

RALI Series: Promoting Solutions for Low Emission Development

Strengthening Greenhouse Gas MRV Systems in Colombia: A RALI Engagement Case Study

The RALI Series is a collection of papers developed by the RALI project to share examples of low emission development in practice. The series features case studies, tools, and innovative new approaches in this space, highlighting user benefits and lessons learned. To learn more about the RALI project, visit <https://www.climatelinks.org/projects/rali>.

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INTRODUCTION

Transparent greenhouse gas emissions (GHG) accounting is essential for monitoring global progress in the fight against climate change. While many countries are implementing ambitious mitigation actions, monitoring and reporting of the GHG impacts of these actions within national inventories remains a persistent challenge for climate change practitioners. National inventories often fail to capture mitigation actions because project implementers and GHG inventory teams are not using comparable data sources, assumptions, and GHG accounting methodologies. In other instances, there may be poor institutional arrangements for tracking, archiving, and sharing mitigation data between project developers, government agencies, and the inventory team. These types of mismatches and organizational gaps can mean that a country's actual emission reductions achieved may not be reflected in national accounting and reporting.

The need for transparent GHG accounting that reflects both emissions and reductions is increasingly urgent as we approach 2020, when the Paris Agreement enters into force. Under the Agreement, countries are required to set GHG emission reduction targets through nationally determined contributions (NDCs) and to demonstrate progress towards these targets according to the requirements of the Paris Rulebook.

Recognizing the need to improve the alignment of GHG accounting between mitigation activities and the national inventory, USAID's Resources to Advance LEADS Implementation (RALI) project worked in close collaboration with the Government of Colombia (GoC) to harmonize the country's GHG MRV systems. Colombia is a regional leader in climate action, having implemented a carbon tax, passed legislation to incentivize renewable energy projects, and spearheaded low emissions development in the Latin American cattle sector. In the next few years, the GoC has prioritized harmonizing its MRV systems and national inventory to ensure that their climate achievements are accurately reflected in their international reporting (i.e., national inventory reports, biennial transparency reports). This case study describes the activities and lessons learned from RALI's engagement in Colombia.

MISSION SUMMARY

RALI worked with the GoC'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 two overarching streams of work to strengthen the country's MRV systems:

Harmonization of Colombia's GHG Accounting: RALI conducted an analysis of the methodologies, data, and institutional processes used for conducting project-level MRV and for developing the national GHG inventory to understand the current state of GHG accounting in Colombia. Through this analysis, RALI identified gaps and presented tangible recommendations for aligning the national GHG inventory with mitigation data and methodologies. To guide the process, RALI developed and applied the **GHG MRV Harmonization Framework**. Based on MADS and IDEAM's priorities, RALI analyzed and harmonized the GHG MRV associated with mitigation activities from the livestock Nationally Appropriate Mitigation Actions (NAMA) and with increasing renewable energy in the energy matrix.

Data Platform Development: To support the continued institutionalization of GHG accounting systems and increased transparency, the RALI team worked closely with the GoC to design and prototype a data management platform for the national inventory. The Sistema Nacional de Inventarios de Gases de Efecto Invernadero (“SINGEI”) is designed to integrate into MADS and IDEAM’s existing IT infrastructure and business practices, which minimizes disruption and adoption risk, while supporting improved centralization and archiving of inputs and process.

Best Practice: Broad Stakeholder Engagement

Stakeholder engagement was a key component of RALI’s work throughout this mission to ensure that the GoC’s MRV priorities were being addressed. RALI worked with a range of stakeholders and development partners in Colombia to understand the current state of MRV for mitigation and inventory data for the two mitigation activities. This engagement allowed RALI to develop a strong understanding of the existing GHG MRV landscape and tailor solutions to meet Colombia’s needs. Communication and coordination between the relevant organizations in Colombia was key to ensuring that the engagement was efficient, additional, and successful. Stakeholders involved in the RALI mission included:

- Ministry of Environment and Sustainable Development (MADS),
- Institute of Hydrology, Meteorology, and Environmental Studies (IDEAM),
- Colombian Institute of Technical Standards and Certification (ICONTEC),
- Department of National Planning (DNP),
- Environmental Business Corporation (CAEM),
- Fundación Natura,
- German Society for International Cooperation (GIZ),
- SilvaCarbon Program,
- Valledupar Regional Government,
- Visión Amazonía, and
- World Resources Institute.

HARMONIZATION OF COLOMBIA’S GHG ACCOUNTING

The USAID RALI project has pioneered a new approach and accompanying guidance on aligning mitigation results from on-the-ground projects with national inventories. RALI’s GHG MRV Harmonization Framework provides an approach for GHG inventory teams 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 to be a sustainable, “turn-key” approach as it allows inventory teams to continuously improve their GHG accounting without external support from RALI.



The RALI GHG MRV Harmonization Framework

While working in Colombia, RALI applied the Harmonization Framework to the two pilot mitigation activities. RALI mapped the causal chain of the mitigation activities’ outcomes and GHG impacts to the standardized sectors and source categories as defined by the Intergovernmental Panel on Climate Change (IPCC).¹ The causal chain is a flow chart that maps the activity’s impact on GHG emissions. For example, additional renewable energy projects would be expected to

¹ IPCC source category descriptions can be found in Table 8.2 of Volume I, Chapter 8 of the 2006 IPCC Guidelines for National Greenhouse Gas Inventories available at: https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/1_Volume1/V1_8_Ch8_Reporting_Guidance.pdf.

reduce the need for diesel generators to meet energy needs and, in turn, GHG emissions from fossil fuel combustion.² RALI then evaluated the current processes in place for MRV for the mitigation activities (i.e. “bottom-up” GHG accounting), including a review of how project implementers collect and share emissions-related data. Next, RALI evaluated the current processes and calculations in place for development of the national inventory (i.e. “top-down” GHG accounting).

Using the data and process information collected, RALI compared the the current bottom-up and top-down accounting and assessed whether emission impacts from the Livestock NAMA and renewable energy mitigation activities were likely to be captured in Colombia’s current national inventory. RALI identified recommendations for improving harmonization where bottom-up and top-down accounting methods were not aligned.

Outcomes and Recommendations – Livestock NAMA

For the livestock NAMA, RALI found that the GHG impacts of mitigation activities related to Manure Management, Agricultural Soil Management, and Grassland Remaining Grassland would not be captured by the national inventory without changes to the current MRV and inventory practices. In the case of Enteric Fermentation, RALI found that the current inventory would sufficiently capture mitigation impacts. Based on the analysis, RALI provided a range of recommendations to harmonize bottom-up and top-down MRV for these activities, including:

- Improving livestock data collection,
- Collecting emission factor data inputs at the project-level,
- Updating emission factors more frequently to reflect changing trends in the livestock sector, and
- Using country-specific emission factors instead of default factors.



RALI identified several opportunities to align Colombia’s current national inventory GHG accounting with MRV for livestock mitigation activities.

RALI also recommended strengthening the inventory development process by improving data sharing between mitigation projects and the national inventory, and leveraging regional inventory efforts in South American countries where possible to develop country- or region-specific emission factors.

Outcomes and Recommendations – Renewable Energy Activities



Colombia’s existing inventory methods can capture the GHG impacts of renewable energy activities. However, these methods could be further refined.

RALI’s evaluation of renewable energy activities focused on the GHG impacts of increasing renewable energy capacity in the non-interconnected zones in Colombia, where the majority of current energy use is from diesel generators. Renewable energy data are not directly reported to Colombia’s national inventory compilers because renewable energy does not emit GHGs at the point of generation. Instead, displaced emissions, accounted for in the IPCC source category Fossil Fuel Combustion, reflect the impact of renewable energy projects. The RALI team concluded that Colombia’s existing inventory methods sufficiently capture the impacts of increased renewable energy capacity, as measured through reductions in Fossil Fuel Combustion. Recognizing that bottom-up and top-down accounting are already aligned (i.e., renewable energy activity impacts are reflected in the national inventory), RALI focused its recommendations on ways to enhance data granularity, reduce uncertainty, strengthen existing institutional

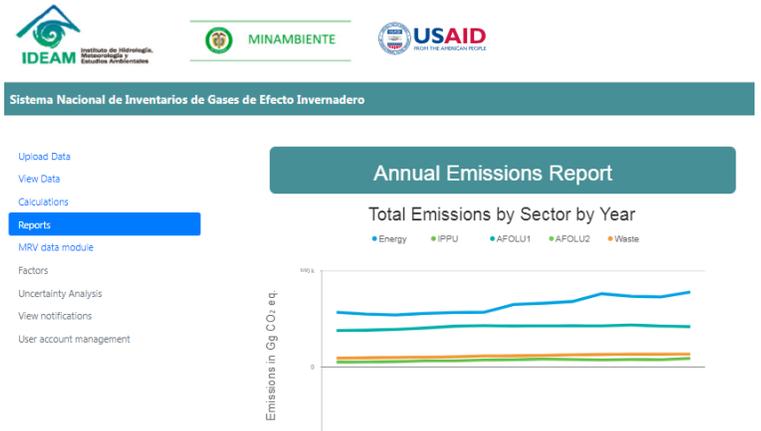
² This step of the GHG MRV Harmonization Framework is informed by the GHG Protocol’s *Policy and Action Standard*. Guidance on mapping the causal chain can be found in Chapters 5, 6, and 7 of the *Policy and Action Standard* available at <http://www.wri.org/publication/policy-and-action-standard>.

arrangements, and refine inventory improvement planning. In addition, because harmonization between bottom-up and top-down accounting is already achieved, the GoC can focus limited resources on identifying and implementing harmonization improvements in other sectors.

DATA MANAGEMENT PLATFORM DEVELOPMENT

RALI's technical team worked closely with stakeholders in Colombia to respond to a 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 system, known as SINGEI, to improve the GoC's ability to develop periodic, robust national inventories, making responding to international reporting obligations more efficient.

Before developing the information technology (IT) platform, RALI assessed the current information systems used for inventory development. RALI conducted numerous consultations with the IDEAM IT team, the IDEAM Global Change team, consultants, MADS, and other entities that submit inventory activity data. Based on feedback from stakeholder conversations, RALI developed the software requirements specifications (a "blueprint" for development) for SINGEI and a working prototype to demonstrate the feasibility of the proposed data architecture.



Example emissions report from the prototype for the SINGEI national GHG data management platform that the USAID RALI project team developed in conjunction with the Government of Colombia.

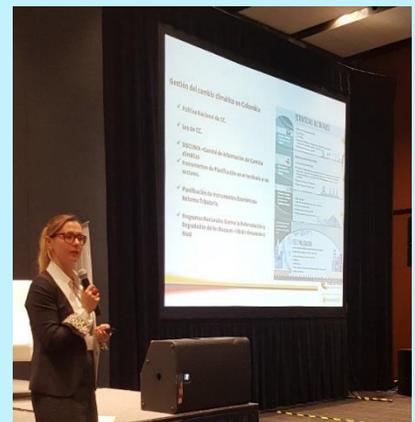
The benefits of the SINGEI platform and RALI's platform development approach include:

- **Compatibility and interoperability** with other GoC IT systems and business processes, enabling easier platform implementation and efficient data transfers;
- **Customization** around how current users are already interacting with IT systems; and
- **Flexibility** to be used beyond current UNFCCC reporting needs, including for enhanced support for data aggregation and reports for local Colombian use.

Best Practice: Capacity Building and Peer Training

To support strengthened MRV and facilitate the adoption of SINGEI, RALI conducted trainings for MADS, IDEAM, and other relevant stakeholders (e.g., staff from line ministries) on applying the RALI GHG MRV Harmonization Framework for future mitigation actions and on the integration of the SINGEI design and prototype. In addition to strengthening capacity within Colombia, RALI collaborated with the GoC to present on best practices and lessons learned to government representatives from other countries, both in the region and globally. RALI and the GoC presented on the need for MRV harmonization and the Colombian experience at:

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



Laura Torres (MADS) presenting with the RALI team on harmonizing GHG MRV at the LAC LEDS regional meeting.

NEXT STEPS INCREASING TRANSPARENCY FOR COLOMBIA

The collaboration between RALI and the GoC has provided Colombia with the tools needed to strengthen its MRV systems. RALI provided suggestions for prioritizing harmonization improvements based on the greatest potential emission impacts, impacts to multiple source categories, and alignment with Colombia's existing Inventory Improvement Plan. The GoC will use these and other criteria to begin improving its national inventory and mitigation activity MRV processes. In addition to the harmonization analysis, RALI developed guidance for the harmonization approach that can be used by Colombia's climate change practitioners to conduct similar analyses for other mitigation activities. As other countries in the region look to strengthen their MRV systems, there may also be an opportunity for Colombia to collaborate with regional partners.

With the SINGEI prototype, Colombia now has a validated data structure that can be integrated with current processes and built upon in the future. The software blueprint describes how the technical architecture should be set up and configured by IDEAM to replicate the prototype in the IDEAM technical environment. From the RALI engagement, the GoC now has the foundation to take the next step and implement a complete system to gather, organize, calculate, and report GHG emissions data.

HARMONIZING GHG MRV IN OTHER COUNTRIES

Strengthening existing GHG MRV systems will be critical as mitigation activities spurred by the Paris Agreement accelerate. RALI's partnership with the GoC provides a model for future engagement between countries and international partners looking to harmonize national inventory and GHG MRV systems. Global climate change practitioners and inventory analysts can use RALI's guidance on the GHG MRV Harmonization Framework to harmonize GHG accounting for their respective national inventories and mitigation activities. Meanwhile, SINGEI demonstrates that effective platform development, based on robust data process mapping and stakeholder engagement, can enable countries with lower IT investment capabilities to benefit from similar efforts. Countries and supporting international partners could apply these lessons when developing or improving their own data platforms for GHG MRV. By continuously taking steps such as these to improve their GHG MRV systems, countries will be well positioned to meet the requirements under the Paris Agreement and enhance their capacity to track progress in addressing climate change.

Contact

USAID
Amanda Valenta
Climate and Energy Specialist
avalenta@usaid.gov

ICF
Marian Van Pelt
Project Director
marian.vanpelt@icf.com

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