

Info Note

Next steps of the Livestock NAMA in Costa Rica

Synthesis of stakeholder consultations and rapid assessment of their current status

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Key messages

- Livestock NAMA in Costa Rica aims to transform the livestock production sector to achieve eco-competitive livestock farming.
- Public-private-academic partnerships evaluate and co-develop the technical and institutional building blocks of the NAMA.
- The key components of NAMA development in its first pilot phase (2013-2021) are well on the track to develop a robust proposal for scaling out and implementation of the goals proposed by 2030.

Livestock production in Costa Rica extends throughout the country: from the border with Nicaragua in the north to the border with Panama in the south; and from coast to coast between the Pacific and the Atlantic. There are approximately 1.28 million head of cattle on 37 171 farms. Forty-two percent of the cattle herd is for meat production, 26% for milk production and 32% is dual purpose. Costa Rican cattle consume 1.04 million hectares of pasture, an area equivalent to 43% of the land devoted to agriculture and 20% of the total area. More than 26 000 producers report livestock as a primary income-generating activity and more than 37 000 producers have livestock on their farm.

Under the leadership of the Ministry of Agriculture and Livestock (MAG) and the Ministry of the Environment and Energy (MINAE), public and private actors together with the academy joined forces to formulate the National Appropriate Mitigation Action (NAMA) for the livestock sector. The Livestock NAMA, launched in November 2015, is now the cornerstone of Costa Rica's low-carbon development strategy for the livestock sector and the country's Nationally Estimated and Projected Contribution (INDC).

The Livestock NAMA aims to significantly reduce CO₂ emissions and promote carbon sequestration in the next

15 years; through transformative process of the livestock sector that will cover 70% of the herd and 60% of the livestock area at the national level.

This article provides a description and evaluation of the progress of Livestock NAMA in Costa Rica, identifying the main milestones, mapping its main partners and highlighting the added value of the innovative alliance set up for this purpose.

NAMA components

The NAMA requires the connection of key elements where policy making is linked to actors from public and private institutions, as well as changes in practices at the farm level.

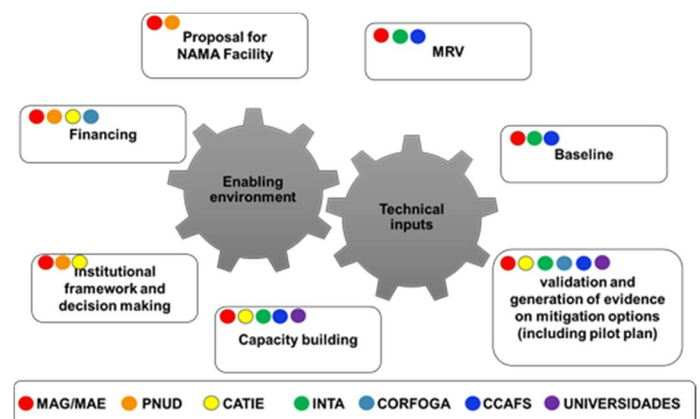


Figure 1. Components of the Livestock NAMA in Costa Rica, including the main institutions involved.

In Costa Rica, stakeholders have identified seven activities required to support the design and implementation of the NAMA: 1) preparation of the NAMA proposal; 2) building adequate institutional and regulatory support; 3) research and design of financing mechanisms; 4) development of baseline studies; 5) validation and generation of evidence on mitigation options; 6) development of Measurement, Reporting and Verification (MRV) systems; And 7) capacity

building. These activities are designed to develop the institutional environment or creating evidence (Figure 1).

Preparation of the NAMA proposal

Costa Rica plans to submit its updated proposal for revision, to the NAMA Facility in March 2016. The technical proposal is being supported with resources provided by the United Nations Development Program (UNDP) and external consultants. The technical content of the proposal is reviewed by MAG, UNDP and CORFOGA.

Building an adequate institutional and regulatory support

The members of the public-private and academic partnership that develops the Livestock NAMA include the Ministries of agriculture and environment (MAG, MINAE), national universities, the National Institute of Agricultural Technology (INTA), development partners (UNDP), producers representatives (CORFOGA and CNPL, the national sectoral chambers of meat and milk producers, respectively), the regional commissions of cattle ranchers, and more recently international research institutions (CATIE, CIAT, ICRAF).

Participants are organized around technical and general committees that provide guidance on NAMA development processes: **the National Livestock Commission** is the basis of the institutional network linking public and private sectors to policy making and national strategies for low carbon farming. The **Agricultural Technology Research and Transfer Program (PITTA)** provides technical advice on research and extension and the **Livestock roundtable** serves as a platform to discuss issues and concerns that arise in the development of the NAMA. Finally, the scaling-out and transfer of technology rely on the regional commissions of cattle ranchers, present in all the regions of the country (Central Eastern, Central South, Brunca, Huetar Norte, Huetar Atlántico, Central Pacific and Chorotega).

Emissions baseline studies

Estimates of current emissions from the livestock sector are based on data from previously collected agricultural censuses. In 2014, Costa Rica carried out a census throughout the country, which provides information on the state of the cattle ranch in the country.

In order to generate a new baseline, the agricultural census data will be used and will be complemented with the information collected in 1000 farms - representative of the main productive systems - distributed throughout the country. The baseline will characterize livestock in aspects of management, technologies, socioeconomic aspects, productivity and sequestration / GHG emissions. In addition, gender aspects will be added to the survey instruments to capture gender dimensions in the different production models. A group of consultants based in San Jose has been contracted (with World Bank funding) to

conduct the baseline socio-economic survey on the 1000 farms during the first quarter of 2016. The survey instrument is being reviewed currently by national and international institutions that provide technical support in the development of the baseline. In order to deepen the gender dynamics; Decision-making and the adoption of innovations in livestock farms, a complementary anthropological study is planned. The CCAFS "Livestock +" project is helping this process.

Testing and evidence about mitigation practices

Through a consultation process involving the MAG; Academic and research institutions; producer organizations and other stakeholders, mitigation & adaptation practices were selected, including live fences, improved pastures, pasture rotation, and improved management of nitrogen fertilizers and manure.

Table 1. Potential mitigation impacts of the selected management practices within the Livestock NAMA.

| Practice | CH ₄ | AGB | C-Soil | N ₂ O |
|-----------------------------|-----------------|-----|--------|------------------|
| Live fences | | + | + | +/- |
| Improved pastures | + ^{2*} | | + | |
| Pasture rotation | + | | +/- | |
| Management of N fertilizers | | | | + ^{1*} |

Abbreviations: CH₄ = methane from livestock enteric emissions; AGB = above ground biomass; C-Soil = Soil carbon, and N₂O = Nitrous oxide emissions from soil management. (+) Reduction in the emission or increase in the sequestration; (+/-) uncertain; (*) Investigations in progress; Numbers ¹ or ² indicate the tier used in the estimates.

Each practice aims to increase productivity, profitability, improve the greenhouse gas (GHG) balance of livestock production systems and increase carbon sequestration, - thanks to an increase in forest cover on farms - (Table 1).

The proposed mitigation practices are being tested on 93 farms in the five regions of the country (Central Eastern, Central South, Brunca, Huetar Norte, Huetar Atlántico, Central Pacific and Chorotega), that differ in key criteria such as production system and agroecological zone. In addition, other actions are being carried out such as silage improvement, silvopastoral systems, protein banks, strategies to improve water and mineral use efficiency and efficient management of the farm. These pilot farms, called the **National Pilot Plan**, serve as a benchmark to evaluate the productivity, economic, social and environmental impacts of selected mitigation practices.

The producers participating in the pilot project were selected by a multi-institutional group, from a larger group of approximately 50 to 60 farms in each region that underwent a diagnosis and initial characterization. In addition to interventions in part of the farm with the practices mentioned above, farmers were asked to create business plans for their farm, in order to access bank loans to develop these practices on their farm. They were also asked to record the activities and results during the four-year duration of the project. The National pilot plan, both nationally and regionally, is led by CORFOGA in association with MAG. In one of the regions (the Brunca region), UNDP has assisted in the organization of the group, to carry out an adequate implementation of the practices and to ensure and control the quality of record keeping.

Research plays a key role in generating evidence of the impacts from implemented practices. Several studies are underway to better characterize the impact of the adoption of the four mitigation practices on GHG balance and agricultural productivity. Specifically, we will seek to advance to tier 2 for the quantification of enteric fermentation through a better understanding of the role of improved forage quality, consumption and energy. In addition, it is in the interest of several actors to estimate the accumulation of organic carbon from the soil with the use of improved pastures, since this land use system is considered as the best way to reach the objective of carbon neutrality in Farms (a very popular goal in Costa Rica).

Measurement, reporting and verification

Plans to create a robust MRV system for the Livestock NAMA are just starting. There is already a national animal health registry called the System for registration of agricultural establishments (SIREA), which is intended to serve as a repository of health data. It is proposed to make a strategic alignment of the MRV system with the SIREA to help ensure the sustainability and co-benefits of the system.

Work is also being done to align with the needs of the private sector: the US Department of Agriculture's (USDA-FAS) worked with CATIE and the milk producers cooperative "Los Pinos" to assess their data collection system and study how it could be adapted to the MRV of the Livestock NAMA.

Experimental farms from the National Pilot Plan collect data on management, production and environmental variables, such as biomass and soil carbon, to assess mitigation practices. The data generated through the pilot plan will be used to build evidence of practices that are most effective in meeting the economic and environmental benefits sought through the NAMA. The relevance of the indicators measured under the National Pilot Plan for the MRV system has not yet been evaluated, since most of these indicators are based on understanding farm activities at the farm level. The measurement of the indicators

selected in the pilot plan will provide an *in-situ* feasibility assessment.

Capacity building

The development of the Livestock NAMA also requires capacity building for technicians from public and private organizations. Through various institutions (UNDP, CATIE, CIAT, INTA), technical capacity building has focused mainly on INTA's GHG measurement methods. Other topics to be addressed in 2016 include standardized and low-cost methods for estimating carbon stocks in soils and aerial biomass.

Figure 2. Improved grass (*Megathyrsus maximus* cv. Mombasa), one of four selected mitigation practices, planted on a pilot farm in the North Huetar region.



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Cross cutting theme: gender

There are no published data describing the gender dynamics in Costa Rican livestock production systems. Limited anecdotal evidence suggests that women assume an important responsibility for childcare and household tasks. In a similar dynamic from other countries in the region, the degree to which women work in livestock-related agricultural activities appears to vary considerably. Women are widely recognized for being heavily involved in the production of cheese for family consumption and sale. Within the household, decision-making seems to depend in part on age, as younger couples report more equal participation. Boys and girls sometimes participate in fieldwork from an early age. CATIE and CIAT have begun to conduct gender analysis for the livestock sector in Costa Rica. CORFOGA and MAG, among others, express a strong interest in studies on gender, youth and other socioeconomic factors that influence the behavioral of the farmer and results at the farm. Therefore, there are clear opportunities for further studies.

Conclusions

Thanks to the support of the private, public and academic sectors, the livestock NAMA in Costa Rica has the impulse to go from a mere concept to taking concrete steps in the development of a coordinated proposal and the execution of key pilots for the planned scale-up. It is now a turning point in the process of Livestock NAMA, where the key technical inputs of the partners to update the proposal; the development of financial mechanisms, the characterization of gender relations and barriers to innovation processes; as well as the design of the MRV system, will be the pillars to move from the pilot phase to upscaling that allows achieving the desired development and mitigation objectives. However, technical inputs will only be effective when used jointly by alliances led by the government and the private sector.

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CCAFS and Info Notes

The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) is a strategic partnership of CGIAR and Future Earth, led by the International Center for Tropical Agriculture (CIAT). CCAFS brings together the world's best researchers in agricultural science, development research, climate science and Earth System science, to identify and address the most important interactions, synergies and tradeoffs between climate change, agriculture and food security.

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