



INITIATIVE ON  
Livestock and Climate

# Livestock and Climate Initiative

Jacobo Arango on behalf of the L&C team

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14 December 2022



# Climate change is our entry point

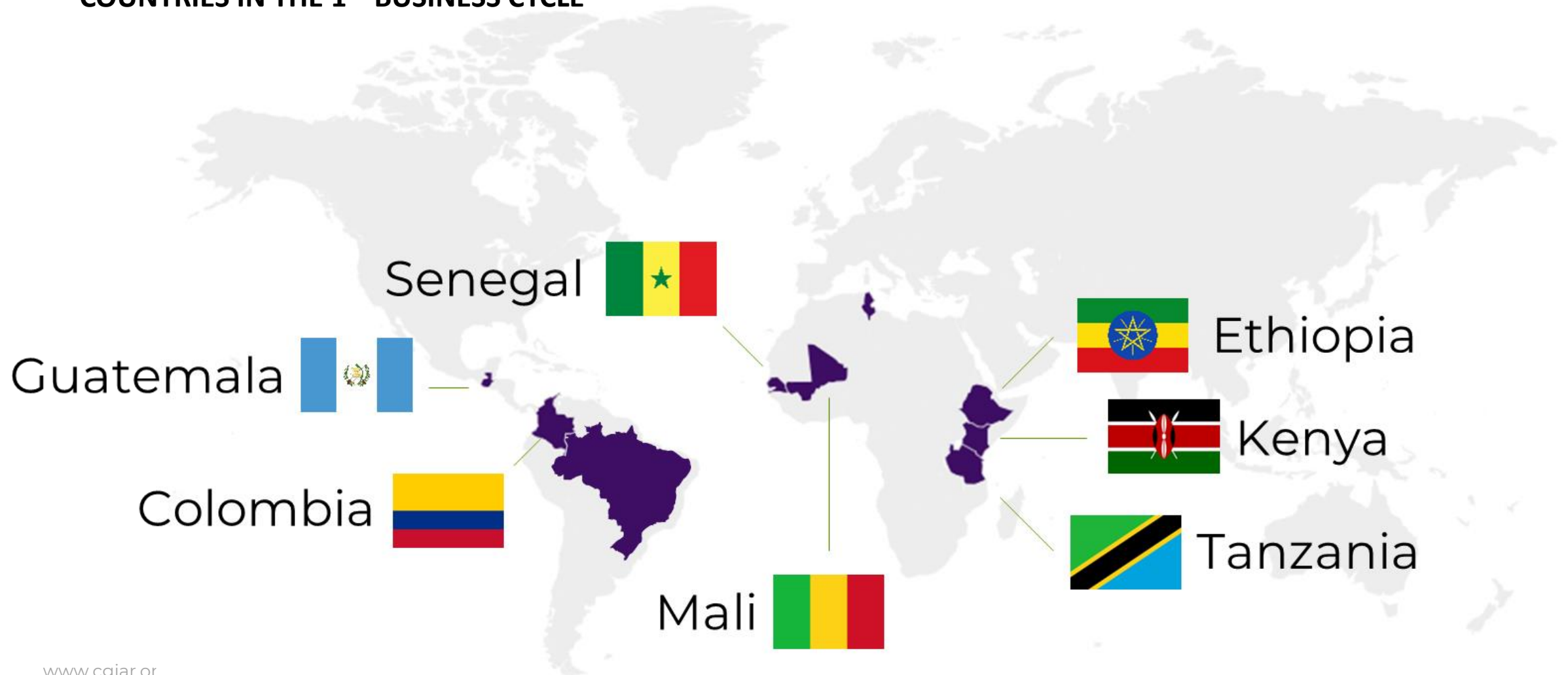
Address the “**double burden**” of livestock and climate change: Livestock are **victim** (requires adaptation) and the **villain** (requires mitigation)



And because **livestock are central to 1.3 billion livelihoods**, 50% of agricultural land, and vital for soils, water, and human health our actions can also have large impact on the other CGIAR Impact Areas.

# Where we work: L&C's 80/20 rule

## COUNTRIES IN THE 1<sup>ST</sup> BUSINESS CYCLE



# What we do (Work packages)



Strengthen household capacities



Todd Crane  
ILRI



Reduce climate risk with digital services



Issa Ouedraogo  
ABC



Leverage landscapes approaches



Mounir Louhaichi  
ICARDA



Identify ways to finance the transition



Todd Rosenstock  
ABC



Support policy environment



Fiona Flintan  
ILRI

# End of Initiative Outcomes\*



80,000 **households across six countries will implement climate smart livestock technologies** to improve their resilience to climate shocks and reduce GHGe, with labor-saving technologies and mechanisms supporting the potential for women to benefit.



320,000 **value chain actors will access bundled climate information**, insurance and credit services delivered through public-private partnerships; women and youth will show a 25% increase in their use of services.



**Land managers will implement governance and restoration practices** on 500,00 hectares of land used for livestock production, with an increase of 25% in women's participation in decision making.



**Climate investors will commit USD 25 Million to finance the transition** towards climate smart livestock production.



International agencies and national **policy makers will use L&C evidence and outputs** to shape four policies or investments to support climate smart livestock production.

\* Assumes current budget level

# Implementation to date



- One of the few initiatives to **reach our FinPlan budget** with designated funds.



- Organized side events at **UNFCCC COP 27, Global Landscapes Forum**.



- Officially an **AIM4C Innovation Sprint Partner**.

- Early outcome: successful **pilot sequestering soil carbon** in managed pasture-based livestock system.

- **Impact Assessment** option with SPIA: rangeland management work in Kenya and Tanzania.

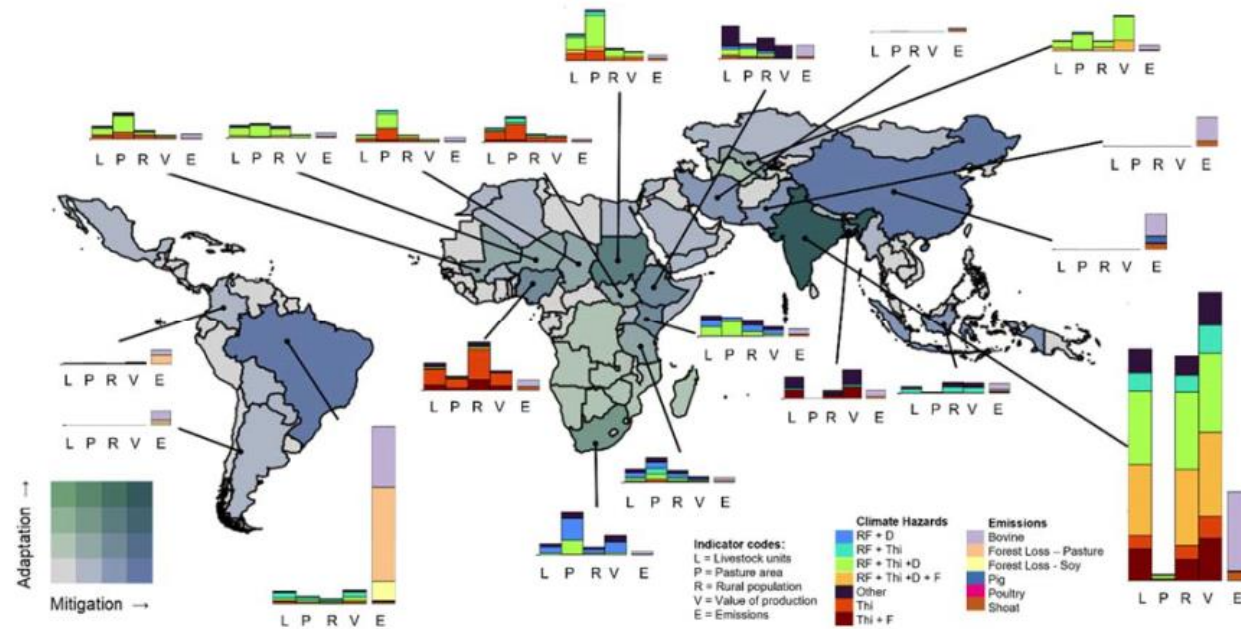
- **Engagement** with the Global Research Alliance, the World Bank and Green Climate Fund.



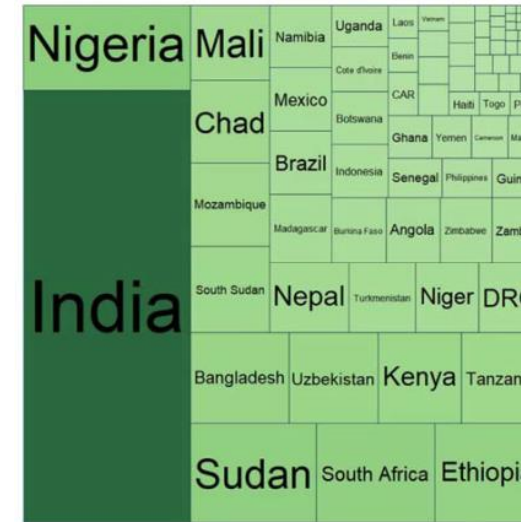


# Clear adaptation and mitigation priorities for livestock investments

Analysis of climate hazards and emissions sources to determine global and national (132 LMICs) priorities



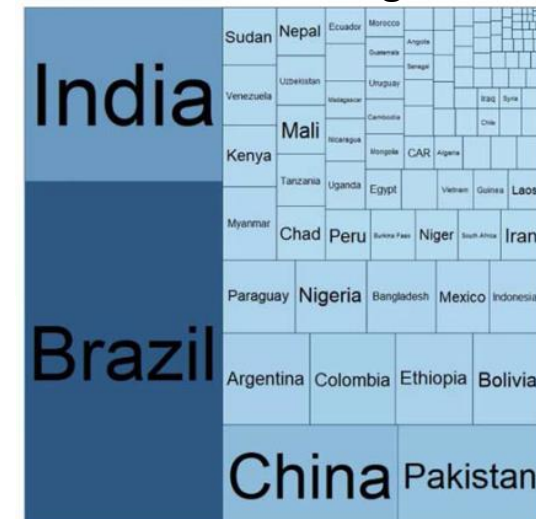
## Adaptation



Exposure of livestock to climate hazards

Livestock-based emissions including feeds and land by country

## Mitigation



- ✓ Adaptation and mitigation goals are inextricably linked for the vast majority of these countries.
- ✓ top five investment priorities are India, Brazil, China, Pakistan, and Sudan

Preprint | 17 November 2022

### Priorities for investing in low-emissions and climate-resilient livestock production systems.

Authors: Camila Bonilla-Cedrez, Peter Steward, Todd S. Rosenstock, Philip Thornton, Jacobo Arango, Martin Kropff, Julian Ramirez-Villegas | [AUTHORS INFO & AFFILIATIONS](#)

Publication: AgriRxiv • 2022 • <https://doi.org/10.31220/agriRxiv.2022.00163>

# Consolidating CGIARs efforts quantifying livestock emissions across 2 continents



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## Emissions accounting supports:

- Filling the evidence gap for LMIC livestock systems
- National GHG inventory development
- Designing low-emissions investments and programs



## State of the art lab and field GHG measurements

- Enteric, manure, fertilizer emissions
- Soil and biomass carbon at plot and landscape scales
- Activity data on livestock numbers, feed, and management
- Building local science capacity





# Supporting land restoration



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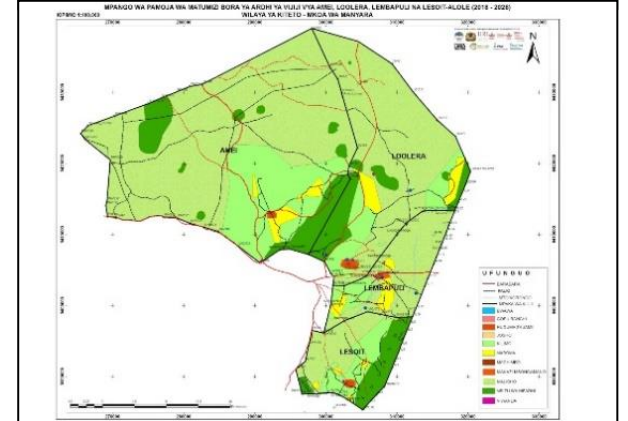


By using **participatory approaches in pastoral rangelands**, we deliver:

- Grazing resources and water central to resilience against climate shocks
- Support effective governance institutions
- Over a decade of experience in Tanzania, Ethiopia and Kenya
- Gender and youth inclusion approach

We deliver with **avoided deforestation in agro-sylvo-pastoral systems**

- Experience in Colombia and Brazil
- Market based solutions (labeling for sustainable beef)
- Traceability tools to track cattle through value chain
- Intensification of pastures to reduce pressure for land



# Builds on and scales out experience on digital services (CIS, insurance) for resilience



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## Deliver bundles of climate information, insurance and credit services through public-private partnerships

- In Senegal more than a million farmers receive climate information services, enabling them to make better informed decisions
- Crowd-sourcing of data from remote pastoral areas in East Africa enables real time monitoring and response, e.g. to droughts
  - including nutritional and diet information
- Successful promotion of drought risk financing products in Horn of Africa has driven other investment opportunities
  - e.g. for fodder markets



# L&C Tracking Climate Adaptation

## Domesticate adaptation tracking tool in 2 countries and international reporting community

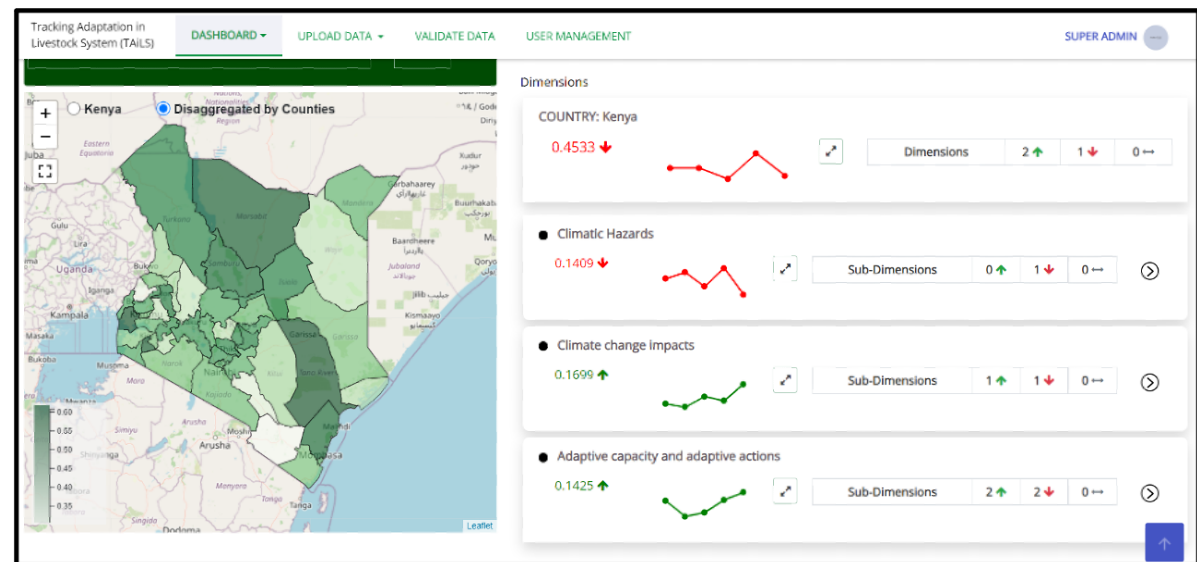
- Continue working with government stakeholders in Kenya and Ethiopia to bring climate change adaptation tracking tool into application for reporting against NDCs,

Work with national stakeholders on flow of available data, institutionalization in reporting

- Advocate for adaptation tracking framework in international adaptation tracking community



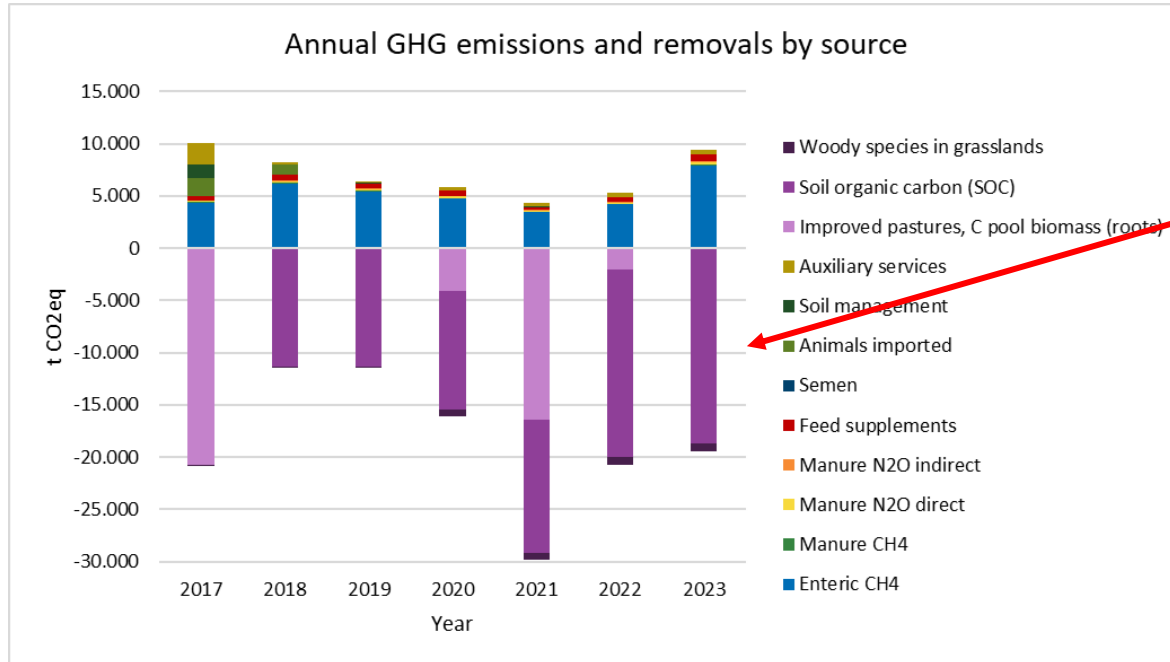
*Effective adaptation tracking, alongside GHG reporting, will support access to climate finance in livestock systems.*





# Mitigation: Impact of planting *Bh* CIAT679 on a large cattle breeding farm (8,800 ha) on its carbon footprint

Functional unit: Live weight (LW) produced during 2017–2023: 5,840 t



Carbon-intensity: 8.4 kg CO<sub>2</sub>eq kg<sup>-1</sup> LW

✓ 46% lower than breeding farms in the region.

Soil carbon sequestration potential: 2.5 t CO<sub>2</sub> ha<sup>-1</sup> y<sup>-1</sup>

✓ Deep root systems and high root turnover for 20 years with improved grazing of pasture *B. humidicola*.

Negative carbon footprint: -17.0 kg CO<sub>2</sub>eq kg<sup>-1</sup> LW

✓ Carbon sequestration is higher than GHG emissions.

✓ Opportunity to access C markets and expand to 180k ha

N<sub>2</sub>O emissions reduced from 2,5 (urine) to 10-fold (water) compared to tropical savanna



frontiers | Frontiers in Climate

Carbon footprint and mitigation scenarios for Hacienda San Jose

Identifying opportunities and challenges using a consolidated modelling framework

Prepared by: Jacobo Arango<sup>1</sup>, Mike Bastidas<sup>2</sup>, Cinero Costa Jr.<sup>1</sup>, Ricardo González<sup>1</sup>, Alejandra Marín<sup>1</sup>, Natalia Matiz<sup>2</sup>, Alejandro Ruden<sup>1</sup> & Daniel Villegas<sup>1</sup>

<sup>1</sup>International Center for Tropical Agriculture (CIAT), Cali, Colombia.  
<sup>2</sup>University of Stuttgart, Germany  
February 2022



Research paper:

<https://doi.org/10.3389/fclim.2022.916068>

Report:

<https://hdl.handle.net/10568/121105>



# Providing technical assistance to increase climate-explicit livestock investments



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Fill the climate investment gap in the livestock sector through partnerships for:

- Investment design (e.g. ROI)
- Monitoring tools for tracking impact
- Testing opportunities on carbon market for the livestock sector



FINAL REPORT

## Carbon footprint and mitigation scenarios for Hacienda San Jose:

*Identifying opportunities and challenges using a consolidated modelling framework*

Prepared by: Jacobo Arango<sup>1</sup>, Mike Bastidas<sup>1</sup>, Ciniro Costa Jr.<sup>1</sup>, Ricardo González<sup>1</sup>, Alejandra Marin<sup>1</sup>, Natalia Mattz<sup>1,2</sup>, Alejandro Ruden<sup>1</sup> & Daniel Villegas<sup>1</sup>.

<sup>1</sup>International Center for Tropical Agriculture (CIAT), Cali, Colombia.

<sup>2</sup>University of Stuttgart, Germany.

February 2022



# Knowledge products in 2022\*

## Total publications:

- ISI Papers: 26
- Others: 85

## Acknowledgement to the Initiative:

- ISI Papers: 13
- Others: 68

*Other kind of acknowledgements: CGIAR, legacy CRP Livestock, other initiatives*

	WP1	WP2	WP3	WP4	WP5
ISI Papers	14	3	11	5	9
Others	50	10	48	22	52

# Strategic issues

- Early 2022 budget adjustments challenging
  - Working for transparency and a shared vision
  - Will remain a challenge with any new funds
- Slow to get in new staff
  - Hiring consultants, sharing ToRs
- Slow/difficult to commit to partner agreements
  - Beginning with well known, trusted partners
- Successfully aligning with **ClimBeR** and **MITIGATE+** Initiatives
- Unclear, unstable funding structure makes recruitment of PhDs difficult.

# Thank you!



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