#) described strategies that small island countries in the Pacific have implemented to combat rising sea levels, such as by drafting energy road maps and installing renewable energy infrastructure. The geographical and topical diversity of the case studies demonstrated that LEDS is versatile and can be tailored to and applied in diverse circumstances and geographies.

To maximize this opportunity to increase viewership and use of RALI products, the RALI team developed and implemented a strategic communications plan in early 2019. This plan included a detailed plan and schedule, informed by key objectives, key messages, and priority communications channels, and included analytics tracking to measure the plan’s impact. Analytics reports revealed that viewership and downloads

increased significantly after implementing the plan. These strategic measures demonstrate how RALI successfully overcame the challenge of getting products directly in the hands of partners and climate change practitioners around the world.

Future Opportunities

The RALI Series provided an opportunity to highlight and expand on the work RALI did under other activities. For example, several case studies were developed based on the outcomes of bilateral missions and trainings; the RALI Series offered an avenue to describe the real-world applications and lessons learned in implementing LEDS in these cases. The RALI Series also showcased major products such as the Harmonization Framework and the CLEER Tool to demonstrate the application and results of these products.

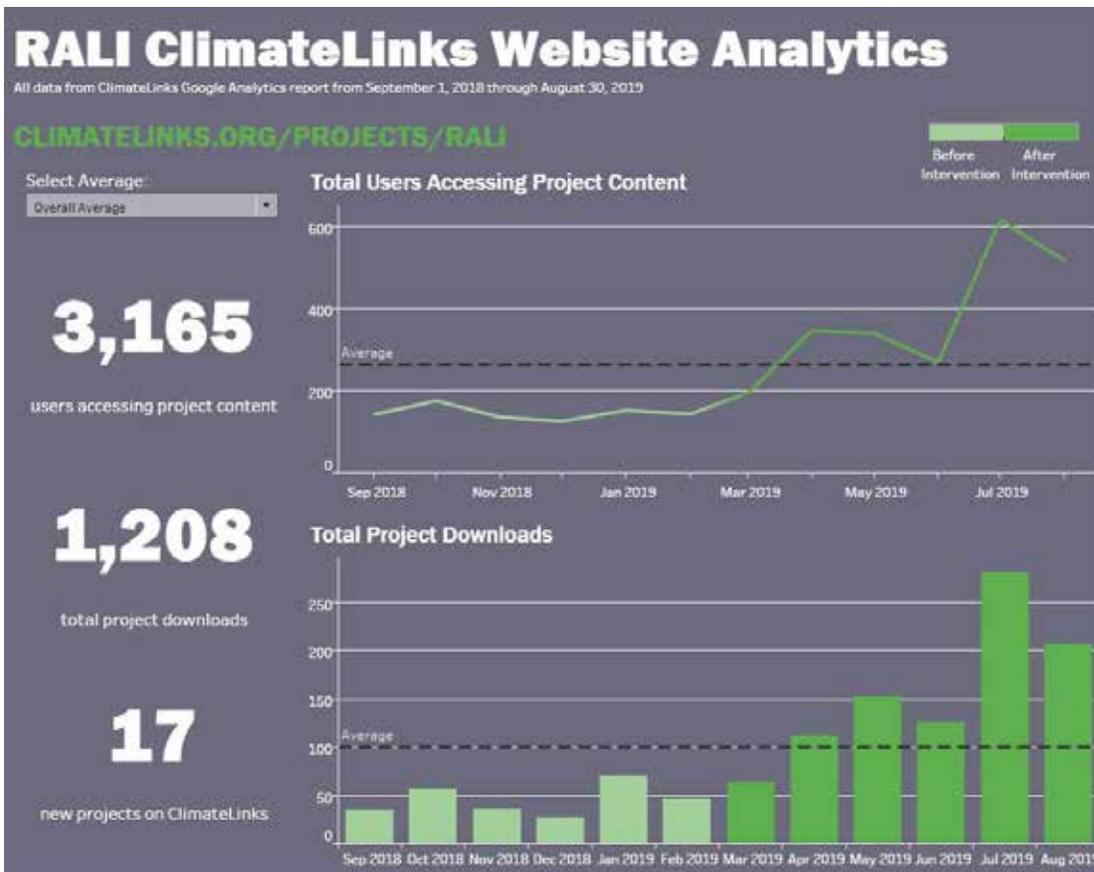
Sustainability

The RALI-ClimateLinks partnership ensures the sustainability of the RALI Series. All RALI Series papers and blogposts will continue to be accessible via ClimateLinks’ website after the RALI project concludes. Climate change practitioners and other users can download these resources for free from the [RALI project website](#).



EMPOWERING LOW EMISSION DEVELOPMENT IN THE PACIFIC

Ha Mai Solar Facility on the island of Ha'apai: the first island in Tonga to reach 50% renewable energy.



LESSONS LEARNED AND RECOMMENDATIONS

THE RALI SERIES

While the RALI Series papers generated insightful analyses and helpful guides, publicizing the results in an effective and accessible manner was an initial obstacle. By partnering with Climatelinks (a global knowledge platform serving USAID staff, implementing partners, and the broader climate and international development community), the RALI Series was able to leverage an existing platform that connected to its target audience. This partnership also led to further outreach, e.g., through Climatelinks' thematic newsletters, which in July 2019 highlighted the multiple MRV products developed by the RALI team. The RALI Series also demonstrates the importance of creating a website where materials will continue to be accessible after the project concludes.

AMERICAN CLEAN ENERGY JOBS ANALYSIS

To better understand the current and future global clean energy market and its associated impact on America-based jobs, RALI investigated the current size of the clean energy market by region and technology, and estimated future market growth. These findings were used to estimate the number of American jobs associated with exports to global clean energy markets through 2030.

RALI began this project in 2017 by conducting a thorough economic analysis of global energy trends. The results and methodology of this analysis were described in a series of memorandums, and ultimately informed the final paper, *American Clean Energy Jobs*. The key results of the analysis and paper were then condensed and presented in a project brief, *The Role of American Industry in the Clean Energy Transformation*. The results of the analysis

demonstrate the significant economic and employment growth potential clean energy exports can create.

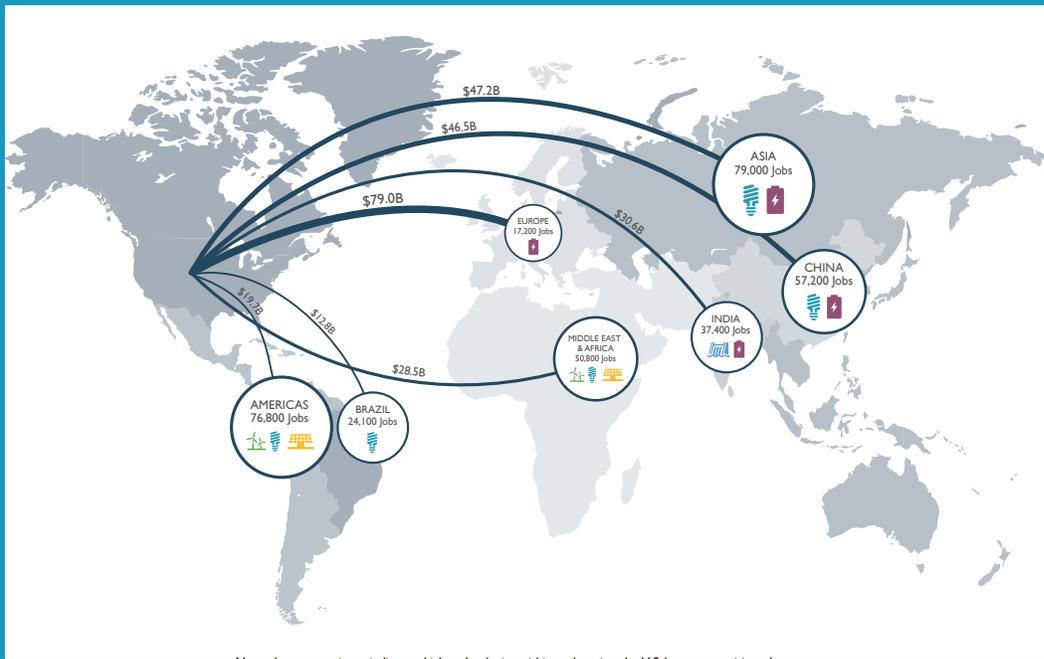
Impact

The American Clean Energy Jobs analysis determined the projected global and regional clean energy markets associated with five technologies: wind, solar photovoltaics (PV), hydropower, energy efficiency, and grid-level energy storage. RALI then used those insights to project the number of American jobs associated with exporting American goods and services to international markets from 2017–2030. The process involved a rigorous economic analysis of past trends, analyzing each technology and region individually, and modeling future projections, before finally aggregating the results.

The results of the analysis identified the regions and technologies in which the United States has the greatest potential market share. The analysis also identified the

Investment in clean energy markets overseas has the potential to create 167,000 to 353,000 American jobs by 2030—about three times more than the number of individuals currently employed in the United States in petroleum and coal products manufacturing.

FINDINGS



Projected regional clean energy markets and associated new U.S. jobs in 2030.

POWER AFRICA: GENERATING ENERGY FOR AFRICA AND JOBS IN AMERICA

The U.S.-led initiative Power Africa strives to drive economic growth and development in Africa by increasing access to reliable, affordable, and sustainable power, while expanding economic opportunities for U.S. businesses and workers. A U.S. Chamber of Commerce analysis estimated that Power Africa will create 40,000 U.S. jobs and generate billions in exports by 2030. By 2019, the initiative had installed 10,100 MW of new clean energy capacity, benefiting over 58 million Africans.

competitive advantages of the American clean energy industry by region and technology. The results of the analysis can be used to inform future American clean energy investments.

The American Clean Energy Jobs analysis ultimately provided a platform for discussing clean energy beyond climate change and energy access by demonstrating the positive economic and industrial development effects of clean energy investments. The analysis took steps to quantify the economic benefits of clean energy across sectors and regions, providing insights relevant to USG intervention—not only how it helps other countries, but how clean energy exports affect domestic interests as well. The analysis demonstrates that USAID investments in supporting LEDS overseas are not purely altruistic but have real domestic benefits as well.

Future Opportunities

Because some clean energy technologies are relatively nascent, and because not all countries have robust data collection and reporting systems, the limited availability of data created challenges for this analysis. This was particularly the case for battery storage, a nascent technology with limited historical data and a rapidly evolving market. However, this presented the RALI team with the opportunity to be a leader in analyzing this new and emerging space.

POWER SYSTEM RESILIENCE

RALI identified power system resilience as a focus area and developed many papers and fact sheets to inform international development practitioners and power sector planners about how climate change can affect power generation resources, along with approaches that can be taken to address climate change risks at the project and sector

level to improve power system resilience.

The state of practice in addressing climate risks to power systems is at an early stage. Greater awareness is beginning to emerge among utility managers of the business risks to power systems posed by climate change. Some investors and managers have begun to incorporate analysis of climate risks as they assess generation options, recognizing and attributing the impacts of climate change as part of their assessment. Incorporating these climate factors into a multi-criteria analysis during power system planning is necessary to ensure the long-term sustainability of power networks. However, most planners, are not yet aware of this need, and they lack the information and tools necessary to consider climate risk. RALI's focus on power system resilience was developed to help build awareness of this critical issue and point to technical approaches to support climate risk management. The resulting work products examined different aspects of climate risk to both conventional and low emission power facilities, helping LED practitioners use a climate resilience lens as they work to reduce the carbon footprint of power generation.

Impact

In May 2017, RALI published a paper, [Addressing Climate Vulnerability for Power System Resilience and Energy Security: A Focus on Hydropower Resources](#), documenting the risks of climate change to hydropower, integrating climate resilience into hydropower investments as well as broader power planning and investment. RALI presented on this topic at the [October 2017 Adaptation Community Meeting](#) and at ACEF (Asia Clean Energy Forum). The paper was also submitted to the Fifth Green Growth Knowledge Platform (GGKP) Annual Conference in Washington,

APPLYING IRRP IN TANZANIA

[ICF's Integrated Resource and Resilience Planning \(IRRP\)](#) work in Tanzania tested several possible investment portfolios for the Tanzanian national electric utility (TANESCO) against a range of climate change scenarios, including assessing the impacts of drought. From this analysis, TANESCO was able to select a best-performing portfolio to inform future investment decisions.

D.C. in November 2017. In addition, RALI conducted outreach to key organizations to further disseminate this paper through their networks. To date, it has been picked up (for distribution via website/platform, social media, or other format) by the following networks:

- LEDS GP
- Climate-L Digest
- SDG-Sustainable Development Policy and Practice
- Green Growth Knowledge Platform (GGGI)
- GGKP
- Nexus: Water, Energy, and Food Security Platform
- Clean Energy Solutions
- New Climate Institute

Other work under power system resilience included two RALI Series papers, [Climate Risk Screening Tools for Low-Emission Energy Development](#) and [Climate Change, Power Planning, and Resilience in Tanzania](#).

RALI also coordinated with NREL to develop fact sheets on a variety of power system resilience topics. These fact sheets provide international development practitioners and power sector planners in the developing world with context, best practices, and tools that can help build power sector resilience to climate change and natural hazards. Key fact sheets include:

- [Integrated Resource & Resiliency Planning for power sector resilience](#)
- [Climate resilience benefits and considerations of mini-grids](#)
- [Tools and methods for valuing power sector resilience](#)
- [Flexible adaptation pathways for power sector planning](#)

Future Opportunities

Because climate risk assessment in the power sector is not well established, RALI's power system resilience project faced a challenge in identifying case studies that demonstrated full implementation of these new approaches. At the same time, this early stage of development provided an opportunity for RALI to contribute to building more awareness among practitioners about the significance of climate risk to the power sector, and to help ensure that LEDS practitioners are engaged in the dialogue about climate resilience.

Work on this series also provided an opportunity for RALI to collaborate with NREL, drawing on the technical expertise and resources of both programs. This partnership helped to expand the reach of RALI to NREL's network, and further broaden the discussion of how best to incorporate climate risk into assessment of power generation options.

Sustainability

RALI papers and factsheets will continue to be accessible via Climatelinks' and NREL's Resilient Energy Platform, developed through the USAID-NREL Partnership. In addition, the discussion sparked in part through RALI's work is continuing through professional working groups and expert panels, such as one recently convened by the World Bank, that are working to further refine analytic approaches to the assessment of climate risk as part of power system and power project planning.

LESSONS LEARNED AND RECOMMENDATIONS

Power System Resilience

RALI found that building partnerships led to a greater final impact. RALI's collaboration with NREL broadened the reach of RALI's power system resilience papers and reinforced the significance of this emerging topic.

Recognizing emerging issues and developing a focused analysis and response allowed RALI to be a leader in this field. RALI highlighted an important issue that will be a growing challenge to low emission power system developers as climate risk becomes a recognized factor in power system planning and investor assessments.

TRANSPARENCY FRAMEWORK

The Paris Agreement Rulebook defines the information that countries will need to report on GHG emissions, mitigation actions, adaptation, and climate finance to meet enhanced transparency requirements. However, the Rulebook does not detail how parties should meet these reporting requirements. RALI developed the first version of the NDC Transparency Systems Framework to provide a roadmap for countries to take concrete, incremental, and sustainable steps toward developing comprehensive enhanced transparency systems. RALI has worked with UNDP to ensure the long-term sustainability of the Transparency Framework

Impact

The NDC Transparency Systems Framework developed by RALI provides an overview of the foundational components required to successfully collect, manage, and report on transparency requirements. These components include:

- Institutional arrangements between actors (i.e., government agencies, project implementers, and civil society);
- Data collection and management (e.g., inventories, mitigation registries);

- Technology systems (e.g., Excel templates, databases, bespoke systems);
- Quantitative and qualitative progress indicators;
- Quality assurance/quality control procedures; and
- Budgeting development and tagging.

The examples and content documented in the Framework draw heavily from stakeholder consultations and expert input from practitioners, country experts, and non-governmental organizations. RALI solicited input on the Framework at the Capacity-Building Initiative for Transparency coordination meeting in Rome in June 2019, the UNFCCC Consultative Group of Experts meeting in Belize in July 2019, and the UNDP NDC Support Programme Team in New York in August 2019.

Future Opportunities

While developing the Framework, RALI needed to ensure that its work was not duplicative of other efforts already underway. This was particularly important given the breadth of initiatives looking to support countries as they report on their climate progress. By leveraging internal institutional

knowledge and socializing the Framework through external presentations and stakeholder engagement, RALI made the Framework a valuable resource which can be used for future engagement and capacity-building activities.

Sustainability

RALI developed the NDC Transparency Systems Framework to provide countries with an understanding of the foundational elements required to meet the enhanced reporting requirements under the Paris Agreement. The need for this concept was initially identified during a collaborative workshop in July 2018, which involved various technical experts and country representatives. Recognizing that the need for and ultimate implementation of the Transparency Systems Framework would extend beyond the duration of the project,

RALI engaged with UNDP. In collaborating with UNDP, RALI could access a broader range of country stakeholders for input and consultation, and develop buy-in from UNDP, which increases the likelihood that the principles of the Transparency Systems Framework would be adopted or influence programmatic planning. RALI also socialized and collected input on the NDC Transparency Framework concept at several events, including the Capacity Building Initiative for Transparency meeting (May 2019), the Global NDC Conference (June 2019), and the UNFCCC Consultative Group of Experts meeting (July 2019), to ensure alignment of the product with the most pressing transparency needs. The UNFCCC is considering the inclusion of the Framework as part of its upcoming toolkit for Biennial Transparency Report preparations.

LESSONS LEARNED AND RECOMMENDATIONS

Transparency Framework

The consultations conducted for the NDC Transparency Systems Framework showed that although countries generally have some systems or arrangements in place, most countries are missing foundational building blocks to be able to produce regular reports under the enhanced transparency framework. Countries generally still lack robust institutional arrangements, data, data management systems, and legal frameworks to support biennial reporting on GHG emissions, reductions, and projections; adaptation; and capacity building and financing needs.

Although this task is daunting, there is opportunity to support multi-country collaboration and peer learning to accelerate the development of transparency systems. The opportunity is most evident for the development of data management systems and/or software (i.e., the opportunity to transition to open-source development). Open-source collaboration helps avoid duplication of efforts across countries and allows for continued, incremental development.

INDCS ANALYZED BY RALI

The white paper analyzes the following countries' INDCs:

- Albania
- Afghanistan
- Bangladesh
- Cambodia
- Colombia
- Costa Rica
- DR Congo
- El Salvador
- Ethiopia
- Gabon
- Georgia
- Ghana
- Guatemala
- India
- Indonesia
- Jamaica
- Kazakhstan
- Kenya
- Lao PDR
- Macedonia
- Malawi
- Malaysia
- Mexico
- Moldova
- Myanmar
- Nepal
- Nigeria
- Pakistan
- Peru
- Philippines
- Serbia
- South Africa
- Thailand
- Uganda
- Ukraine
- Vietnam
- Zambia

INDC PAPER

In 2015, in advance of the 21st Conference of the Parties (COP21) in Paris, France, RALI briefed USAID staff on countries' recently announced Intended Nationally Determined Contributions (INDCs). The purpose of these briefings was to provide USAID staff with key information on each INDC and prepare them for bilateral discussions at COP21. In June 2016, RALI used the materials developed for those briefings to create a publicly available white paper, [Analysis of Intended Nationally Determined Contributions \(INDCs\)](#), to help climate change practitioners understand the status of developing countries' national climate strategies and inform decisions about future activities related to implementation of the Paris Agreement.

Impact

The INDC white paper profiles the INDCs submitted to the UNFCCC by 37 developing countries, including Enhancing Capacity for Low Emission Development Strategies (EC-LEDS) partners. Each country profile includes information on the following:

- Unconditional and conditional GHG emissions reduction targets,

- Analytical basis for developing the emissions reduction targets,
- Mitigation actions being undertaken by the country,
- Adaptation strategies,
- Existing policy framework of the country's INDC, and
- Financial and technical assistance required.

Insights on data quality and transparency, GHG inventories submitted to the UNFCCC, national GHG emissions by sector, and key documents for further consultation were included for each profile. The white paper also provides a summary of total INDC pledges and an analysis of regional and sector trends. By helping USAID to understand country and regional circumstances, the kinds of targets countries set, and the plans they had in place, RALI ensured that the U.S. delegation to COP21 was able to engage bilateral partners more effectively and develop future programming and collaboration. More broadly, RALI laid the groundwork for USAID and other climate change practitioners' understanding of the overall global INDC landscape.

LESSONS LEARNED AND RECOMMENDATIONS

INDC Paper

The INDCs submitted by countries varied drastically in terms of detail, type of goal, and type of content, making it challenging to develop a consistent, comparable summary across all 37 countries included. The RALI team was able to come up with a common template for reviewing all INDCs and worked closely to ensure that content was presented in a similar format. The common analysis and summary make comparisons across regions and needs easier and more meaningful.

CHAPTER 3: SUSTAINABILITY AND RECOMMENDATIONS



3.1 SUSTAINABILITY

The sustainability of project outcomes has been a key focus of the RALI project. The goal of sustainability efforts is to ensure that RALI project outcomes will continue to support lasting transformational change after RALI's conclusion. RALI adopted several approaches to ensure the sustainability of project outcomes, described below.

PROMOTING COLLABORATION AND OUTREACH

Robust collaboration and outreach with climate change practitioners and in-country partners has enabled RALI to develop stakeholder-relevant analyses, resources, and tools and effectively communicate the benefits of these products, thereby increasing their likely uptake by target users.

RALI's collaboration and outreach took many forms. In addition to providing direct training and support, RALI promoted key tools and resources such as the Harmonization Framework at a variety of events across the globe. Complementing these engagements, RALI promoted tools and resources through blogs, case studies, and webinars. For selected resources, RALI developed a strategic communications plan to maximize targeted distribution efforts. RALI also collaborated closely with American and international partners to promote power system resilience and to develop the INDC Transparency Systems Framework. In each case, engagement was instrumental in creating a constituency among climate change practitioners, which supported the continued use and overall sustainability of resources developed under RALI.

EMPOWERING IN-COUNTRY PARTNERS

RALI developed tools and resources that in-country partners could use without additional interventions, thus supporting the continued use of these products after the RALI project concluded.

Through direct bilateral engagement, RALI worked closely with in-country partners in Colombia, Bangladesh, Peru, and Vietnam to provide them with the tools and resources they needed to independently advance their low emission development goals. Results of this engagement included roadmaps, frameworks, and guides that could be built on after the conclusion of RALI's engagement.

The CLEER Protocol and Tool were developed with the same sustainability goal in mind. RALI socialized both of these resources within the LEDS community to ensure that they were highly usable for in-country partners and could be sustained over time. Developed to inform future USAID programming, the Air Quality Management Building Blocks also sought to empower in-country partners. RALI developed this tool so that it can be continuously referenced and adapted by users without additional support from RALI.

ENSURING PRODUCT ACCESSIBILITY

Ensuring public accessibility of analyses, tools, and resources for all stakeholders to use after project completion was a key component of the RALI project's sustainability plan. The majority of RALI-developed resources and tools were designed to be web-accessible, including the CLEER Tool and Protocol, the RALI Series, the NDC Toolbox, and the

Harmonization Framework. RALI developed the Harmonization Framework using an interactive PDF, which provides an interactive user experience without the need for long-term web hosting. The PDF format also allows users to transmit and download the content, making it more accessible for users who may not have reliable internet access. The core RALI GHG MRV Harmonization Framework was also developed in Spanish to increase the accessibility of the product to the LAC region.

RALI often worked collaboratively with other initiatives to ensure these products were accessible and would remain so after the RALI project concludes. For example, all RALI Series papers and blog posts are accessible via Climatelinks' website and will continue to be available after the RALI project concludes. Climate change practitioners and other users can download these resources for free.

Other resources, such as the NDC Toolbox, will continue to be accessible elsewhere. RALI identified partners to host products: for example, the NDC Toolbox developed by RALI was adopted by the NDC Partnership and continues to be accessible through the Partnership website. Similarly, RALI contributed fact sheets to the Resilient Energy Platform, which is being developed and maintained by NREL. These fact sheets are part of a larger toolkit to support power systems resiliency and will be used in NREL's activities after RALI concludes.

SUPPORTING DONOR FUNDING TRANSITIONS

Several of the analyses, resources, and tools developed by RALI can be leveraged by countries and other stakeholders to support

new donor initiatives that promote LEDS. With the support of new donor funding, the Harmonization Framework can be applied in additional countries after the RALI project concludes. The RALI ICF team also leveraged its extensive harmonization experience in Colombia to promote additional donor support from the United Kingdom's International Climate Finance initiative, which will be funding the next tranche of MRV work—a direct extension of the work done under RALI.

RALI tools and resources can also be leveraged to support other ongoing low emission development initiatives. For example, the results of RALI's engagement were intended to contribute to other efforts to promote clean energy development in Bangladesh, such as the activities undertaken by RALI that dovetail with the FY2019 and FY2020 activities under NREL's project. By setting out the steps countries will need to take in order to comply with the Paris Agreement Rulebook, the Transparency Systems Framework provides a roadmap for what type of initiatives international donors could support.

3.2 OPPORTUNITIES & RECOMMENDATIONS FOR FUTURE PROGRAMMING

Informed by its experience supporting LEDS implementation, RALI has identified a number of opportunities and recommendations for future USAID programming. These opportunities and recommendations are described below.

UNDERSTAND INITIAL CONDITIONS

A robust understanding of initial conditions in partner countries and within the global community is necessary to ensure that programming provides value and is effectively planned and conducted. This understanding ensures that future programming is not duplicative of existing efforts in the LEDS community, but rather builds upon them. For example, the primary challenge associated with developing the NDC Toolbox was identifying and accurately cataloguing all of the tools and resources available. RALI relied on robust engagement with external partners to capture these tools and resources. When developing the Transparency Framework, RALI leveraged internal institutional knowledge and socialized the Framework through external presentations and stakeholder engagement, to ensure the Framework would be an original and valuable resource. In Colombia, developing a strong understanding of the existing GHG MRV landscape allowed RALI to tailor solutions to meet Colombia's needs. Therefore, RALI recommends that future efforts undertake a thorough investigation of the initial landscape.

RESPOND TO STAKEHOLDER NEEDS

When developing resources and/or tools to advance LEDS implementation, RALI recommends placing emphasis on identifying the specific needs of stakeholders such as in-country partners, non-governmental organizations, and other climate change practitioners. This engagement not only ensures that programming is useful, it also

facilitates the creation of partnerships and enhances the effectiveness of the resources developed. For example, responding to country needs and building partnerships through robust stakeholder engagement drove the development, revision, and adoption of the Harmonization Framework and has ensured that it will be an accessible resource for users. Using a demand-driven approach when developing the CLEER Protocol also allowed the RALI team to focus on the areas that would be most impactful to users, including the technical quality of the GHG methodologies in the CLEER Protocol as well as the Protocol's accessibility and user-friendliness.

BUILD PARTNERSHIPS

Partnerships are key to ensuring the success of future low emission development programming. RALI recommends making a concerted effort to identify partners early in the process to support and/or complement LEDS implementation activities. Partnerships were critical in advancing RALI outcomes and ensuring the sustainability of resources

and tools after the project's conclusion. RALI used partnerships to create resources and tools with an identified user base. RALI collaborated with these partners throughout the development process and worked closely with partners to support the initial adoption of these resources and tools. This enabled partners to understand the value of these materials and apply the tool again in the future.

RALI worked with USAID Climatelinks, the NDC Partnership, and LEDS GP to develop and present resources and tools to advance LEDS implementation. Through these collaborative engagements, RALI ensured resources will be updated and maintained after the project concluded. RALI also partnered with the Government of Colombia to present the Harmonization Framework, allowing for enhanced socialization of the Framework within the climate community. Additionally, partnerships present an opportunity to support donor funding transitions, such as the one the RALI ICF team realized in Colombia.

CHAPTER 4: INDICATORS AND RESULTS



4.1 RESULTS FRAMEWORK AND INDICATORS

ICF, in coordination with USAID, developed an M&E Plan to measure progress toward achieving RALI's Strategic Objective. The M&E Plan consisted of a Strategic Objective and corresponding Results Framework, which informed the RALI team's quarterly progress on its goals. Changes and improvements were tracked and documented throughout the life of the project, which allowed ICF and USAID to have a clear understanding of the results produced.

In addition, RALI compiled quarterly and annual reports and an annual M&E Plan, and where needed, pivoted by modifying programming and the Results Framework according to indicator results. RALI updated the standard indicator numbers annually

to correspond with any adjustments made to USAID's GCC standard indicators. In addition, each annual report included an assessment of why performance targets were met or not met in the final year.

RESULTS SUMMARY

Through the duration of the project, RALI measured performance and tracked progress through seven indicators. As of September 24, 2019, RALI achieved the following results:

- Developed 13 case studies communicating the GHG impacts of USAID actions
- Trained 660 staff in clean energy activities
- Improved 39 organizations' abilities to address climate change
- Tested, developed, and adopted 102 technologies, methodologies, and white papers

STRATEGIC OBJECTIVE AND RESULTS FRAMEWORK

RALI's Strategic Objective, shown in Figure 8 below, was to "Improve USAID-supported and country-led Low Emission Development Strategy outcomes in clean energy."

Underneath the Strategic Objective, the Results Framework consists of Intermediate Results and Sub-Intermediate Results that contributed to the overall achievement of the Strategic Objective and helped to guide the efforts of the project so that all activities undertaken supported the project's long-term goals. Each Intermediate Result and Sub-Intermediate Result has supporting indicators, which were counted throughout the duration of the project to track progress toward achieving the results.

RALI'S INDICATORS AND TARGETS

ICF identified performance targets for each indicator that could be achieved within the project timeframe and with available resources. A performance target is the specific, planned level of result to be achieved within an explicit timeframe. ICF documented when and how the target values were developed, as appropriate, through the indicator reference sheets. A detailed list of RALI's indicator targets and results achieved is shown in Table I below. The following seven indicators were the primary means of tracking RALI's progress toward the Strategic

Objective:

- **Indicator 1:** Number of OUs pilot-testing the CLEER Protocol and Tool to estimate GHG reductions associated with clean energy activities.
- **Indicator 2:** Number of OUs reporting GHG reductions associated with clean energy activities to USAID HQ (through the Foreign Assistance Coordination and Tracking System (FACTS)) using the CLEER Protocol and Tool.
- **Indicator 3:** Number of case studies developed to communicate GHG impacts of USAID actions. (Count/Number).
- **Indicator 4:** Number of people trained in clean energy supported by USG assistance (EG.12-1).
- **Indicator 5:** Number of institutions with improved capacity to address climate change as a result of USG assistance (4.8.2-14).
- **Indicator 6:** Number of tools, technologies, and methodologies that support low emission development developed, tested, or adopted as a result of USG assistance (FY15 EG12.1-2).
- **Indicator 7:** Number of USG staff or implementers trained in clean energy supported by USG assistance.

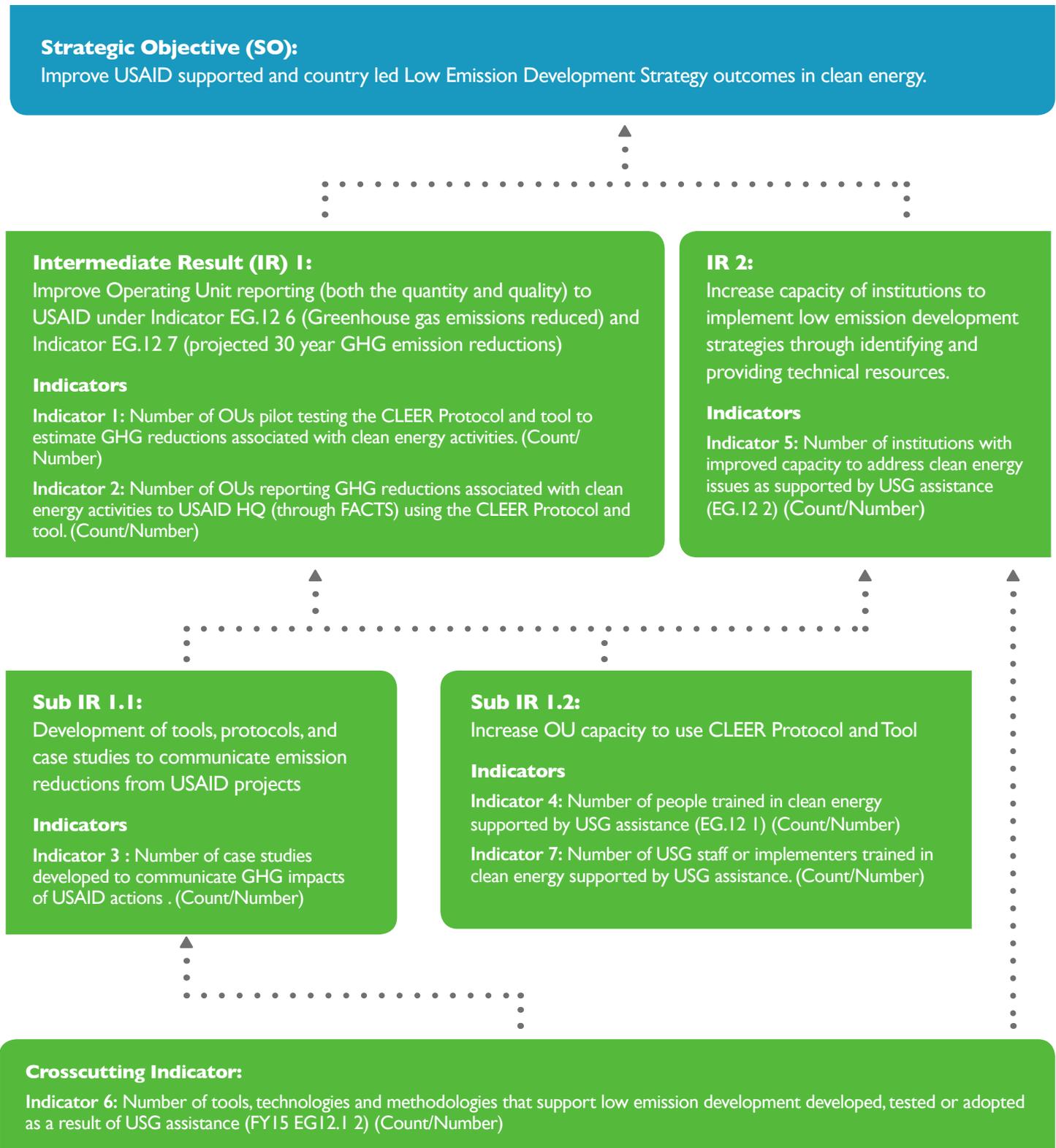


Figure 8: Theory of Change and Results Framework

Table I: M&E Plan Indicator progress: USAID Standard Indicators and Project Custom Indicators*

STRATEGIC OBJECTIVE: Improve USAID-supported and country-led Low Emission Development Strategy outcomes in clean energy											
Intermediate Result (IR) 1: Improve Operating Unit reporting (both the quantity and quality) to USAID under Indicator EG.12-6 (Greenhouse gas emissions reduced) and Indicator EG.12-7 (projected 30-year GHG emission reductions)											
Indicator	Baseline	Target					Actual				
		FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Indicator 1: Number of OUs pilot-testing the CLEER Protocol and Tool to estimate GHG reductions associated with clean energy activities (Count/Number)	0	8	10	5	4	1	7	12	5	4	1
Indicator 2: Number of OUs reporting GHG reductions associated with clean energy activities to USAID HQ (through FACTS) using the CLEER Protocol and Tool (Count/Number)	0	2	8	10	10	8	3	3	9	8	6
Sub-IR 1.1: Development of tools, protocols, and case studies to communicate emission reductions from USAID projects											
Indicator	Baseline	Target					Actual				
		FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Indicator 3: Number of case studies developed to communicate GHG impacts of USAID actions (Count/Number)	0	3	7	3	2	1	3	5	3	1	1
Sub-IR 1.2: Increase OU capacity to utilize CLEER Protocol and Tool											
Indicator	Baseline	Target					Actual				
		FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Indicator 4: Number of people trained in clean energy supported by USG assistance (EG.12-1) (Count/Number)	0	25	35	150	130	115	37	127	178	162	112
Indicator 7 (FY2018-FY2019): Number of USG staff or implementers trained in clean energy supported by USG assistance (Count/Number)	0	N/A	N/A	N/A	40	25	N/A	N/A	N/A	19	25

Table I: M&E Plan Indicator progress: USAID Standard Indicators and Project Custom Indicators (Continued)

IR 2: Increase capacity of institutions to implement low emission development strategies through identifying and providing technical resources											
Indicator	Baseline	Target					Actual				
		FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Indicator 5 (FY2015): Number of low emission development institutions engaged through meetings, webinars, and communications (Count/Number)	0	10	N/A	N/A	N/A	N/A	18	N/A	N/A	N/A	N/A
Indicator 5 (FY2016-FY2019): Number of institutions with improved capacity to address clean energy issues as supported by USG assistance (EG.12-2) (Count/Number)	0	N/A	3	8	5	6	N/A	2	8	5	6
Sub- IR 1.2 and IR 2: Increase OU capacity to use CLEER Protocol and Tool and increase capacity of institutions to implement low emission development strategies through identifying and providing technical resources											
Indicator	Baseline	Target					Actual				
		FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Indicator 6: Number of tools, technologies, and methodologies that support low emission development developed, tested, or adopted as a result of USG assistance (EG12.1-2) (Count/Number)	0	8	20	18	22	32	7	19	22	21	33

*Indicator Actuals are current as of September 24, 2019

FINANCIALS/COOPERATIVE AGREEMENT

The section below describes the RALI project's finances and details of the cost share contribution that was outlined in the original cooperative agreement.

COST SHARE CONTRIBUTION

The USAID RALI project had a funded value of \$6,467,488. As a condition of the RALI Associate Award to ICF, the project Agreement Officer initially determined that a minimum of \$125,000 in cost share was required before the end of the project's period of performance. In accordance with Section A.7 of the RALI cooperative agreement ICF worked diligently during implementation to ensure that the cost share contribution exceeded the minimum requirement. Below is an overview of the ICF-facilitated partnership and collaboration that led to these contributions.

Throughout the project life cycle the RALI team partnered with USAID to prioritize leveraging and building upon work performed by non-U.S. Government organizations to achieve common objectives. Through this initiative RALI facilitated an expanded collaboration with WRI as a part of the NDC Partnership Support Unit. The NDC Partnership's development of the NDC Knowledge Portal, which includes the NDC Toolbox Navigator, supports countries in implementing climate actions associated with NDC commitments, which aligns directly with both USAID and RALI objectives.

Between October 2016 and July 2017, RALI and WRI collaborated on the development of the NDC Toolbox Navigator. Under this collaboration, WRI coordinated working group members within the NDC Partnership Support Unit and conducted additional methods. Additionally, WRI led stakeholder engagement efforts, defined technical requirements, and developed and maintained a prototype. In accordance with ADS 303.3.10 and 2 CFR 200.306, the labor hours and financial contributions contributed by WRI during this period were counted as cost share contributions. As a result of this ICF-facilitated partnership an additional \$142,125.60 in cost share was contributed to the RALI cooperative agreement.

INDEX OF ALL RELEVANT WORK PRODUCTS

The table below provides a comprehensive catalogue of all RALI products published over the lifetime of the project. A few key details describe each product including the resource type, associated RALI workstream, applicable region, and general themes. Additionally, all products are linked to the online version.

Table 2: RALI Products

RALI Product	Product Type	RALI Workstream	Region	Theme
Hydropower in Tanzania	Blog Post	RALI Series	Africa	Adaptation, Clean Energy, Climate Risk, Power System Resilience
Risky Business? Climate Change, Power Planning, and Resilience in Tanzania	Case Study	RALI Series	Africa	Adaptation, Clean Energy, Climate Risk, Power System Resilience
Harmonization Recipe: Energy Sector	Methodology	RALI Series	Global	MRV, Energy
Harmonization Recipe: AFOLU Sector	Methodology	RALI Series	Global	MRV, Agriculture
Market-Based Mechanisms to Reduce GHG Emissions in Asia	Paper	RALI Series	Asia	Clean Energy, Climate Finance, Climate Policy, Mitigation
RALI GHG MRV Harmonization Framework (English) RALI GHG MRV Harmonization Framework (Spanish)	Paper	RALI Series	Global	M&E, Mitigation
Market-Based Mechanisms to Reduce Greenhouse Gas Emissions in Asia	Blog	RALI Series	Asia	Clean Energy, Climate Finance, Climate Policy, Mitigation
Power System and Municipal Resilience in the Dominican Republic: Learning in Real-Time Following Hurricanes Irma and Maria	Case Study	RALI Series	Latin America & Caribbean	Adaptation, Power System Resilience

Table 2: RALI Products (Continued)

RALI Product	Product Type	RALI Workstream	Region	Theme
Municipal Hurricane Resilience in the Dominican Republic	Blog	RALI Series	Latin America & Caribbean	Adaptation, Power System Resilience
Supporting Low Emission Development by Generating Electricity from Biogas from Palm Oil Effluent: Costs, Benefits, and the Potential for Replication	Paper	RALI Series	Asia	Mitigation
Generating Electricity from Biogas from Palm Oil Mill Effluent	Blog	RALI Series	Asia	Mitigation
Climate Risk Screening Tools for Low-Emission Energy Development	Paper	RALI Series	Global	Climate Risk Management, Mitigation, M&E
Assessing Climate Risks in the Energy Sector	Blog	RALI Series	Global	Climate Risk Management, Mitigation, M&E
Strengthening Greenhouse Gas MRV Systems in Colombia: A RALI Engagement Case Study	Case Study	RALI Series	Latin America & Caribbean	Mitigation, M&E
Strengthening Greenhouse Gas MRV Systems in Colombia (English) Strengthening Greenhouse Gas MRV Systems in Colombia (Spanish)	Blog	RALI Series	Latin America & Caribbean	Mitigation, M&E
Benefits of Low Emission Development Strategies: The Case of Clean Energy Policies in Bangladesh	Paper	RALI Series	Asia	Clean Energy, Climate Policy, Mitigation
Addressing Climate Vulnerability for Power System Resilience and Energy Security: A Focus on Hydropower Resources	Paper	RALI Series	Global	Clean Energy, Climate Risk, Power System Resilience
Planning for Hydropower Resilience in a Changing Climate: A Four Step Approach to Addressing Risk	Blog	RALI Series	Global	Clean Energy, Climate Risk, Power System Resilience
Calculating Energy Saving and Projected Emissions Reduced	Paper	RALI Series	Asia	Clean Energy, Mitigation, M&E

Table 2: RALI Products (Continued)

RALI Product	Product Type	RALI Workstream	Region	Theme
Benefits of Low Emission Development Strategies: The Case of Kenya's Lake Turkana Wind Power Project	Case Study	RALI Series	Africa	Clean Energy, Mitigation
Quantifying Benefits from Large-Scale Wind Power: A New Case Study in Kenya	Blog	RALI Series	Africa	Clean Energy, Mitigation
Empowering Low Emission Development in the Pacific	Paper	RALI Series	Asia	Clean Energy, Mitigation
Empowering Renewable Energy Development in Pacific Island Countries	Blog	RALI Series	Asia	Clean Energy, Mitigation
Bringing Harmony to GHG MRV	Paper	RALI Series	Global	Clean Energy, Mitigation, M&E
Harmonizing Greenhouse Gas Mitigation Project Accounting and National Inventories	Blog	RALI Series	Global	Clean Energy, Mitigation, M&E
Using the US EPA's Workbook to Support Preparation of National GHG Inventories: The Experience of Bangladesh	Paper	RALI Series	Asia	Emissions, Mitigation, M&E
Calculating and Projecting Energy and GHG Benefits	Paper	RALI Series	Latin America & Caribbean	Climate Finance, Mitigation, M&E
Using the US EPA's Workbook to Support Preparation of National GHG Inventories: The Experience of Bangladesh	Case Study	RALI Series	Asia	Mitigation, M&E
Preparing National Emissions Inventories with US EPA Templates	Blog	RALI Series	Asia	Mitigation, M&E
Accounting for Climate Progress Through Harmonized GHG Accounting	Webinar	RALI Series	Global	M&E, Mitigation
Women's Leadership Is Necessary for the Clean Energy Transition	Paper	RALI Series	Global	Gender, Clean Energy
Gender Inclusive Recruitment and Selection: A Workbook for Clean Energy Incubators	Workbook	RALI Series	Global	Gender, Clean Energy

Table 2: RALI Products (Continued)

RALI Product	Product Type	RALI Workstream	Region	Theme
Monitoring and Evaluation Framework for Gender Inclusive Recruitment and Selection	Framework	RALI Series	Global	Gender, Clean Energy
Women in the Clean Energy Transition	Fact Sheet	RALI Series	Global	Gender, Clean Energy
RALI Collaborates with WRI to Identify Tools to Support Climate Commitments	Blog	NDC Partnership	Global	Adaptation, Mitigation, M&E
From Climate Commitments to Action—the NDC Toolbox Navigator Brings a World of Resources into Customized Focus	Blog	NDC Partnership	Global	Adaptation, Mitigation, M&E
NDC Climate Toolbox	Tool	NDC Partnership	Global	Adaptation, Mitigation, M&E
Clean Energy Emissions Reduction (CLEER) Tool	Tool	CLEER	Global	M&E
USAID CLEER Web Tool Training	Webinar	CLEER	Global	M&E
CLEER Tool Webinar Recording Available Now	Blog	CLEER	Global	M&E
South African Municipalities Use CLEER to Assess Clean Energy Impacts	Blog	CLEER	Africa	Clean Energy, Climate Policy, M&E
Calculating Energy Savings and Projected Emissions Reduced: A Case Study of Industrial Energy Efficiency Activities in Colombia	Case Study	CLEER	Asia	Clean Energy, Mitigation, M&E
Calculating Energy Savings and Projected Emissions Reduced in Bangladesh Using the CLEER Tool	Blog	CLEER	Asia	Clean Energy, Mitigation, M&E
Benefits of Low Emission Development Strategies: The Case of Clean Energy Policies in Bangladesh	Case Study	CLEER	Asia	Clean Energy, Mitigation, Climate Policy

Table 2: RALI Products (Continued)

RALI Product	Product Type	RALI Workstream	Region	Theme
CLEER Tool Now Estimates Energy Generated and Cost Savings Produced from Clean Energy Projects	Blog	CLEER	Global	M&E
CLEER Protocol	Methodology	CLEER	Global	M&E
Calculating and Projecting Energy and GHG Benefits	Case Study	CLEER	Latin America & Caribbean	Clean Energy, M&E
Solar, Wind, and Energy Efficiency Progress in El Salvador	Blog	CLEER	Latin America & Caribbean	Clean Energy, M&E
Calculating Energy Savings and Projected Emissions Reduced: A Case Study of Industrial Energy Efficiency Activities in Colombia	Case Study	CLEER	Latin America & Caribbean	Energy Efficiency, M&E
Calculating Energy Savings and Emission Reductions in Colombia Using the CLEER Tool	Blog	CLEER	Latin America & Caribbean	Energy Efficiency, M&E
CLEER Fact Sheet	Fact Sheet	CLEER	Global	M&E
Using the CLEER Tool to Estimate GHG Impacts of USAID PFAN-Asia	Blog	CLEER	Asia	M&E, Clean Energy, Climate Finance
Calculating and Projecting Energy and Greenhouse Gas Benefits in Mexico with the CLEER Tool	Blog	CLEER	Latin America & Caribbean	M&E, Clean Energy, Agriculture
RALI Fact Sheet	Fact Sheet	RALI	Global	Clean Energy



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