

Building Climate Resilient Agriculture in Caribbean Countries: The Commonwealth of Dominica

Dominica's Agriculture Sector in Context

Agriculture, Dominica's second largest sector, contributed between 11.5% and 15.2% of the country's gross domestic product between 2010 and 2020. Croplands and pastures cover 33.3% of Dominica's land area with the agriculture sector featuring a mixture of both subsistence and commercial operations. In 2011, 15% of the labour force were employed as skilled Agriculture, Forestry, and Fishery workers, in addition to the unskilled labourers. The perennial labour problem has been partially addressed through the growing community of Haitian migrants.

Typical to the Dominican agricultural landscape, crop farming is on steep slopes and hillside cultivation extends into the mid-elevation areas along road access routes, whereas flat areas for agricultural production are restricted to the narrow flat floodplains of the major rivers. Farming is rainfed, with irrigated land accounting for less than 1% of the estimated acreage of farmland.

Primary production is led by crops on units of 0.5–10 hectares, providing rural employment and incomes for small farmers practising multiple cropping systems, and for the more commercialised farmers who use protected agriculture systems mainly for high value vegetables. Livestock production systems are characterised mainly as semi-commercial/commercial, high input farms (0.4–4 hectares) with hired labour, producing mainly poultry and pigs; and subsistence livestock producers, rearing small ruminants, poultry and pigs, primarily for home consumption, with any excess sold at the local markets, or in the community. The country is self-sufficient in egg production. Apiculture is carried out on a subsistence basis, but is becoming increasingly commercialised.

Local markets for Dominica's crop and livestock fresh produce are diverse. In addition, Dominica has the capacity for sorting, grading and packaging produce for export. The agro-processing sector is characterised largely by home-based, family production and small-



Source: McLeod, Sheri-Kae, *Caribbean National Weekly*, August 10, 2019, <https://www.caribbeannationalweekly.com/caribbean-breaking-news-featured/dominica-launches-multi-million-agricultural-project/>.

scale processing utilising varying degrees of technology, with little modernisation of equipment and facilities, and limited product development sophistication.

The agricultural economy is highly vulnerable to external shocks, as exemplified by the dismantling of agricultural trade preferences in the 1980s; storms and hurricanes, including Hurricane Maria in 2017, which resulted in devastation of the agriculture sector with over 90% of crops and livestock lost; the COVID-19 pandemic, which caused significant fallout in tourism, impacted availability and pricing of input supplies, food imports and markets for Dominican fresh produce and exports; and the more recent Russia-Ukraine war that has impacted fertiliser availability and pricing.

Agriculture in Dominica's NDCs

Dominica's initial Nationally Determined Contribution (iNDC) (2015) stated that Greenhouse Gas (GHG) emissions will be reduced by 44.7% by 2030 in comparison to 2014, including sectoral targets for energy industries; transport; manufacturing and construction; commercial/institutional, residential, agriculture, forestry and fishing; and solid waste. No specific agriculture mitigation

targets were identified. The iNDC also identified several agriculture-related adaptation goals, although not all these actions (e.g., early warning systems, education) would have quantifiable mitigation co-benefits.

The updated NDC (2022) includes greater specificity regarding agriculture sector targets, with a 50% reduction in emissions by 2030. Transformational approaches will include: enhancing soil organic carbon, reducing soil erosion, mitigating N₂O emissions, eliminating short-lived climate pollutants, introducing manure management, continuing no tillage and replacing fossil fuel farm energy with biofuels and other forms of renewable energy. In addition, reduction or elimination of slash and burn practices, disposal of cuttings through burning, burning of grass or fibre by workers to repel biting insects, the burning of shrubs and weeds can further reduce emissions. Agroforestry will contribute to mitigation efforts through increased: (i) carbon sequestration, increased carbon storage in biomass above and below ground, as well as soil organic carbon; and (ii) reduction of GHG emissions.

Emissions Profile for Agriculture in Dominica

The overall emissions were estimated to be -2,479 Gg CO₂e and 292 Gg CO₂e with and without Forestry and Other Land Use respectively. Agriculture is estimated to contribute 34.8% with biomass burning contributing 57% and enteric fermentation 19% of the total agricultural emissions.

Barriers to Inclusion of CRA in NDCs

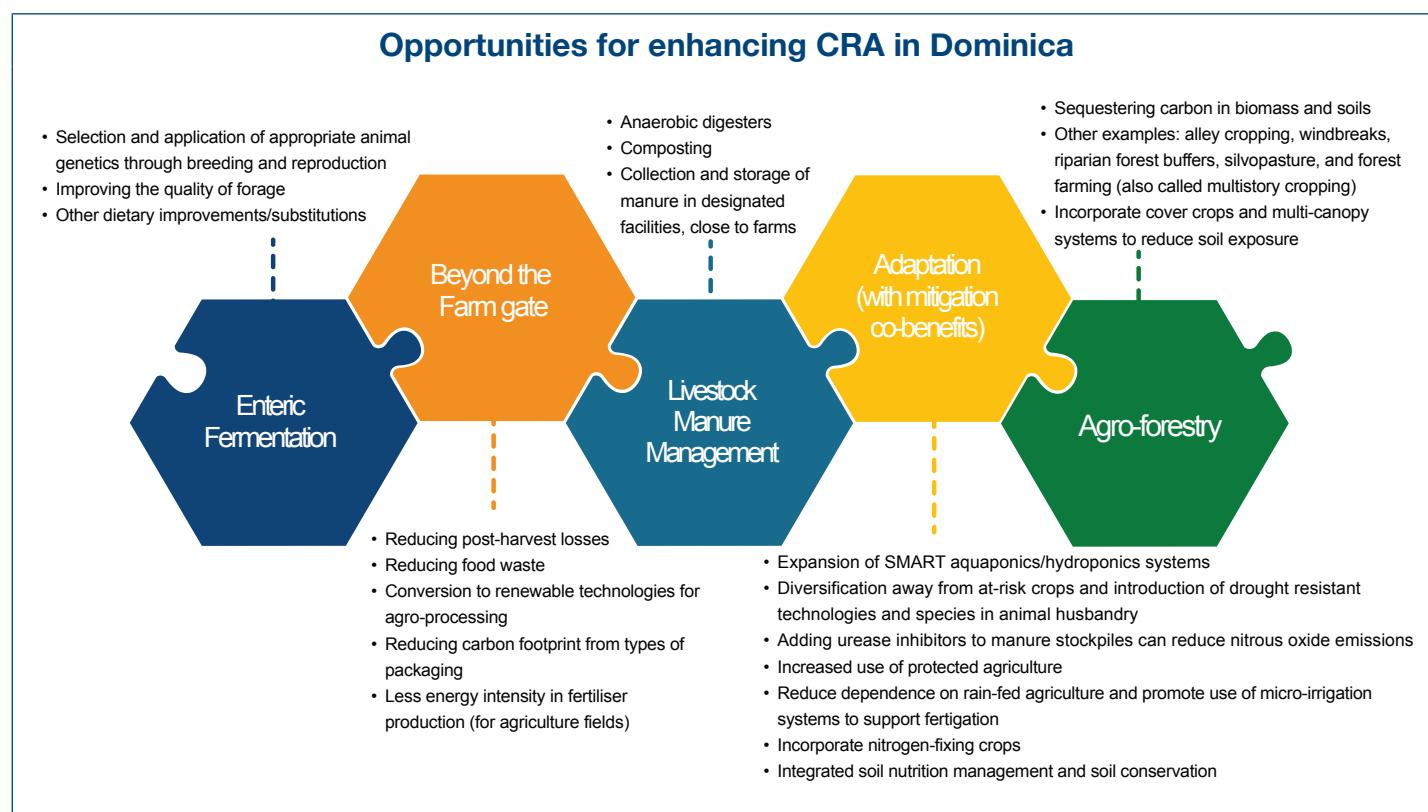
Despite efforts to advance implementation of Dominica's NDCs, several barriers to progress in achieving mitigation targets have been identified that include:

- Limited availability of agriculture data, with absence of a centralised data management infrastructure and networks for data sharing.
- Weaknesses and gaps in the institutional environment and domestic support structure.

- Inadequate financing, including instances where resources have been shifted to recovery, rather than improvements, as exemplified in the aftermath of Hurricane Maria, and poor credit terms for farmers.
- Weak technology transfer and capacity development.
- Insecurity of tenure and suitability of small and fragmented holdings.
- High reliance on costly imported inputs (fertilisers, feed, medications and improved genetic material, etc.) coupled with rudimentary practices that negatively impact productivity, raise production costs and consumer prices, and affect competitiveness of agricultural products in domestic and export markets.

Opportunities for Building CRA and Enhancing Climate Ambition in Future NDCs in Dominica

The opportunity to reduce emissions and enhance climate ambition from the agriculture sector is focused on the two significant sources of agricultural GHG emissions in Dominica: enteric fermentation and manure management. Other opportunities for the agriculture sector to contribute to future NDCs that have mitigation potential are adaptation, agroforestry and practices beyond the farmgate.



Priority Capacity Needs and Key Approaches for Enhancing Agriculture's Contribution to Future NDCs

Capacity Needs for Building CRA in Dominica

- Technical capacity to develop GHG inventories and run mitigation scenarios.
- Data availability, quality and archiving.
- Research and development, including validation of technologies prior to adoption.
- Incorporation of digital technology in decision making.
- Creating pathways to enhance women and youth participation in primary agriculture.
- Enhancing capacity of extension services, including specific training and plant/soil health.
- Implementation plans, financing and monitoring, evaluation, reporting and learning strategies associated with new agriculture policies.
- Multi-level governance and enhanced coordination across the food value chain.
- Financing to facilitate transition to new technologies, new practices and new types of crop production.
- Disaster risk financing strategies (including insurance) to strengthen the sector's capacity to recover from the occurrence of climate shocks and stressors.
- Outreach and awareness to farmers and manufacturers to support changes in practices and behaviours including technology stigmatisation), aligned with national climate and other policies.

Approaches and Steps to Enhancing Agriculture's Contribution to Future NDCs

- Alignment of agricultural climate targets, policies, and actions with NAPs or SDGs.
- Enhancing financing for climate resilient agriculture.
- Strengthening Monitoring, Reporting and Verification (MRV) systems for better inventories, assessments of mitigation potentials or assessment of access to finance.
- Improvement of agricultural innovation and extension services.
- Identification of policies and measures to equitably clarify land tenure, protect small-scale farmers, and engage private sector in the CRA transition.
- Identification or prioritization of actions that support both mitigation and adaptation.
- Improved description of co-benefits for mitigation and/or adaptation actions.
- Link to niche markets that could incentivise sustainable, lower emission products.
- Market chain development and support.
- Improving the legislative environment to incentive technology use and mechanisation.

The *Strengthening the Foundation for a Climate Responsive Agricultural Sector in the Caribbean Readiness Project* (CARICOM AgReady), financed by the Green Climate Fund, targets nine countries in the CARICOM region with The Ministry of Environment and Housing of The Bahamas as the lead National Designated Authority (NDA) and the Inter-American Institute

for Cooperation on Agriculture (IICA) as the delivery partner. Covering Bahamas, Belize, Dominica, Haiti, St. Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, and Trinidad and Tobago, the project works to provide information and tools to enable greater participation from the agriculture sector in climate action and finance processes.



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