

NR-344 - Costa Rica Sugarcane NAMA

Costa Rica

NAMA for Recognition

A Overview

A.1 Party

Costa Rica

A.2 Title of Mitigation Action 

Costa Rica Sugarcane NAMA

A.3 Description of mitigation action

Costa Rica Sugarcane NAMA's main objective is "to implement strategic technological actions that will allow the Costa Rican sugarcane agro-chain to stimulate and increase its agricultural productivity levels within a framework of environmental eco-efficiency, economic profitability and social benefit; incorporating measures that contribute to the mitigation of Greenhouse Gases (GHG), adapting the different agro-productive systems prevailing in the country to the complex conditions imposed by climate change". This objective contributes to the vision of transformation stipulated in the 2050 National Decarbonization Plan for the promotion of highly efficient agri-food systems that generate export goods and low-carbon local consumption, which specifically indicates the ambition that by 2030 the supply chain value of sugarcane (among others) will be applying emission reduction technologies at the farm level. To achieve a transformation of the sector towards low-carbon production, three key measures with the greatest potential for reducing emissions were selected: a. Reduce nitrous oxide (N₂O) emissions generated by the application of nitrogenous fertilizers b. Reduce carbon dioxide (CO₂) emissions, generated by the application of soil amendments c. Reduce emissions of carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O) generated by the consumption of fossil fuels.

A.4 Sector

☐ Energy supply

☐ Transport and its Infrastructure

☐ Residential and Commercial buildings

☐ Industry

☒ Agriculture

☐ Forestry

☐ Waste management

☐ Other

A.5 Technology

☐ Bioenergy

☐ Cleaner fuels

☒ Energy Efficiency

☐ Geothermal

☐ Hydropower

☐ Solar Energy

☐ Wind Energy

☐ Ocean Energy

☒ Carbon Capture and Storage

☐ Low till / No till

☐ Land fill gas collection

☐ Other

A.6 Type of action	☒ National/ Sectoral goal	☒ Project: Investment in machinery
	☒ Strategy	☐ Project: Investment in infrastructure
	☒ National/Sectoral policy or program	☐ Project : other
	☐ Other	

A.7 Greenhouse gases covered by the action	☒ CO2	☒ CH4
	☒ N2O	☐ HFCs
	☐ PFCs	☐ SF6
	☐ Other	

B National Implementing Entity

B.1.0 Name	Ministerio de Agricultura y Ganadería (MAG)/ Ministerio de Ambiente y Energía (MINAE)
B.1.1 Contact Person 1	Mauricio Chacón Navarro
B.1.2 Address	Costa Rica, San Jose, Sabana Sur
B.1.3 Phone	+506-86583536
B.1.4 Email	mchacon@mag.go.cr
B.1.5 Contact Person 2	
B.1.6 Address	
B.1.7 Phone	+506-22534298
B.1.8 Email	idelgado@minae.go.cr
B.1.9 Contact Person 3	
B.1.10 Address	
B.1.11 Phone	
B.1.12 Email	
B.1.13 Comments	The figure of the NAMAS is articulated around the National Decarbonization Plan and the current NDC with the ambition of being able to promote the decarbonization and vertical integration of priority value chains. Currently, the country seeks to develop and consolidate NAMA processes-programs in priority products such as NAMA Coffee and NAMA Livestock. In addition, it seeks to promote the initial processes of the NAMAS Sugarcane, Rice and Musaceae, all of them articulated around promoting the identification, transfer and adoption of technologies that reduce emissions and improve competitiveness; promote actions that facilitate the commercialization of low-emission products (among others, promote labeling and differentiation processes, promotional campaigns-link country brand) and promote circular economy processes that encourage the valuation and reuse of organic agricultural waste, and other waste that is generated throughout the value chain, which is linked to the Waste NAMA that this Costa Rican nation also aspires to. This NAMA is integrated with other NAMAS at the level of scalability mechanisms, as well as in the systems that seek to consolidate the Monitoring, Reporting and Verification data through SINAMECC platform.

Add Additional Entity

C Expected timeframe for the implementation of the mitigation action

C.1	Number of years for completion	8
C.2	Expected start year of implementation	2023

D Currency

D.1	Used Currency	USD ▼
Conversion to USD: 1		

E Cost

E.1.1	Estimated full cost of preparation	272,393,500
Conversion to USD: 272,393,500		
E.1.2	Comments on estimated full cost of preparation	
E.2.1	Estimated full cost of implementation	661,053,500
Conversion to USD: 661,053,500		
E.2.2	Comments on estimated full cost of implementation	For the establishment, implementation and development of the Pilot Plan in 35 Farms where 70 pilot plots of sugarcane will be located, the investment for years 1 to 3 is estimated at USD 2.723.935. To carry out the scaling plan from 2025 is required an investment of USD 3.886.600,00 for a total of USD 6.610.535,00. The 75% of the total area cultivated with sugarcane throughout the country will be covered, it is estimated at 45.501 hectares.
E.3.1	Estimated incremental cost of implementation	
Conversion to USD: 0		
E.3.2	Comments on estimated incremental cost of implementation	

F Estimated emission reductions

F.1	Amount 	153,5 (Intermediate scenario, projection to 2050)
F.2	Unit	MtCO2e ▼
F.3	Additional information (e.g. if available, information on the methodological approach followed)	This budget contains inputs for the establishment and management of Pilot Farms and Demonstration Plots; national inventory of sectoral resources (equipment); national sectoral and regional diagnosis of agribusiness; design, formulation and printing Regional cultivation guides (soils and nutrition); formulation and circulation Manual of Technical Recommendations for Cultivation; formulation of the Manual of Good Agricultural Practices; design of specific protocols by management area; establishment and monitoring of soil organic carbon (SOC) measurement and monitoring plots, among others that can be consulted in the attached NAMA document. ☐☐☐☐ 

G Other indicators

G.1 Other indicators of implementation	1. Cultivated area (ha) according to vegetative state: new, renewed, in the soca or sapling cycle and that dedicated to seedbeds or another purpose (livestock, forage, sweet.) 2. Cane productivity (t/ha) 3. Sucrose concentration contained in the stems (kg/t) 4. Honey yield (molasses) (kg/t) 5. Agroindustrial productivity (t sugar/ha) 6. Cane/Sugar Ratio (t/t) 7. Agricultural residues (RAC) (t/ha) 8. Cost of Plots with Producer Technology (¢/ha) 9. Cost of Plots with NAMA Technology (¢/ha) 10. Cost per unit area (¢/ha) 11. Unit cost of cane production (¢/t) 12. Income per area unit (¢/ha) 13. Agroproductive profitability 14. Biomass production (t/ha) 15. Physicochemical condition of the soil 16. Soil Organic Carbon (SOC) (t/ha) 17. Organic Carbon in compact forest areas (t/ha) 18. Organic Carbon in scattered trees (t/ha) 19. Fertilizer Emission (t CO₂eq) 20. Emission of organic fertilizers and other organic amendments (t CO₂eq) 21. Emission of corrective acidity amendments (t CO₂eq) 22. Hydrocarbon Emission (t CO₂eq) 23. Nitrogen use (kg of N applied/ t cane produced) 24. Productive emission efficiency (t CO₂eq emitted/ t cane produced) 25. Emission efficiency (t CO₂eq/ t sugar produced) 26. Economic efficiency of emission (t CO₂eq/ million colones in income) 27. Calculation of carbon sequestration (t CO₂eq) 28. Calculation of GHG emissions (t CO₂eq) 29. Balance calculation (t CO₂eq)
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H Other relevant information

H.1 Other relevant information including co-benefits for local sustainable development	1. The sector seeks to satisfy seven specific goals of general consensus, classified as primary, which are: 2. Support global and national initiatives for the environment and against climate change. 3. Mitigate and reduce GHG emissions generated by primary activity of produce and harvest sugarcane in the field; with the projection to expand in the future to the manufacturing and marketing area. 4. Produce sugarcane in a sustainable way in harmony with nature and protecting the natural resources and biodiversity. 5. Increase significantly and sustainably over time the agroindustrial productivity index, referenced to the tons of sugarcane produced and harvested per hectare (t/ha), the concentration of sucrose contained and extracted from the processed raw material (kg/t), and integrally, affect the amount of sugar manufactured in the mill given in t/ha. 6. Dispose and enable a new differentiated commercial product to enter the world market as "low emission sugar". 7. Increase the profitability of the production unit 8. Maximize the eco-efficiency, eco-competitiveness and sustainability of the sugarcane agribusiness. 9. The crop also seeks to satisfy several important goals, such as the following: 10. Comprehensively review the systems of production, management and harvest of raw material in force at the regional level; adapting, systematizing, articulating and optimizing as far as possible practices, times, inputs and field work. 11. Take advantage of the anatomical, genetic and physiological properties and attributes that sugarcane possesses that differentiate and enhance it as an exceptional plant. 12. Reduce GHG emissions to a significant degree without negatively affecting the agro-industrial productivity of the crop. 13. Mentalize, stimulate, motivate and involve the sugarcane producer in modernizing and adapting their production system to the legislation, markets and consumers demand. 14. Incorporate the concepts of eco-efficiency and eco-competitiveness as guiding principles in the production of sugarcane. 15. Adopt, implement and consolidate Good Agricultural Practices (GAP) as support for the optimal and sustainable management of commercial plantations; which implies correcting and overcoming the technical-administrative errors and omissions that are usually committed in the field, and that cause losses and impacts to the ecosystem, sacrifice productivity and cost money in the sugar agribusiness. 16. Intervene on the systematic and accelerated degradation maintained by many of the soils cultivated with sugarcane in the country, and which causes a significant loss of their capacity and productive potential, thus raising the implicit costs. 17. Adapt land preparation and mechanical management of plantations to what is strictly necessary, avoiding excessive, oversized and unnecessary use of equipment that generates degradation and GHG emissions. 18. Take advantage of the important genetic potential available in the country by selecting and cultivating the varieties that show the best adaptation to the particular conditions of the environment where the cane is produced. LAICA's national varieties offer great potential by virtue of their local adaptation. 19. Reduce the use of synthetic fertilizers and agrochemicals as far as possible, viable and feasible without affecting productivity, overcoming their dependence. 20. Promote the use of organic fertilizers and bio-inputs. 21. Take advantage of and incorporate added value to the system's own resources (harvest residues) as a principle of circular economy. 22. Make efficient use of water and energy in sugarcane production. 23. Review and adapt the current harvesting systems (manual, semi-mechanized and mechanized) in all their dimensions, seeking to increase capacities and efficiency, while reducing losses, times and costs involved and impacts generated; in addition to GHG emissions. 24. Incorporate forest content into the sugarcane production system, making full use of the available land by planting forest and fruit species in spaces where it is viable and feasible to repopulate without affecting the management and development of the plantations. 25. Promote the establishment and operation of a monitoring, reporting and verification (MRV) system at the level of the agro-productive unit, which allows control of what has been done in all areas: productive, administrative, technical and financial. 26. Prepare and condition the sugarcane production system to enable the execution of audits that allow determining the Carbon Footprint as an instrument for the certification of the differentiated production process. 27. Design, implement and develop the necessary strategies aimed at promoting
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and consolidating the production of a differentiated sugar in its primary phase. 28. Make it possible to carry out feasibility studies and project design aimed at the implementation of low GHG emission technologies. 29. Adjust and bring into legal, environmental and commercial compliance several elements related to agricultural practice, which represent inconvenient spaces for controversy, challenge and criticism that contribute little to the good image of the sector.

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

- I.1 Relevant National Policies
- The National Development and Public Investment Plan (PNDIP) 2019 – 2022: The National Plan includes actions regarding the reduction of GHG emissions in the agricultural sector, through the development of "sustainable production models in livestock and agricultural farms." (1072_0.pdf (unesco.org))
 - The National Policy for Adaptation to Climate Change: The National Policy for Adaptation to Climate Change proposes that "agricultural production systems (...) adopt resilient and eco-competitive production practices, designs and construction systems in the face of climate change." (final-politica-adaptacion-24-abril.pdf (cambioclimatico.go.cr))
 - National Plan for Decarbonization by 2050: The Plan specifically seeks to guide the "modern, green and emission-free economy in order to have net zero emissions by the year 2050." (PLAN-NACIONAL-DESCARBONIZACION.pdf (cambioclimatico.go.cr))
 - National Adaptation Plan 2018-2030 (in design process).
 - Sectoral Plan 2019 – 2022 of the Agricultural, Fishing and Rural Sector: Plan with strategic interventions, among which one linked to promoting climate actions that contribute to the comprehensive decarbonization of the agricultural sector through the design and implementation of NAMAS in rice, musaceae and sugarcane, which would be added to the existing NAMAS in livestock and coffee. (2019-010-Plan_Sectorial_2019-2022.pdf (sepsa.go.cr))
 - Agro-environmental Agenda: Intersectoral effort of great importance for the productive activity of rice. Among its work axes are elements related to climate-smart agriculture. (agenda-agroambiental-final-aprobada.pdf (mag.go.cr))
 - Paris Agreement: The Paris Agreement corresponds to a supranational exercise which is materialized in the country through the Nationally Determined Contribution (NDC), in which, through contribution 7.2, it is desired that the productive chains migrate to a low in greenhouse gas emissions. (parisagreement_publication.pdf (unfccc.int))
 - National Bioeconomy Strategy 2020-2030: Axis focused on bioeconomy for rural development through better environmental management of the agricultural sector (policyespañol (micitt.go.cr))
 - National Climate Change Strategy: <https://cambioclimatico.go.cr/wp-content/uploads/2018/08/ENCC.pdf>
 - National Policy for Sustainable Production and Consumption (Política Nacional de Producción y Consumos Sostenibles (digeca.go.cr))
 - AgroAmbiente Agenda MAG – MINAE (2021). (Agenda AgroAmbiente).
 - Law No. 7818 - Organic Law of Agriculture and Sugarcane Industry. Its primary objective is to maintain an equitable regime of relations between cane producers and sugar mills, guaranteeing each sector a rational and fair participation. Ley N°7818.
 - DECREE No. 28665 - MAG. Executive Regulation of the Organic Law of Agriculture and Sugarcane Industry No. 7818 of September 2, 1998. Given in the Presidency of the Republic. San José, on the twenty-seventh day of the month of April of the year two thousand. 140p
- I.2 Link to other NAMAs
- (none)
Sustainable Housing Programme
High Integration Program of Wind Energy
Implementation of a National Forestry and Climate Change Strategy, including the development and implementation of a Platform for the Generation and Trading of Forest Carbon Credits.

J Attachments

J	Attachments	<table><tr><th>Title</th><th>Description</th></tr><tr><td><u>NAMA CR 2022 (español).pdf</u></td><td></td></tr></table>	Title	Description	<u>NAMA CR 2022 (español).pdf</u>	
Title	Description					
<u>NAMA CR 2022 (español).pdf</u>						
J.1	Attachment description					
J.2	File	Choose File No file chosen				

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