CLIMATE ACTION RESERVE

Argentina Livestock Protocol V1.0

Workgroup Meeting 3

June 4, 2024

Introduction

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Housekeeping

- Workgroup members have the opportunity to actively participate throughout the meeting
  - Ask that you keep yourselves muted unless / until would like to speak
- We will ask and take questions throughout the session
  - Please raise your hand if you wish to speak

    (For virtual attendees - function available on Zoom)
- All other attendees/observers are in listen-only mode
- Observers are free to submit questions in the question box or via email
- We will follow up via email to answer any questions not addressed during the meeting
- The slides and a recording of the presentation will be posted online

AGENDA

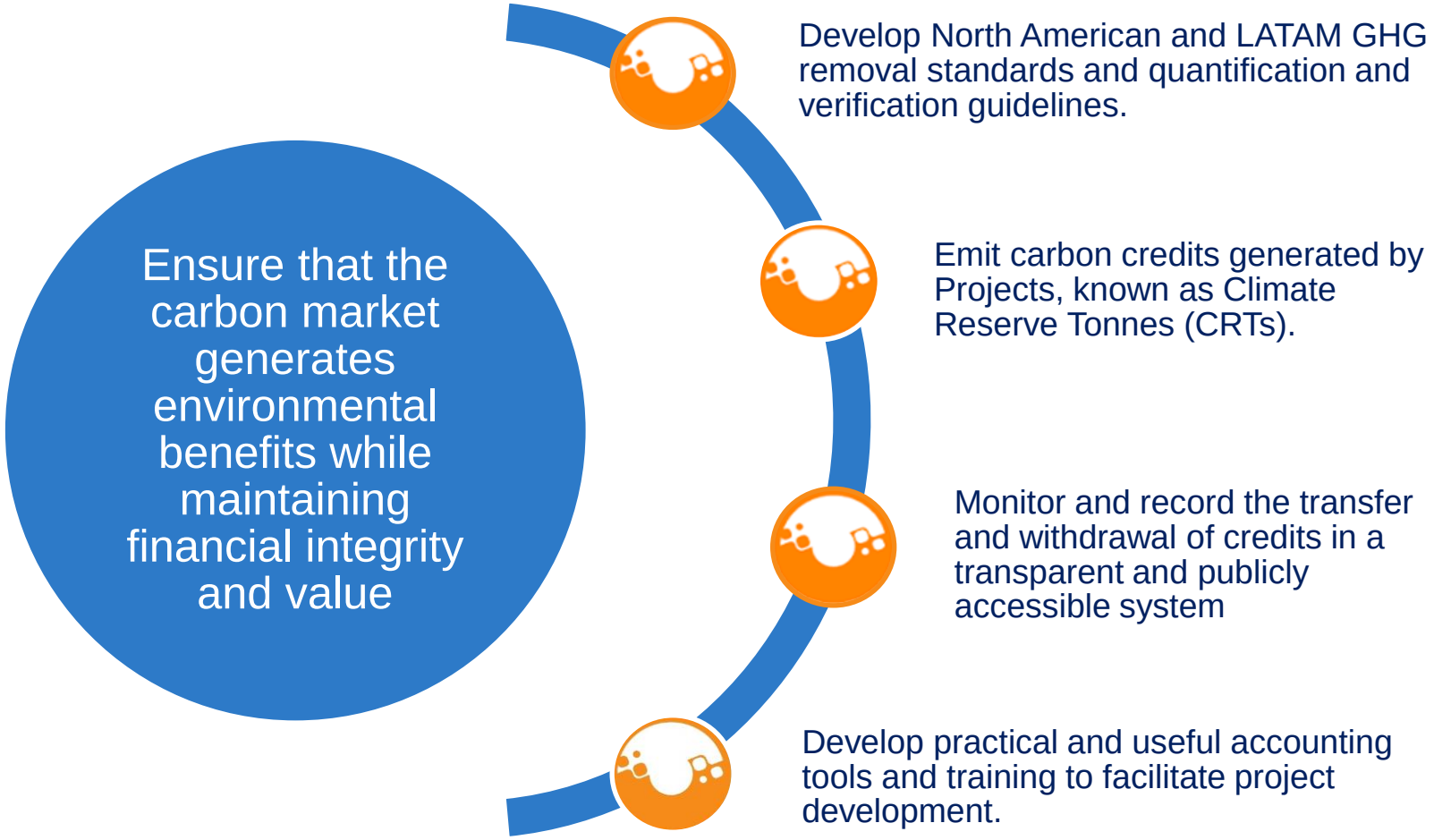
- Introductions
- Process Overview
- Protocol Considerations and Workgroup Comments
  - Key Takeaways and pending items
    - Project Definition – Eligible livestock categories
  - Assessment Boundary & Quantification
    - Site-specific B_0 value
    - Overview of Livestock Calc Tool
  - Other
- Open Discussion
- Next Steps

CLIMATE ACTION RESERVE

Climate Action Reserve

- Mission: to develop, promote and support innovative, credible market-based climate change solutions that benefit economies, ecosystems and society
- Develop high-quality, stakeholder-driven, standardized carbon offset project protocols across North America and Latin America
- Accredited Offset Project Registry under the California cap-and-trade program
- Serve compliance and voluntary carbon markets
- Reputation for integrity and experience in providing best-in-class registry services for offset markets

The Climate Action Reserve



CLIMATE ACTION RESERVE

- Adipic Acid
- Forest
- Forest (ARB)
- Grassland
- Landfill
- Livestock
- Livestock (ARB)
- Mine Methane
- Mine Methane (ARB)
- Nitric Acid Production
- Nitrogen Management
- Organic Waste Composting
- Organic Waste Digestion
- Ozone Depleting Substances
- Ozone Depleting Substances (ARB)
- Soil Enrichment
- Low Carbon Cement

911 Listed, Registered, Completed, & Transitioned Projects as of 8 April 2024

Climate Action Reserve

Voluntary & compliance

>700 Projects

200M+ Credits Issued

LATIN AMERICA

Mexico – Livestock, Landfill, Forest, Halocarbons

Panama – Forest

Guatemala - Forest

Dominican Republic – Livestock

Principles of the Reserve Program

All registered projects and credits issued by the Reserve must be:

ADDITIONAL	VERIFIED	REAL	PERMANENT	ENFORCEABLE
• Beyond common practices • Beyond regulatory requirements	• Standardized eligibility criteria and quantification methodologies • Independent third-party review.	• Conservative emissions accounting • Prescriptive models and equations • Uncertainty reduction	• Monitoring and reporting processes • Any leakage or loss is quantified and compensated	• Processes to ensure program compliance • Accountability mechanisms

- The Reserve seeks to be practical and ensures that projects do not have negative impacts
- The standards include social and environmental safeguards to ensure the participation and benefit of the participants

GHG Accounting Standardization

Two elements:

- Determination of project eligibility and additionality using standardized criteria rather than project-specific assessments.
- Quantification of GHG reductions/removals through a baseline established under certain assumptions, emission factors and monitoring methods.

Objectives:

- Minimize personal judgment in project assessment
- Reduce transaction costs for the project developer, minimize uncertainties for investors, and increase the transparency of the project when it is approved and verified

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INTRODUCTIONS

Workgroup Members

Organization (Alphabetical)	Name
Bret Consultores	Teresa Tattersfield
Displaced Carbon Committee - Government of Córdoba	Marine Iriart
Ecosecurities	Federico Fritz
Génesis	Laura Garzón
HINS Energía	Javier Slythe
MEXICO2	Yulissa Camacho
Ministry of Infrastructure and Public Services of Córdoba	Pablo Gabutti
Ministry of Bioagroindustry of Córdoba	Catalina Boetto
Ministry of Production – Corrientes Province	Raúl Eduardo Ortiz
National Technological University	Ariel Clebañer
National University of La Plata	Guillermo Piovano
Secretariat for Energy Transition - Ministry of Infrastructure and Public Services of Córdoba	Juan Martin Lemos
Secretariat of Energy Planning	Pamela Zanel
Secretariat of Livestock of Cordoba	Martina Solenot
SEGAM – Responsabilidad Ambiental	Marcos Cena
Subsecretary of the Nation's Environment	Agustina Cundari

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PROCESS OVERVIEW

Purpose

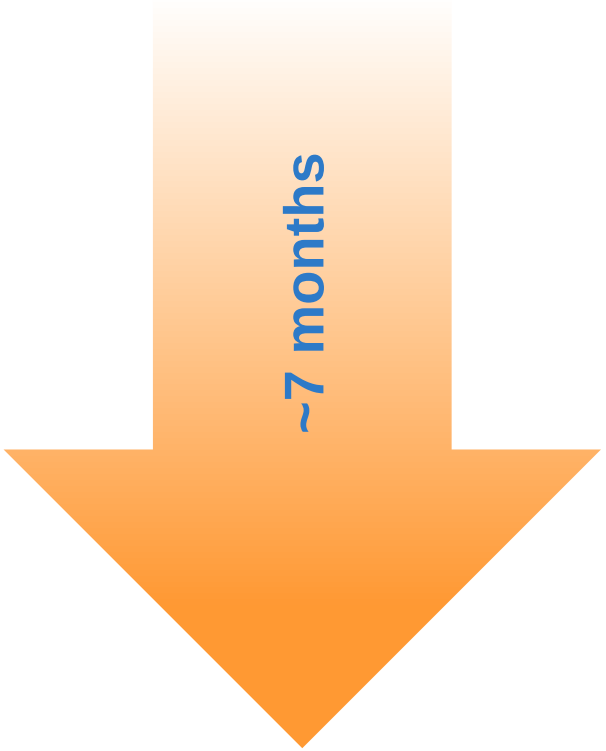
- To familiarize workgroup members with offset protocol development process – what we typically want in an offset protocol
- To present and solicit feedback from workgroup members on key considerations for the Argentina Livestock Protocol Version 1.0
- Provide draft protocol for reference and then revisions

Protocol Development Overview

- **GOAL**: To create a robust Argentina Livestock Protocol that provides best practices for GHG accounting to generate Climate Reserve Tonnes (CRTs)
  - Incentivize the capture and destruction of methane emissions from livestock operations
  - Direct carbon finance to the livestock sector and make biogas control system projects more financially attractive to investors
  - Adhere to high quality offset criteria and Reserve's principles
  - Leverage lessons learned from the Reserve's US, Dominican Republic, and Mexico Livestock protocols
  - Solicit and incorporate expert stakeholder feedback

Protocol Development Timeline

1. Kick-off meeting (*March 7, 2024*)
2. Workgroup process
   - Formation (*March 2024*)
   - Meeting 1 (*April 11, 2024*)
   - Meeting 2 (*May 7, 2024*)
   - Meeting 3 – In person *(June 4, 2024 – today)*
3. 30-day public comment period (*July-August 2024*)
4. Propose to Board adoption *(October 2024)*



Timeline Process Detail

	Mar	Apr	May	Jun	July	Aug	Sep	Oct
Public webinar	7th							
Workgroup formation								
1st workgroup meeting (webinar)		11th						
Drafting/content development								
2nd workgroup meeting (webinar)			7th					
3rd workgroup meeting (in person) - tentative				4th				
Drafting/content development								
Public comment period & webinar (30 days)								
Staff revisions based on feedback								
Internal reviews/formatting								
Deliver Board draft								
Public Board meeting								4th

Workgroup Process and Expectations

CAR/Process:

- Manage the protocol development process
- Hold 3 workgroup meetings
- Reserve staff identify and solicit feedback on specific protocol criteria
  - **Specific questions for WG will be highlighted in red**
- Reserve staff will share the draft protocol with WG
- Revise protocol based on feedback

WG/Expectations:

- Attend all (~3) workgroup sessions
- Be active participants: provide input and ask questions on protocol concepts and language
- After meetings, share additional input and expertise as needed
- Review draft protocol and provide written feedback to Reserve staff
- Be constructive, collaborative, and productive

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PROTOCOL CONSIDERATIONS

Project Ownership

The Reserve added the following language into the Protocol to clarify potential *hotelerías* participation in the livestock project. Feedback?

- Facilities that host livestock owned by a third party, commonly referred to as "*hotelerias*" in Argentina, must advise the third-party livestock owners of the existence of a carbon project on the facility and clarify that the GHG emission reduction rights remain with the livestock facility operator.
- If the livestock facility operates as a "*hotelería*," verify that a sample of the contracts with the livestock owners establish GHG emission reduction rights.
- *Hotelería*: Livestock operations common in Argentina that raise third-party livestock for a fee.

Anaerobic Baseline

- **Baseline (pre-project) conditions:** project developers must demonstrate that the depth of their anaerobic ponds/lagoons pre-project were sufficient to prevent algal oxygen production and create an oxygen-free bottom layer; which usually means at least 1 meter depth.
  - **Project scenario:** implementation of a biogas control system (BCS) also referred to as an anaerobic digester

- WG confirmed that open lagoons waste management is a common practice in Argentina: is there data or studies to support this statement?

Anaerobic Baseline: Greenfield Projects

- Greenfield projects: new livestock operations

- For Greenfield projects:
  - Reserve waiting on data/studies to demonstrate uncontrolled anaerobic storage and/or treatment is common practice at new "greenfield" livestock operations in Argentina.

Eligible Livestock Categories Comments Received

- Sources of livestock categories data is based on the Secretariat of Livestock of Cordoba provided
- WG confirmed that the information on livestock categories from Córdoba is conservative and representative of the country

Feedback?

Livestock Category (*L*)	Livestock Typical Average Mass (kg)
Dairy Cattle	
Lactating and non-lactating Dairy Cow	580
Cow	546
Steer	450
Heifer	439
Bull	680
Calf	230
Beef Cattle	
Cow	431
Calf	188
Heifer	349
Castrated or Immuno-castrated Calves	209
Castrated Steer	387
Immuno-castrated Steer	434
Swine	
Sow (Pregnant, lactating, or empty)	250
Sucking piglet	8
Post-weaning – initial	8
Post-weaning – final	30
Growing pigs – initial	30
Growing – final	60
Finished	60-115
Stallion	250
Immuno-castrated male	115
Replacement swine	130
Capon*	115
Cull sow**	250

*Capón: Castrated male pigs intended for slaughter

**Cull sow: Type of sows that are culled (killed humanely on farms) from the farm because they are too old or because they suffer certain problems that make have a low productivity.

Eligible Livestock Categories Comments Received

- Reserve unifies categories: production and commercial pigs and left as swine.
  - WG confirmed that the values for production and commercial pigs are the same values for production and commercial pigs are the same and suggested to unify the categories.
- Reserve corrected livestock terms as per WG comments
  - WG clarified that the correct term in Spanish for *lechones chupadores* is *lechones lactantes.*
  - Is *vaquillona* the correct term in Spanish? It was also found as *novilla / vaquilla*
  - The data for finished pigs was given to us as ranges, which represent their weight when they begin and exit this phase. Reserve denoted it as initial vs final. Are these the correct terms? Is there a better way to name these categories? The table would include it as follows:
    - Initial – 60
    - Final – 115

Table B.2. Livestock Categories and Typical Average Mass

Livestock Category (*L*)	Livestock Typical Average Mass (kg)
Dairy Cattle	
Lactating and non-lactating Dairy Cow	580
Cow	546
Steer	450
Heifer	439
Bull	680
Calf	230
Beef Cattle	
Cow	431
Calf	188
Heifer	349
Castrated or Immuno-castrated Calves	209
Castrated Steer	387
Immuno-castrated Steer	434
Swine	
Sow (Pregnant, lactating, or empty)	250
Sucking piglet	8
Post-weaning – initial	8
Post-weaning – final	30
Growing pigs – initial	30
Growing – final	60
Initial	60
Finished	115
Stallion	250
Immuno-castrated male	115
Replacement swine	130
Capon[1]	115
Cull sow[2]	250

Source: Estimated values from the Livestock Secretariat of the Ministry of Agriculture and Livestock of the Province of Cordoba, Argentina. The workgroup confirmed that livestock categories from Córdoba Province are conservative and representative of the country.[3]

Eligible Livestock Categories Comments Received

- Are these two categories still relevant?
  - Capón: Castrated male pigs intended for slaughter
  - Cull sow: Type of sows that are culled (killed humanely on farms) from the farm because they are too old or because they suffer certain problems that make have a low productivity.
- Feedback?

Table B.2. Livestock Categories and Typical Average Mass

Livestock Category (*L*)	Livestock Typical Average Mass (kg)
Swine	
Sow (Pregnant, lactating, or empty)	250
Sucking piglet	8
Post-weaning – initial	8
Post-weaning – final	30
Growing pigs – initial	30
Growing – final	60
Finished	60-115
Stallion	250
Immuno-castrated male	115
Replacement swine	130
Capon[1]	115
Cull sow[2]	250

Source: Estimated values from the Livestock Secretariat of the Ministry of Agriculture and Livestock of the Province of Cordoba, Argentina. The workgroup confirmed that livestock categories from Córdoba Province are conservative and representative of the country.[3]

Social Safeguards: Comments received

- **Free, Prior, and Informed Consent (FPIC)**
- Reserve clarify “Livestock Operators” in the protocol as follows:

  Livestock “operators” refers to the entity that owns/operates the livestock facility.

- **Labor and Safety:** The project developer must attest that the project is in material compliance with all applicable laws, including labor or safety laws.
- Reserve added language in Appendix A.2 that references the following labor laws:
  - The National Registry of Rural Workers (RENATRE) as the national regulatory agency overseeing compliance with agricultural worker safety laws and regulations.
  - Law 26,727 Agricultural Work Regime
  - National Law 19.587 - Safety and Hygiene at Work
    - Regulatory Decrees 351/79 and 1338/96 determine the technical standards and safety, sanitary, precautionary, protection measures.
  - Decree 617/97, The Hygiene and Safety Regulations for Agricultural Activity
  - Is there any other labor law that needs to be considered?

Feedback?

Environmental Safeguards: Comments received

- The Reserve will require verifiers to reach out to the appropriate provincial agency to confirm regulatory compliance
- Note for verifiers: there is no national agency tracking the applicable environmental regulations.
- Reserve added the following language into Appendix A.1. Feedback?

Additional national and provincial environmental regulations are available at https://ambiente.cba.gov.ar/normativa-ambiental/. The discussion of regulations above should not be considered a complete list of regulations. The project monitoring plan will include the procedures that the project developer will follow to verify and demonstrate that the project is in compliance at all times.

Site-Specific Determination of B_0 Value

- B_0 Value: Maximum Methane Potential
- Adopted in US protocol with consultation from experts since the default values for dairy cattle were very conservative.
- **Sampling schedule:** six samples at regular intervals throughout the day and combined to represent one sampling event for each livestock category separately. Samples taken at pre-defined month range.
  - Sample procedures vary depending on the manure management system
  - Methane potential is positively correlated with milk production. To prevent overestimation, samples must be taken in average or below-average milk production periods.
- **Laboratory Requirements:** 3 years using Biochemical Methane Potential (BMP) Assay procedures and ISO 11734

Site-Specific Determination of B_0 Value Comments received

- Is there a dataset with monthly milk production trends to determine months for sampling?
  - Reserve has received the dataset from the Secretariat of Livestock of Córdoba. In the US, testing was done per head; however, herd count data were not available in Argentina. Can you confirm that this is representative of general milk production trends on a per head basis?
- Analysis would limit sampling to February through June (inclusive)
  - Figure E.1 shows the results of this analysis and the consistent pattern of milk production over this 9-year period.
- Please review Appendix E for more information.

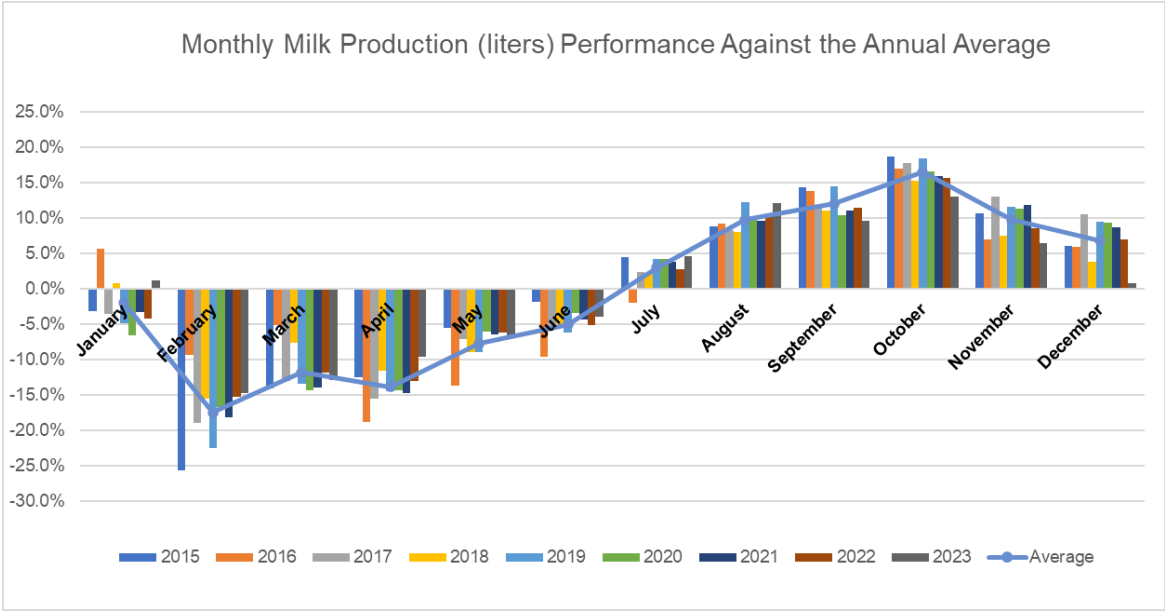

Figure E.1. Monthly Milk Production Trends as a Percent Change Over Annual Average Monthly Milk Production (2015-2023)

Site-Specific Determination of B_0 Value Comments received

- Laboratory analysis for BMP testing
  - WG confirmed that the Cordoba Province has an "Official Registry of Environmental Laboratories (ROLA)" that operates in the Ministry of Environment and Circular Economy. The labs take samples, perform analysis, and/or measurements in the environmental field within the province.
- Reserve added the following language into 6.1 Site-Specific Determination of Maximum Methane Potential (B_0) Section. Feedback?

For projects located in Cordoba, the General Directorate of Technical Development of the Ministry of the Environment provides a list of laboratories that carry out environmental sampling, analysis, and/or measurements within the jurisdiction. However, project developers must confirm that the laboratory selected meets the requirements outlined in this Section. List available on the Official Registry of Environmental Laboratories: https://cidi.cba.gov.ar/portal-publico/tramite/317CF416-78F0-EB11-BCE9-005056A190FF

VS and Maximum Methane Potential (B0,L) Default values

Table B.3. Volatile Solids and Maximum Methane Potential by Livestock Category

Livestock category (L)	VS_L (kg/head/day)	$B_{0,L}$ [c] (m^3 CH_4 /kg VS)
Beef cattle		
Cow	1.701[a]	0.13
Heifer	1.341[a]	0.13
Calf	0.675[a]	0.13
Little bull	1.143[a]	0.13
Steer	2.171[a]	0.13
Bull	1.795[a]	0.13
Dairy cattle		
Cow	3.777[a]	0.13
Heifer	1.593[a]	0.13
Calf	1.160[a]	0.13
Steer	1.620[a]	0.13
Bull	1.757[a]	0.13
Swine		
Breeding	0.14[b]	0.29
Fattening 1 (23-57kg)	0.25[b]	0.29
Fattening 2 (57-80kg)	0.33[b]	0.29
Fattening 3 (80-114kg)	0.39[b]	0.29
Suckling pigs	0.33[b]	0.29
Stallions	0.31[b]	0.29
Gestation sow	0.30[b]	0.29
Maternity sow + piglets	1.05[b]	0.29

[a] Estimates based on the parameters provided from the methodology used in GLEAM-i, a tool developed by FAO in conjunction with the World Bank and the International Finance Corporation.
[b] Ministry of Agroindustry, Presidency of the Nation (2016), Good Management Practices and Use of Swine Effluents
[c] Default values for Latin America. Source: 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 4, Chapter 10, Section 10.4.2 (Table 10.16a and Table 10.13a). This table uses $B_{0,L}$ values for beef cattle (non-dairy) and dairy cattle categorized as" other region" low productivity systems by the IPCC.

VS and Maximum Methane Potential (B0,L) Default values

- VS and Maximum Methane Potential (B0,L) default values: updated values in IPCC 2019 Refinement to the 2019 IPCC Guidelines
  - 2019 “Other region” value:
    - High Productivity Systems: 0.45
    - Low Productivity Systems for swine: 0.29
    - Low Productivity Systems for beef and dairy cattle: 0.13
    - IPCC suggests using Low PS for Tier 1 and Tier 1a.
  - Please review default values for beef cattle and swine in Table B.3 Volatile Solids and Maximum Methane Potential by Livestock Category
    - Are there datasets specific to Argentina that should/can be used instead?
    - Beef cattle under IPCC would be defined as “non dairy cattle.”
    - IPCC also states that cattle used for both dairy and beef should use “other cattle” default value
  - Reserve updates calculation tool with the most recent available data, so project developers are able to utilize updated values when they become available. ARG specific values are used in place of IPCC when available.

Calculation Tool
Available after Protocol approval (Oct 2024-tentative)

ARGtool Version 1.0

Argentina

Introducción a la Herramienta de Cálculo para Proyectos de Ganadería

Se ha desarrollado esta herramienta de cálculo con el fin de ayudar con la cuantificación de las reducciones de emisiones en conformidad con la V2.0 de Mexico Livestock Project Protocol de la Reserva de Acción Climática. La herramienta está diseñada para ser la más "sencilla" como sea posible, aunque a primera vista, esta herramienta puede parecer muy complicada. Es importante señalar que sólo las hojas de trabajo que requieren la entrada del usuario son las hojas III, IV y V. El resto de las hojas de trabajo son para los cálculos automáticos, tablas y referencias y resúmenes de la ecuaciones. Todas las otras hojas de cálculo aparte de las III, IV y V no requieren intervención o manipulación del usuario. Con esto en mente, la disposición general se describe a continuación.

Hoja de Trabajo I. - Introducción e instrucciones.
Hoja de Trabajo II. - Resumen de Cálculos - En esta hoja se encuentra un resumen de la reducción de emisiones finales que serán reportadas a la Reseva.
Hoja de Trabajo III. - Datos de entrada para el Escenario de Línea Base - Esta hoja es para ingresar todos los datos para la línea base - (extraídos de los datos *in situ* y de tablas de consulta) necesarios para el cálculo de las emisiones de línea base.
Hoja de Trabajo IV. - Datos de entrada para el Escenario del Proyecto - Esta hoja es para ingresar todos los datos del proyecto (extraídos de datos *in situ* y tablas de consulta) necesarios para el cálculo de las emisiones del proyecto.
Hoja de Trabajo V. - Emisiones de la Línea Base de Metano de los Sistemas de Almacenamiento/Tratamiento Anaeróbicos - Esta hoja se encuentra en su mayor parte automatizada, sin embargo **el Usuario es responsable de la ingresar manuelmente los datos de entrada de los datos de cálculo de los años previos.**
Hoja de Trabajo VI. - Emisiones de la Línea Base de Metano de los Sistemas de Almacenamiento/ Tratamiento No-Anaeróbicos - El Usuario no requiere ajustar o ingresar nuevos datos.
Hoja de Trabajo VII. - Emisiones Totales de la Línea Base - Resumen del total de emisiones de línea base por categoría de ganado y sistema de almacenamiento/tratamiento. El Usuario no requiere ajustar o ingresar nuevos datos.
Hoja de Trabajo VIII. - Emisiones de Metano del Proyecto del Sistema de Control de Biogás - Automatizada, el Usuario no requiere ajustar o ingresar nuevos datos.
Hoja deTrabajo IX -Emisión de Metano por un Evento de Ventilación. Automatizada, el Usuario no requiere ajustar o ingresar nuevos datos.
Hoja de Trabajo X - Emisiones de Metano del Proyecto del Estanque Efluente del SCB - Automated, no user input/adjustment required. Automatizada, el Usuario no requiere ajustar o ingresar nuevos datos.
Hoja deTrabajo XI - Emisiones de Metano del Proyecto de Fuentes Relacionadas con Sistemas de Control que no sean de Control de Biogás. Automatizada, el Usuario no requiere ajustar o ingresar nuevos datos.
Hoja de Trabajo XII. - Total de Emisiones de Metano del Proyecto - Resumen del total de emisiones de metano del proyecto. Automatizada, el Usuario no requiere ajustar o ingresar nuevos datos.
Hoja de Trabajo XIII. - Cálculos de Emisiones de Dioxido de Carbono - Automated, no user input/adjustment required. Automatizada, el Usuario no requiere ajustar o ingresar nuevos datos.

Descripción de datos de entrada:
A continuación encontrará una descripción de los insumos requeridos mensuales (todos los demás insumos son sobre una base anual):

Sobre una base mensual, los desarrolladores del proyecto tiene que introducir en esta herramienta de cálculo las siguientes variables:

1) Actualizar la población por tipo de ganado – Hoja de Cálculo III, Sección III.D
2) Actualizar la cantidad medida de metano capturado y quemado por el sistema de recolección de biogás – Hoja de Trabajo IV, Sección A.

Otras variables y parámetros se ingresan dentro de esta herramienta de cálculo sólo una vez al año, y algunos sólo una vez al inicio del proyecto.

Este libro de trabajo calcula automáticamente las emisiones de metano utilizando los datos mensuales ingresados por los desarrolladores de proyectos y los valores tomados del protocolo.

Para mayor conveniencia de uso, las celdas dentro de las hojas de trabajo son definidas de tal manera que:

- campos que se requieren para ser llenados por el usuario utilizando los datos específicos del sitio se destacan en Amarillo.
- campos que requieren ser llenados con la información obtenida de las tablas de consulta de la Hoja XIV se destacan en Naranja.
- campos que se calculan automáticamente **pero que deben ser registrados y utilizados como insumo para el cálculo del próximo año se destacan en Durazno.**
- campos que se completan de forma automática a partir de datos extraídos de la información proporcionada previamente por el usuario se destacan en Verde.
- valores constantes se proporcionan en los campos Grises.
- campos que se calculan automáticamente basados en los valores específicos del lugar y por defecto se resaltan en Azul.
- campos que muestran los resultados de los cálculos finales se destacan en Rosa.
- los campos que muestran alertas y notas para el Usuario se destacan en Rojo.
- campos disponibles para las notas y los comentarios del Usuario se destacan en color Amarillo pálido

CLIMATE ACTION RESERVE

NEXT STEPS

Next steps

- ***For Interested Stakeholders:***
  - Still can submit Local Engagement Form
  - Email interest to sign up for updates as an observer
  - Email us feedback anytime
- ***For Reserve:***
  - Compile notes summary on discussion
  - Post recording, notes, and presentation to the webpage
  - Incorporate feedback from workgroup into draft Protocol
- ***For Workgroup:***
  - Email feedback on today's discussion or protocol draft review (by June 14)
  - Review Protocol draft by June 14

Key contacts

Climate Action Reserve:

Protocol development lead:

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THANK YOU!