

# NS-71 - Costa Rica Livestock NAMA

## Costa Rica

### NAMA Seeking Support for Implementation

#### A Overview

##### A.1 Party

Costa Rica

##### A.2 Title of Mitigation Action

Costa Rica Livestock NAMA

##### A.3 Description of mitigation action

In Costa Rica, there are 45,870 livestock production units spread through the country covering 35% of the entire national territory. The livestock sector generates, at least, 12% of the national workforce.

The mode of livestock production is based on grazing, with an average farm size of 41 ha and an animal density of 0.9 AU / ha. Of the total area, 5% is used for silvopastoral uses, 24% is devoted to forests protection, and at least 45,00 ha are devoted to forest plantations. Production systems are mostly meat cattle (34%), dairy cattle (21%) and dual-purpose (38%). Herd distribution in the farms is asymmetric with two clearly distinctive segments, on one hand, a large number of small producers (50% of farmers have a herd of approximately 16 heads), while a smaller segment of producers (10 %) own most of the cattle herd.

The last national inventory, whose base year is 2010, reported a total gross emission of 14.044.040 tons of CO<sub>2</sub>e and a net total of 8.778.840 metric tons of CO<sub>2</sub>e, after subtracting carbon sinks nationwide (IMN, 2014). The livestock category is the second largest national subsector in terms of emission generation and it is responsible for approximately 23,6 % ( 3.317.000 tCO<sub>2</sub>e) of national gross emissions.

The National Strategy for Low Carbon Livestock, which is not a government strategy, but a national public policy, is born to address better the challenges of climate change and carbon neutrality. The ENGBC generates a baseline, mitigation scenarios, and a plan for removing barriers that provide the framework need for the implementation of the Livestock Cattle NAMA.

The vision for Costa Rican livestock in the medium term (10-15 years) is to have an intensified, environmentally sustainable, more modernized and more efficient sector in meat and milk production, with an increased dual-purpose system resulting from increased mechanization of this system.

In the long term (15 years and over) a higher herd density is expected, small farms will continue to diversify, with an increase in the number of animals. It is expected to have an even more articulated, more economically and environmentally efficient sector, in addition to a well-established product differentiation established by identifying labels.

Moreover, rather than the emergence of new enterprises in meat industrialization, it is expected an evolution of the livestock industry towards cleaner production. At the same time, it is anticipated that the domestic market of these products will be satisfied, together with specialized (gourmet) exports of final goods. Both the ENGBC and NAMA aim at optimizing this vision for the sector.

Regarding the Livestock NAMA, the objective of the country is to produce a transformational change in the production and processing forms of the livestock sector in Costa Rica in order to generate eco-competitive livestock practices.

It is expected that the planned transformation of the livestock practices in this NAMA will improve the income and quality of life of livestock producers in the country, by reaching a range of at least 60% of the area devoted to livestock, which would allow a sector with limited resources to become more competitive. With the increased capacities of farmers and the technical support of extension agents, a large-scale implementation and maximization of positive associated outcomes would be possible.

Framed within the country's strategies and programs and among its objectives, the livestock NAMA seeks to respond to the global problem of climate change with a strong participation of the different actors and sectors, considering the following strategic areas of work: GHG mitigation, adaptation to change climate, measurement, reporting and verification (MRV), capacity building, technology transfer and public awareness and change of consumer habits.

NAMA expects changes not only in the primary production of meat and milk through the generation, dissemination and adoption of new measures (technologies and processes) of mitigation-adaptation in the livestock sector, but also in the form of processing the product within the Costa Rican agricultural chain. It also seeks to improve the extension service and public and private technical support. Further, the NAMA aims at promoting greater consumer awareness on the importance of reducing GHG emissions in the sector.

To achieve the goal of the livestock NAMA, the following specific objectives are proposed:

1. To transform cattle production chain through sustainable practices to strengthen financial and environmental components.
2. To consolidate the system of measurement, reporting and verification, and the reduction of uncertainty on emission ratios in the Costa Rican agricultural sector.
3. To strengthen the institutional, economic and social capacities of producers, livestock chambers, industry and environmental awareness of consumers.
4. To harmonize interagency coordination for linking Livestock NAMA to the National Strategy REDD+, under the national GHG inventory and under the C-neutrality program.

A.4 Sector	<input type="checkbox"/> Energy supply <input type="checkbox"/> Residential and Commercial buildings <input checked="" type="checkbox"/> Agriculture <input type="checkbox"/> Waste management <input type="checkbox"/> Transport and its Infrastructure <input type="checkbox"/> Industry <input type="checkbox"/> Forestry
	<input type="checkbox"/> Other <input type="text"/>
A.5 Technology	<input type="checkbox"/> Bioenergy <input type="checkbox"/> Energy Efficiency <input type="checkbox"/> Hydropower <input type="checkbox"/> Wind energy <input type="checkbox"/> Carbon Capture and Storage <input type="checkbox"/> Land fill gas collection <input type="checkbox"/> Cleaner Fuels <input type="checkbox"/> Geothermal energy <input type="checkbox"/> Solar energy <input type="checkbox"/> Ocean energy <input type="checkbox"/> Low till / No till
	<input type="checkbox"/> Other <input type="text"/>
A.6 Type of action	<input type="checkbox"/> National/ Sectoral goal <input type="checkbox"/> Strategy <input checked="" type="checkbox"/> National/Sectoral policy or program <input type="checkbox"/> Project: Investment in machinery <input type="checkbox"/> Project: Investment in infrastructure <input type="checkbox"/> Project: Other
	<input type="checkbox"/> Other <input type="text"/>
A.7 Greenhouse gases covered by the action	<input checked="" type="checkbox"/> CO2 <input checked="" type="checkbox"/> N2O <input type="checkbox"/> PFCs <input checked="" type="checkbox"/> CH4 <input type="checkbox"/> HFCs <input type="checkbox"/> SF6 <input type="checkbox"/> Other <input type="text"/>

### B National Implementing Entity

B.1.0 Name	
B.1.1 Contact Person 1	William Alpizar - Director Climate Change Directorate
B.1.2 Address	Centro de Cambio Climático, Barrio Dent-San José
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B.1.5 Contact Person 2	
B.1.6 Address	
B.1.7 Phone	
B.1.8 Email	
B.1.9 Contact Person 3	
B.1.10 Address	
B.1.11 Phone	
B.1.12 Email	
B.1.13 Comments	

### C Expected timeframe for the implementation of the mitigation action

C.1	Number of years for completion	15
C.2	Expected start year of implementation	2015

### D Currency

D.1 Used Currency	<input type="text" value="AED"/> Conversion to USD: 1
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## E Cost

E.1.1 Estimated full cost of implementation

E.1.2 Comments on full cost of implementation

The livestock sector has such a level of heterogeneity that for a mass adoption of the proposed measures it is necessary to use a variety of financial instruments to suit the needs and characteristics of each segment of the livestock population.

The Government of Costa Rica is covering the costs involved in the adoption of new technologies and processes in its current startup phase. It is providing important funding to the pilot plan--mainly by means of cooperation--directly assisting farmers in the Brunca Region through LECB. However, once there is more clarity on cash flows and the social and environmental impacts of NAMA components, thanks to the said pilot plan, the direct and increasingly dominant participation of the private sector will be necessary in funding these measures in the farms.

Therefore, they are considering using at least three financial instruments: i) a high level of co-financing (direct payments) for the measures, through support conditional upon the adoption-verification of technology, which is a measure appropriate for the smaller groups. ii) Credit guarantees for those groups whose access to credit is limited by the lack of collaterals. iii) Prime interest rates for groups that have access to credit. These would be managed by the National Bank of Costa Rica (BNCR), which has accompanied the NAMA since the beginning of 2014, as well as other concerned financial institutions.

Likewise, they are considering establishing legal and institutional conditions for the transparent functioning of a national carbon market to include the agricultural sector. They also propose to include carbon sequestration in soils and biomass of cattle farms in the national carbon market, as an instrument for payment of co-funding to small producers. All the above will be done by linking the reduction-generating eco-competitive livestock sector of the UCC 14 to potential buyers (demanding organizations).

With the support of the livestock NAMA, a label to identify products manufactured with low GHG emissions will be created, as an incentive for producers and industries adopting the aforementioned processes and technologies; this, in turn, will allow consumers to recognize the products easily.

E.2.1 Estimated incremental cost of implementation

E.2.2 Comments on estimated incremental cost of implementation

## F Support required for the implementation the mitigation action

F.1.1 Amount of Financial support

F.1.2 Type of required Financial support

<input type="checkbox"/> Grant	<input type="checkbox"/> Guarantee
<input type="checkbox"/> Loan (sovereign)	<input type="checkbox"/> Equity
<input type="checkbox"/> Loan (Private)	<input type="checkbox"/> Carbon finance
<input type="checkbox"/> Concessional loan	
<input type="checkbox"/> Other	<input type="text"/>

- F.1.3 Comments on Financial support
- F.2.1 Amount of Technological support
- F.2.2 Comments on Technological support
- F.3.1 Amount of capacity building support
- F.3.2 Type of required capacity building support

<input type="checkbox"/> Individual level
<input type="checkbox"/> Institutional level
<input type="checkbox"/> Systemic level
<input type="checkbox"/> Other <input type="text"/>

- F.3.3 Comments on Capacity Building support
- F.4 Financial support for implementation required
- F.5 Technological support for implementation required
- F.6 Capacity Building support for implementation required

### G Estimated emission reductions

G.1 Amount	6000
G.2 Unit	<input type="text" value="MtCO2e"/>
G.3 Additional information (e.g. if available, information on the methodological approach followed)	<p>In regard with the high emissions of the sector, these are the result of low efficiency in the digestibility of the livestock during the enteric fermentation process. Therefore, the adoption of technologies and processes that lead to increase such efficiency is key to increase productivity and reduce sectoral emissions.</p> <p>In a 15-year period, it is expected to reach at least 70% of the herd and 60% of the area devoted to livestock farming, thus achieving a mitigation potential of approximately 6 million tCO<sub>2</sub> e. Additionally, as a result of the measures taken, it is expected to capture approximately 4 million tCO<sub>2</sub> e by 2030, through the sequestration capacity of the biomass in the farm.</p> <p>The key technologies and processes suggested in the NAMA are:</p> <p><b>Hedges-pasture sections:</b> Dividing pasture areas in farms into more pasture sections allows a more efficient use of pasture and space. Hedges consist essentially of planting trees to divide the pasture areas capturing CO<sub>2</sub>. They are a source of food for the herd while they reduce production costs, as this type of fence should not be replaced as often as wooden posts.</p> <p><b>Rational grazing:</b> It is a management system of livestock farms that allows herd rotation in pasture sections at least every two or three days, increasing animal density and productivity per hectare. Moreover, due to longer recovery times, pastures are healthier as there is an increase in carbon sequestration in soil.</p> <p><b>Pasture Improvement-feeding:</b> The incorporation of new pasture species (e.g. the Brachiaria gender) results in a better nutrition of livestock, which increases productivity and reproduction rates. In addition, improved pasture reduces GHG emissions as it allows the herd to digest more efficiently and reduce enteric fermentation. It is worth noting that improved pasture and grazing are rational actions that are more successful when they are implemented together.</p>

**Improved fertilization plans:** The use of fertilizers is a major source of GHG emissions in dairy farms; therefore, information and capacity building can contribute to implement them more efficiently and to implement other strategies such as organic fertilizers, slurries or new technologies, including slow-release fertilizers.

Although the measures to be taken are focused on the primary sector of production, the livestock NAMA is considering the incorporation, in 2015, of a number of measures in the processing industry, such as the change toward renewable energy sources and the implementation of more efficient cooling systems.

Additionally, other measures such as genetic improvement of the herd and excreta management are considered for future inclusion in the NAMA.

## H Other indicators

### H.1 Other indicators of implementation

The NAMA adopts an innovative conceptual framework integrating scientific, institutional, management and economic policy aspects toward greater effectiveness and efficiency to achieve the desired objectives. Additionally, it integrates into the private industrial sector, which plays an important role in the dissemination and support in the adoption of technologies and processes for the expected transformation. Finally, the dissemination of successful experiences in competitiveness and profitability of producers who joined the NAMA and the information generated through this process will be available for the exchange of knowledge and best practices.

To develop the previously identified objectives, the following results and products are proposed:

**Result 1:** Technologies and processes aimed at increasing productivity and reducing GHG emissions have been characterized. The products of this result are: i) technologies characterized in terms of their profitability and GHG emissions. ii) Research processes and strengthened technology transfer for the generation-adaptation of win-win technologies. iii) Methodologies adapted and tested for reducing uncertainty in the estimation of GHG emission ratios (CH<sub>4</sub> and N<sub>2</sub>O) in Costa Rican livestock systems.

**Result 2:** The institutional arrangement for the livestock NAMA has been strengthened by involving the matters shown in Diagram 1 (Attached). This arrangement seeks to improve the dialogue among all stakeholders involved in decision-making for the livestock sector. In addition, it seeks to establish interagency agreements among involved the parties.

**Result 3:** Eco-competitive technologies and processes implemented by livestock producers. At this stage, pilot farms will be established and funded in the five regions of the country, to develop a training program for farmers and technicians on eco-competitive technologies with the support of public-private extension services.

## I Other relevant information

### I.1 Other relevant information including co-benefits for local sustainable development

The implementation of the livestock NAMA—integrated with a focus on Climate Smart Agriculture (CSA)—is expected to provide the following co-benefits:

**Soil Conservation and Restoration:** Improvement in the quality of soils and carbon containment is expected as a result of improvement in pastures and rotating pasture sections. This, in turn, contributes to a higher organic content and an increased capacity to retain moisture—which is crucial for the expected reductions in rainfall and increases in temperature—as well as a reduction in runoff and soil erosion.

**Ecosystem services:** It is expected to have an increase in the capacity to retain moisture in the soil, protection of water sources, protection of biodiversity, improvement of biological connectivity, and landscape improvement, thus benefiting tourism and other services.

**Profitability:** An increased productivity of economic activity implies an increase in cash flow and income of farmers, sustainability of their income-generating activity and improvement in their livelihoods and their families (better access to education and health). Since this activity is developed in rural areas, these improvements also help secure employment opportunities in deprived areas, and increase rural income.

## J Relevant National Policies strategies, plans and programmes and/or other mitigation action

### J.1 Relevant National Policies

In 2007, the Costa Rican government announced its goal of becoming a carbon neutral country by 2021.

This commitment of Costa Rica to climate change mitigation and adaptation was stated in several documents detailing this public policy, such as:

- 1) the National Development Plan 2015-2018,
- 2) the National Climate Change Strategy 2009 (ENCC);
- 3) the National Climate Change Program (ENCC Action Plan 2013); and
- 4) the Policy for the Costa Rican Agrifood Sector and Rural Development 2010-2021.

In the latter publication, prepared by the Ministry of Agriculture and Livestock Farming (MAG), Climate Change and Agro-environmental Management was established as one of its four pillars of the state policy in line with the national goal of achieving carbon neutrality.

As part of this Strategy, in early 2013, government authorities, with the support of public and private institutions, universities and research centers, with technical and financial support of international cooperation, made the decision to develop a NAMA for the sector in order to achieve a transformational change and make it re eco-competitive.

The synergy between the Ministry of Environment and Energy (MINAE) and the Ministry of Agriculture and Livestock Farming, with institutions such as--among others--Livestock Corporation (CORFOGA) and the National Chamber of Milk Producers (CNLP), allowed in 2013 to begin the following initiatives:

- i) National Strategy for Low Carbon Livestock Farming (ENGBC).
- ii) Capacity building towards the design of a Livestock NAMA,
- iii) First pilot project of Livestock NAMA, and
- iv) First public-private institutional arrangement aimed at strengthening dialogue and joint implementation of both mitigation initiatives.

The importance of the environmental policy in Costa Rica stands out among the priorities of the new ministerial authorities (2014-2018). As a part of the agenda for the development of the agricultural sector, they have publicly committed to donor agencies to maintain the State policy already established and to strengthen not only the agenda of sustainability and climate change, but also the strategy to promote low-emission livestock farming.

J.2 Link to other NAMAs

#### K Attachments

K Attachments	Title	Description
K.1 Attachment description	NAMA Concept_Livestock_Costa Rica_Nov 2014.pdf	
K.2 File	<input type="text"/>	<input type="button" value="Browse..."/>

#### L Support received

L.1 Outside the Registry	Support provided	SupportType	Amount	Comment	Date
L.2 Within the Registry					