



PROPOSALS TO ENHANCE CLIMATE AMBITION IN THE AFOLU SECTOR IN ARGENTINA

María Eugenia Periago, Pablo Preliasco, CREA (autores varios), Lara Sabino, Milagros Baraldi, Marlene Diedrich

NOTED POINTS

The Agriculture, Forestry and Other Land Use (AFOLU) sector is strategic to address the climate crisis.

For Agriculture, it is necessary to promote greenhouse gas (GHG) sequestration by increasing organic matter in agricultural and livestock lands, particularly by means of degraded land restoration, rotation with grasslands, and an increased number of grass crops.

For the livestock sector, it is necessary to increase efficiency in terms of produced kilograms per head of livestock instead of increased stocking, because the latter would result in a higher emission rate.

For native forests, the proposed steps should avoid the transformation of natural forest and non-forest ecosystems, which are big suppliers of ecosystem services.

To develop an environmentally friendly agricultural output, it is necessary to rely on regulations which set forth adaptation and mitigation measures for GHG emission reduction and GHG storage in carbon sinks.

EXECUTIVE SUMMARY

Production growth associated with increased population has started to raise alarms regarding natural resource degradation and our planet's limits to support production systems and maintain other ecosystem services. One of the main alarms is associated with increased greenhouse gas in the atmosphere, the resulting rise in temperatures, and severe weather events. To address these issues, clear and comprehensive agricultural, livestock, and land-use change policies are needed to bring environmental, social, and economic benefits for all the stakeholders involved. This policy brief introduces a set of proposals so that Argentina may mitigate and adapt to climate change impacts, taking into consideration the undesirable effects of each intervention.

OVERVIEW

The growth of worldwide population—which has doubled in the past 40 years—has given rise to a greater demand for food, goods, and services. According to FAO estimates (2020), 1 out of 10 individuals in the world, i.e. 750 million people, are affected today by some kind of severe food insecurity. In this context, food production is required to supply a growing population, while being accessible to those suffering from hunger. The challenge is to produce quality food in sufficient amounts, while mitigating climate change, taking care of natural ecosystems, and adjusting our systems to any potential impact.

The associated production growth has started to raise alarms regarding natural resource degradation and our planet's limits to support production systems and maintain other ecosystem services (Rockstrom, 2005; Steffen et al., 2015). One of these alarms is related to GHG emission into the atmosphere, the rise in the average temperature of our planet and the resulting greater number of severe weather events. The degradation of natural resources, including soil and biodiversity, is one of the most critical issues we are facing and, therefore, any applicable targets and/or actions should measure up to this challenge.

Globally, the Agriculture, Forestry and Other Land Use (AFOLU) sector is the second GHG emitter¹ (24%) after the energy sector, with Argentina contributing 0.7% of global emissions. According to the National Greenhouse Gas Inventory (INGVEI), the agriculture and livestock sector is the second source of greenhouse gas emissions in the country (combining direct sector-specific emissions and those originating in land-use change), accounting for 37% of emissions². Furthermore, the agricultural and livestock sector is one of the most affected by climate change effects (droughts, floods, severe weather events), and this has become even a threat to global food security. Particularly, in addition to being one of the sources of emissions and bearing their consequences, the agrifood sector has the capacity for carbon sequestration in different production system sections, such as plant biomass (grassland, forestation) and soil organic matter.

Argentina's commitment to be carbon neutral by 2050 should encompass specific mitigation steps to achieve agriculture and livestock development according to country targets. These measures should not only include minimizing natural environment transformation and maximizing the contribution of carbon sequestration in pasture systems, but also fostering the escalation of good agricultural and livestock practices. It is urgent to model different scenarios to check what measures are appropriate and necessary to reduce emissions according to the carbon neutrality target.

Since agriculture is one of the foundations on which the Argentine economy relies, we recommend agro-ecosystem planning in order to meet future food demand, while reducing the adverse environmental impact of this activity so that soil fertility is preserved, ecosystem services are protected and natural environment conversion is minimized (forests, grasslands, wetlands, etc.).

1. <https://www.ipcc.ch/report/ar5/wg3/>

2. <https://inventariogei.ambiente.gob.ar>

PROPOSALS

The proposals in this policy brief have been drawn up taking into consideration agriculture, livestock and native forest sector-specific policies, as well as technical, scientific, and legal aspects.

I) Sector-Specific Policies

To be efficient, the sector-specific policies below need to create appropriate conditions for decision-making by private stakeholders and a framework for proper articulation among the various public sector levels. The goal is to be able to drive the necessary in-depth change to tackle the climate crisis, by means of coordinated actions at all levels and in all areas. Therefore, a policy to integrate, add and coordinate all of the abovementioned items is needed.

This policy should consider:

1. An environmental organization of the territory to include environmental, social, and economic criteria. This item is especially important for climate change adaptation purposes.
2. Development of policies for sector-specific transitions: a fair transition to an environmentally sustainable economy should be properly managed and further the goals of decent jobs for everyone, social inclusion and eradication of poverty.
3. Incorporation of the principle of social inclusion to consider new relationships with the labor sector, so that technological changes, including other factors, do not affect workers' performance or welfare.
4. Reaching agreements, by developing dialog processes among conflict sectors in order to encourage agreed-upon and long-term solutions that should be addressed as national policies.
5. Institutional coordination: improved coordination among ministries and public organizations dealing with science and political decisions, in addition to public and private sector coordination, by actually, and hierarchically, including the areas in government institutions that should experience significant development in the next few decades.
6. Democratization of decision-making to encourage the actual involvement of citizens in the creation and implementation of climate change measures and/or policies.
7. Fostering production systems that will minimize deforestation and natural ecosystem conversion due to high loss in terms of biodiversity, ecosystem services and emissions involved. Additionally, the production sector plays an important role in the restoration of degraded environments, and this should be recognized and encouraged.

The proposed steps should be specific, because the production sector is very heterogeneous (the same activity can occur in natural or converted environments). At the same time, each mitigation and adaptation measure should define precisely the type of activity that it intends to encourage or discourage, so that it is in line with the country's biodiversity targets and the forest action plan.

II) Technical and Scientific Aspects

Regarding the development of the National Greenhouse Gas Inventory (INVGEI), we propose encouraging actions to improve:

- Institutional organization for activity data collection. Any technological progress or change at a production scale should have a statistical data collection mechanism to be followed by those responsible for developing INVGEIs;
- INVGEI interaction between ministries and scientists to obtain the quality information required to update the inventories;
- Evaluation of the most recent IPCC methodology updates. We are currently working on GWP*³ and local information is not sufficient.

To improve data quality, we propose that the scientific sector should develop a Carbon Monitoring Plan for managed lands. Land carbon changes due to different types of production fail to provide enough details to be included in INVGEIs. Taking this into consideration, the scientific sector needs to work in coordination with the INVGEI team and the production sector, with the support of lot monitoring and historical records, and the inclusion of systematized information in IPCC - accepted forecast models for soil carbon development.

The following actions are proposed for each activity:

Agriculture

We recommend the promotion of GHG sequestration by increasing organic matter in agricultural and livestock lands, especially for degraded soil restoration, and rotation with grasslands in agricultural systems. In addition, in continuous cropping systems, it is necessary to keep a high proportion of grass crops in rotation and avoid soil tillage. It is also necessary to manage nitrogen (N) fertilization more efficiently to reduce the emissions of nitrous oxide (N₂O, a gas with 300 times greater global warming effect than CO₂), as well as to cut down pollution from the inefficient use of fertilizers. If there were plans to increase forestation, this should only occur in already converted areas and with primarily native or otherwise non-invasive species.

Crop output should be evaluated so as to determine whether crops are fit for biomass creation in non-natural ecosystem areas or those which are not fit for usual agricultural/livestock production, before environmental land-use planning. These crops should require little water and a small amount of fertilizers and should not be invasive. The resulting biomass would generate non-competitive energy for food product manufacturing.

Where agroecological and economic conditions allow it, improved crop rotation should include perennial grasslands (more than 4 years) in continuous cropping fields and the use of biomass for energy generation, only where it does not compete with human food or the addition of organic matter to the soil, such as the use of forest waste but not stubble.

3. GWP* is an alternative proposal for Global Warming Potential, where the equivalence of CO₂ from short-lifetime climate pollutant emissions is mainly determined by changes in emission rates. <https://www.nature.com/articles/s41612-018-0026-8>.

PROPOSALS TO ENHANCE CLIMATE AMBITION IN THE AFOLU SECTOR IN ARGENTINA



Livestock

We recommend encouraging practices to improve system efficiency rates, with increased weaning percentages. Argentina should become more efficient in terms of kilograms produced per head of livestock instead of increased stocking, since the latter causes a greater amount of emissions (Cañada et al., 2020).

The emissions caused by enteric fermentation (digestion) in ruminants can be offset by pasture and silvopastoral systems, with the fixation provided by native vegetation. For this purpose, it is necessary to generate scientific information, promote its availability, and encourage dialog to design practices for emission reduction and carbon sequestration.

The great storage potential of the soil is a strategic opportunity for the country—land carbon balance in the face of management changes, the impact of cattle-raising in native forests on emission balance, and the activity parameter estimation (size of each land use and management in every region) do not only further the goal to be more sustainable, but they are also helpful for Argentina's emission report and the production of more attractive goods due to their lower carbon footprint.

Native Forests

We propose that there should be a much more articulated link among measures associated with the agriculture, livestock and forest sectors. The proposed measures should cover the transformation or conversion of natural non-forest ecosystems (including the Espinal savannas), which are important providers of ecosystem services, including carbon sequestration, species habitat, and water flow maintenance. Conservation of natural ecosystems in agricultural, forestation and/or urbanization activities should be encouraged in order to reduce emissions and keep the small amount left, in line with the country's global commitments under the 2016-2020 National Biodiversity Strategy and Action Plan (ENBPA).

An active promotion policy and a commitment to foster Forest Management with Integrated Livestock Activity (FMILA) and natural cattle grazing would be very beneficial, while helping escalate result monitoring of different management models, which can be implemented later at greater scale.

Finally, an active natural environment conservation policy is needed by means of the actual creation and implementation of protected areas and the encouragement of private protected areas.

Argentina should have an environmental land-use planning at the national level to cover all natural ecosystems, since 10% of the country's emissions are caused by land use change and forestry. The process of natural ecosystem conversion into croplands depends on multiple variables and socioeconomic, political, technological, and even climatic needs, which make agricultural and livestock producers engage in this practice. In the face of this situation, it is the responsibility of the Government to plan these processes in a consensual, smart fashion, so that the provision of environmental goods and services is not compromised for the generations to come.

4. <https://inventariogei.ambiente.gob.ar>

III) Legal Aspects

Legal regulation is a key factor to implement the above measures successfully.

Based on Argentina's international commitment to deliver on the Paris Agreement, as approved under Law No. 27,270, the country submitted its Second Nationally Determined Contribution (NDC) in December 2020 (Ministry of Environment and Sustainable Development, 2020), setting forth an absolute, economy-wide and unconditional mitigation target to avoid exceeding a net emission of 359 MtCO_{2e} by 2030. To reach this target, in addition to stabilizing emissions, it is crucial to focus on the reduction of emissions, and the AFOLU sector is strategic in this respect.

This Second NDC includes 15 governing principles to guide the design, implementation and monitoring of all national adaptation and mitigation actions, including ecosystem conservation (e.g. forests and wetlands) and the development of good agricultural and livestock practices in the AFOLU sector.

For the purpose of meeting the commitment above, the agricultural and livestock sector needs to be provided with an appropriate legal framework to successfully develop an environmentally friendly production.

In Argentina, environmental protection has been guaranteed by the Constitution since 1994, when Section 41 of the National Constitution was added to regulate the right to a healthy environment and the duty to preserve it.

In this context, minimum environmental protection budget laws have been passed starting in 2002. These laws represent a baseline environmental protection threshold which the national government must set forth and which is enforced uniformly across the country as an irrevocable basic protection, requiring provinces to abide by any provisions thereof and granting them, at the same time, the authority to pass any supplementary rules and regulations.

These laws include Law No. 25,675, also known as the General Environmental Law, which regulates minimum budgets for sustainable and appropriate environmental management, biological diversity preservation and protection, and sustainable development implementation. Environmental Land-Use Planning is a critical environmental policy and management tool for the development of sustainable agriculture. However, it should be noted that it is not implemented. Therefore, we have been battling for its enforcement to develop agricultural activity.

Furthermore, Law No. 27,520 on Minimum Budgets for Global Climate Change Adaptation and Mitigation, entailed a big step forward for climate action. In this respect, both native forest protection and agricultural and livestock activity development should be considered mitigation and adaptation measures. These measures should be part of the National Mitigation and Adaptation Plan and/or be regulated by a specific rule.

As regards native forests, there is Law No. 26,331, which regulates the minimum environmental protection budgets for native forests, aiming at land-use planning and regulating forest restoration, conservation, use and sustainable management. Currently, it is necessary to cut down conversion emissions drastically. To this end, it is essential to cease the grant of forest clearing permits in non-approved areas and to initiate a native forest land-use planning adjustment process, since nearly all of land-use plans are now expired.

PROPOSALS TO ENHANCE CLIMATE AMBITION IN THE AFOLU SECTOR IN ARGENTINA



For agricultural and livestock activity development, we propose that a sustainable production regulation be passed, considering the abovementioned measures as proposals for the agricultural and livestock sectors. These measures should be separated into adaptation and mitigation measures, and it is advisable that mitigation measures be set forth according to two lines of action: a) GHG emission reduction, and b) GHG storage in carbon sinks.

There is no specific wetland protection rule in the Argentine legal system; therefore, we believe a minimum budget law should be passed urgently to provide a legal framework for the protection and efficient and sustainable use of these ecosystems, preserving, in turn, any resulting ecosystem services.

Furthermore, another challenge is to pass new rules and regulations to promote and regulate the development of an agricultural and livestock production system that is locally suitable for each region.

Provincial regulations should supplement national rules taking into consideration the needs and the reality of each region.

LEGAL PROPOSALS:

- In order to further the development of sustainable agriculture, it is necessary to expand the implementation of Environmental Land-Use Planning as a tool regulated by Law No. 25,675 on environmental policy and management.
- Regarding native forest protection and agricultural and livestock activity development, mitigation and adaptation measures should be set forth under the National Mitigation and Adaptation Plan and/or be regulated by a specific rule according to Law No. 27,520 on Minimum Climate Change Adaptation and Mitigation Budgets.
- Locally, it is necessary to cease the grant of forest clearing permits in non-approved areas and to initiate an adjustment process for expired native forest land-use plans, as provided under Law No. 26,331.
- For agricultural and livestock activities, it would be necessary to regulate a legal framework aimed at developing a sustainable agricultural and livestock production system that is locally suitable for each region, make a distinction between adaptation and mitigation measures, and set forth two lines of action for mitigation measures: a) GHG emission reduction, and b) GHG storage in carbon sinks.
- As regards wetland protection, we believe a minimum budget law should be passed to provide a legal framework for the protection and efficient and sustainable use of these ecosystems, preserving, in turn, any resulting ecosystem services.

CONCLUSIONS

The AFOLU sector is a strategic sector to tackle the climate crisis.

Even though it is one of the main sources of emissions and suffers the consequences, this sector has the capacity for carbon sequestration in different production system sections, such as plant biomass (grassland, forestation) and soil organic matter. This is the reason why we recommend agro-ecosystem planning to meet future food demand, while reducing the adverse environmental impact of this activity in order to preserve soil fertility, protect ecosystem services and minimize natural environment conversion (forests, grasslands, wetlands, etc.)

Recommendations by sector are provided below, considering these objectives on a case-by-case basis:

- To create financing lines in order to articulate, organize and develop interinstitutional projects with agreed-upon and highly beneficial objectives. So far, the greatest demand has been for information and project management. However, institutions are not provided with any funding that can be associated with this initiative.
- To provide a legal framework in order to promote sustainable agricultural and livestock production, taking into account adaptation and mitigation measures for both GHG emission reduction and GHG storage in carbon sinks, adjustment of native forest land-use plans, and passing of a law to provide regulations on minimum budgets for the protection and management of other natural ecosystems such as wetlands.

For Agriculture:

- To encourage the use of urea-based formulations, with reduced probability of nitrous oxide emissions, and implementation of good fertilization practices (in the fertilizer dose selection, time and application method process).
- To reduce food loss and waste, especially after harvesting.
- To perform land cover (see below for details) based on rotation with grasslands, increased proportion of grass crops in agricultural rotation, and annual cover crops.
- To recover degraded lands and convert them into natural environments or, where impossible, production systems.
- To promote the use of zero tillage in continuous cropping systems. To promote the use of rotation with grasslands in tillage systems.
- To calibrate/validate agricultural land carbon models based on IPCC models.

For Livestock Activity:

- For the scientific sector: to inform about enteric methane emission studies in order to determine whether the results show the expected contribution level for INVGEl purposes.
- To develop a long-term livestock policy based on agreements between the national and provincial governments, with the aim to achieve sustainable production with a comprehensive, system-based outlook, fostering and encouraging efficiency improvements in production and the environment.
- To design a communication plan on climate change and livestock activity in Argentina. The only current communication tool is the official INVGEl website. It is evident that more communication tools are needed to reach out to society in general, in addition to the scientific public sector, with key, easy-to-understand messages.

PROPOSALS TO ENHANCE CLIMATE AMBITION IN THE AFOLU SECTOR IN ARGENTINA



For Native Forests:

- To commit to a target whereby non-classified and green-classified native forests may all gradually change to yellow or red classification by 2030.
- To encourage actions to promote previously converted, abandoned and/or burned surface restoration.
- Considering that over 80% of forests are classified as yellow and green under the Land-Use Planning for Native Forests, and based on the paper “Escenarios futuros de expansión agropecuaria en la Ecorregión Chaqueña” by Vida Silvestre and the National Institute of Agricultural Technology (INTA), we propose that the ambition target in the reviewed NDCs should be 1.7 million hectares under Forest Management with Integrated Livestock Activity in the Chaco Ecoregion.
- To further technical and economic feasibility studies on Forest Management with Integrated Livestock Activity in the Chaco Ecoregion.
- To foster sustainable management and native forest wood harvesting so that they may operate as a stable carbon sink over time. This, in turn, will support continuous provision of ecosystem services.

REFERENCE

Cañada, P., Feiguin, F., Fritz, F., García, G., Preliasco, P. y Angeli, A. (2020). Ganadería y Gases de Efecto Invernadero. Estudio sobre potencialidad de mitigación y sensibilidad para reportar en los INVGEI. Boletín técnico de la Fundación Vida Silvestre Argentina. Convenio colaborativo de trabajo AACREA – Fundación Vida Silvestre Argentina. Buenos Aires, Argentina. https://wwfar.awsassets.panda.org/downloads/boletin_tecnico__ganaderia_y_gases_de_efecto_invernadero__2020.pdf.

FAO, IFAD, UNICEF, WFP, and WHO (2020). The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets. Rome, FAO. <https://doi.org/10.4060/ca9692en>.

García, G., Rovere, S., Cañada, P., Bert, F. y Angeli, A. (2021). Decisiones agrícolas: simulación y análisis del impacto sobre emisiones de Gases de Efecto Invernadero. Boletín técnico de la Fundación Vida Silvestre Argentina. Convenio colaborativo de trabajo AACREA – Fundación Vida Silvestre Argentina. Buenos Aires, Argentina. https://wwfar.awsassets.panda.org/downloads/boletin_tecnico__decisiones_agricolas__2021.pdf.

Ministry of Environment and Sustainable Development (2020). Segunda Contribución Determinada a Nivel Nacional de la República Argentina. Ministry of Environment and Sustainable Development, Argentine Republic. https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Argentina%20Second/Argentina_Segunda%20Contribuci%C3%B3n%20Nacional.pdf.

Rockstrom, J. (2005). Bounding the Planet Future: Why we need a Great Transition. Great Transition Initiative Essay.

Steffen, W. et al. (2015). Planetary boundaries: Guiding human development on a changing planet. Science 347(6223).

PROPOSALS TO ENHANCE CLIMATE AMBITION IN THE AFOLU SECTOR IN ARGENTINA



This document is part of the Argentine Climate Action Alliance (ACA) framework, an inter-institutional alliance formed by non-state actors (private sector, academia, civil society), provinces and municipalities, committed to climate action and sustainable development. We work collaboratively to increase climate ambition, motivate by example and articulate with the national public sector and society in the promotion of climate action in Argentina.

The views expressed in this study are those of the author and do not necessarily reflect the views of the ACA. The opinions expressed in this document are the sole responsibility of the author and may not coincide with those of the aforementioned network.

The signatories listed below adhere to the proposals and recommendations detailed in the document: Asociación Sustentar, Banco Galicia, Banco Santander, Cámara Argentina de Energías Renovables (CADER), Consorcios Regionales de Experimentación Agrícola (CREA), Danone Argentina, Empresas B, FLACSO Argentina, Fundación Avina, Fundación Nueva Generación Argentina (FNGA), Fundación Vida Silvestre Argentina, Municipality of Vicente López, Natura Argentina, Quilmes, Red Argentina de Municipios frente al Cambio Climático (RAMCC), Universidad del Salvador.



Proposals to enhance climate ambition in the AFOLU sector in Argentina. By the Argentine Climate Action Alliance (ACA), 2021. Distributed under a Creative Commons Attribution-NonCommercial 4.0 International License.

AUTHORS

María Eugenia Periago, Fundación Vida Silvestre Argentina
Pablo Preliasco, Fundación Vida Silvestre Argentina
Regional Consortiums of Agricultural Experimentation (CREA)
Lara Sabino, Fundación Nueva Generación Argentina (New Generation Argentina Foundation)
Milagros Baraldi, Fundación Nueva Generación Argentina
Marlene Diedrich, External Consultant, Fundación Nueva Generación Argentina

REVIEWERS

Paula Bianchi - External Consultant,
Fundación Vida Silvestre Argentina
Marlene Diedrich, External Consultant, FNGA

GENERAL COORDINATION

Paula Bianchi - External Consultant,
Fundación Vida Silvestre Argentina
Leonel Roget, Fundación Vida Silvestre Argentina
Carlos Tanides, Fundación Vida Silvestre Argentina

PROOFREADING

Valeria Verona
valeriaverona.com

DESIGN AND LAYOUT

Valentina Manochi
manochivalen@gmail.com