BUILDING A PRODUCTIVE AND RESILIENT REGIONAL AGRICULTURE SECTOR
STATEGIC PLAN 2018 - 2022
Building a productive and resilient regional agriculture sector
Agriculture is one of the key drivers to achieving economic prosperity, food and nutrition security and rural development in the Caribbean. But the growth of the sector is persistently slow and uneven. Much of the available data indicates that the region is operating below its potential to feed itself, in spite of having significant land and abundant natural resources, rich agrobiodiversity and a growing demand from international markets for niche Caribbean products.

The Strategic Plan 2018-2022 is the Institute’s five-year road map for transforming regional agriculture into a modernised, competitive, innovative and resilient sector. In comparison to previous three-year plans, this five-year period provides the Institute with more flexibility to implement and achieve results for programmes and projects. This is deliberate, as the Strategic Plan emphasises results, impact and accountability.

To translate our vision into action, the Caribbean Agricultural Research and Development Institute (CARDI) will focus its work over the next five years on the following Strategic Programmes:

- Value Chain Services
- Policy and Advocacy
- Institutional Strengthening
- Partnerships and Strategic Alliances

Key deliverables under those strategic programmes will enable the Institute to contribute, in the short term, to increases in food supply to the region, and in the medium term, to the stability of the agricultural sector, food and nutrition security and reduction in hunger and poverty. Such successes will, in time, enable CARDI to assist the sector in becoming a significant driver to the sustainable development agenda of the region. The Strategic Plan has been shared with stakeholders in all member states, through a series of consultations. Based on feedback, priority programmes closely aligned to the country’s agriculture development policies and CARDI’s Strategic Plan will be developed, packaged and rolled out as operational plans for each country.

Over the next five years, CARDI is committed to working with all stakeholders to realise the strategic goal of contributing to food and nutrition security through the development of innovations that contribute to sustainable, climate resilient value chains.

Foreword

BARTON A. CLARKE
Executive Director, CARDI
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<table>
<thead>
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<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AIS</td>
<td>Agricultural Innovation System</td>
</tr>
<tr>
<td>CACSH</td>
<td>Caribbean Agricultural Commercial Services Hub</td>
</tr>
<tr>
<td>CAP</td>
<td>Community Agricultural Policy</td>
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<tr>
<td>CARDI</td>
<td>Caribbean Agricultural Research and Development Institute</td>
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<tr>
<td>CARICOM</td>
<td>Caribbean Community</td>
</tr>
<tr>
<td>CARPHA</td>
<td>Caribbean Public Health Agency</td>
</tr>
<tr>
<td>COP21</td>
<td>21st Conference of the Parties to the United Nations Framework Convention on Climate Change</td>
</tr>
<tr>
<td>CSME</td>
<td>Caribbean Single Market and Economy</td>
</tr>
<tr>
<td>EC$</td>
<td>Eastern Caribbean Dollar</td>
</tr>
<tr>
<td>FAO</td>
<td>Food and Agriculture Organisation</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>ICN2</td>
<td>Second International Conference on Nutrition</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and Communication Technology</td>
</tr>
<tr>
<td>INDC</td>
<td>Intended Nationally Determined Contributions</td>
</tr>
<tr>
<td>IPM</td>
<td>Integrated Pest Management</td>
</tr>
<tr>
<td>IPR</td>
<td>Intellectual Property Rights</td>
</tr>
<tr>
<td>ICTA</td>
<td>Imperial College of Tropical Agriculture</td>
</tr>
<tr>
<td>NIS</td>
<td>National Innovation Systems</td>
</tr>
<tr>
<td>OECS</td>
<td>Organisation of Eastern Caribbean States</td>
</tr>
<tr>
<td>OJT</td>
<td>On the Job Training</td>
</tr>
<tr>
<td>RFNSP</td>
<td>Regional Food and Nutrition Security Policy</td>
</tr>
<tr>
<td>RRC</td>
<td>Regional Research Centre</td>
</tr>
<tr>
<td>SDG</td>
<td>Sustainable Development Goal</td>
</tr>
<tr>
<td>SIDS</td>
<td>Small Island Development States</td>
</tr>
<tr>
<td>SIDS S.A.M.O.A.</td>
<td>SIDS Accelerated Modalities of Action</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>UNFCCC</td>
<td>United Nations Framework Convention on Climate Change</td>
</tr>
<tr>
<td>USDA APHIS</td>
<td>United States Department of Agriculture Animal and Plant Health Inspection Service</td>
</tr>
<tr>
<td>US$</td>
<td>United States Dollar</td>
</tr>
</tbody>
</table>
The Caribbean Agricultural Research and Development Institute (CARDI) is one of the foremost organisations dedicated to conducting research and development that seeks to improve the competitiveness and sustainability of the regional agricultural sector. The Institute was established in 1974 by the governments of 12 member states of the Caribbean Community (CARICOM). It is headquartered in Trinidad and Tobago and now has representation in 14 countries including Cayman Islands and the Bahamas, who became members in 2014 and 2016 respectively (Figure 1). CARDI currently serves a collective population of just over 6.2 million.

Figure 1: Map showing CARDI Countries

- Antigua & Barbuda
- Bahamas
- Barbados
- Belize
- Cayman Islands
- Dominica
- Grenada
- Guyana
- Jamaica
- St. Kitts & Nevis
- St. Lucia
- St. Vincent & the Grenadines
- Monserrat
- Trinidad & Tobago
VISION
A Centre of Excellence delivering innovation and technologies for the region’s food and agricultural sectors.

MISSION
To contribute to the sustainable development of the Caribbean by the co-generation, diffusion and application of knowledge, through agricultural research for development.

CORE VALUES
Partnerships, Integrity, Professionalism, Accountability, Transparency and People Centredness.
Across the Caribbean, agricultural production continues to trend downwards, in spite of large areas of arable lands in some territories, warm temperatures, year-round sunshine, a rich and diverse agro-biodiversity, a highly trained cadre of technical experts and a strong commitment from farmers. Table 1 shows that the contribution of agriculture to gross domestic product (GDP) is on the decline throughout the region.

Although it has been demonstrated that these figures do not include the forward and backward linkages with agriculture, the declining figures do indicate a poor performance. This is due to an interplay of factors including lack of competitiveness, underinvestment by regional governments, extreme weather events, poor market access, inadequate transportation, praedial larceny and high cost of inputs.

According to the Food and Agriculture Organisation of the United Nations (FAO) all the Caribbean Community (CARICOM) countries except for Belize and Guyana are net food importers, with at least seven of these countries importing more than 80% of the food they consume. The region’s annual food import bill, currently estimated to be US$6.5 billion, is dominated by energy dense foods high in fats, oils, sweeteners and sodium. The ready availability of these imported calorie dense foods has gradually led to the replacement of traditional locally grown roots, tubers, fruits and vegetables in local diets. This has been strongly correlated to the growing problem of chronic non-communicable diseases and childhood obesity in the Caribbean. According to the Caribbean Public Health Agency (CARPHA), the Caribbean is in the midst of a childhood obesity epidemic, in which one in every five children is carrying an unhealthy weight and is at high risk of developing non-communicable diseases later in life. This situation underscores the importance of agriculture in responding to this burgeoning health crisis.

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Increased agricultural production and processing concomitant with investments are key to reversing these worrying trends. The region must get back to feeding itself with healthy, nutritious food produced in a sustainable manner. The region’s agriculture sector, which has been performing below its true potential, must be modernised and transformed if it is to meet this ambitious but achievable target.

Under the current Strategic Plan 2018-2022, CARDI will be in the vanguard of this transformation. CARDI will focus on innovations that could assist in the development of value chains for economically important food industries, forming strategic linkages with key research and development partners to position agriculture at the heart of the development agenda and encourage co-learning and investment in the sector through a strengthened Institute and a robust advocacy programme (Figure 3).

The achievement of the above will contribute to tangible benefits such as increased employment, poverty alleviation, reduction in the food import bill, food and nutrition security and a reversal of the growing incidence of chronic non-communicable diseases.

<table>
<thead>
<tr>
<th>Country</th>
<th>1984</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antigua and Barbuda</td>
<td>2.3</td>
<td>1.9</td>
</tr>
<tr>
<td>Bahamas</td>
<td>2.3</td>
<td></td>
</tr>
<tr>
<td>Belize</td>
<td>20.8</td>
<td>10.9</td>
</tr>
<tr>
<td>Dominica</td>
<td>28.0</td>
<td>16.0</td>
</tr>
<tr>
<td>Grenada</td>
<td>15.0</td>
<td>7.3</td>
</tr>
<tr>
<td>Guyana</td>
<td>24.7</td>
<td>18.5</td>
</tr>
<tr>
<td>Jamaica</td>
<td>No data available</td>
<td>7.9</td>
</tr>
<tr>
<td>St. Kitts and Nevis</td>
<td>7.6</td>
<td>1.1</td>
</tr>
<tr>
<td>St Lucia</td>
<td>11.1</td>
<td>3.3</td>
</tr>
<tr>
<td>St Vincent and the Grenadines</td>
<td>14.0</td>
<td>7.8</td>
</tr>
<tr>
<td>Trinidad and Tobago</td>
<td>2.6</td>
<td>0.6</td>
</tr>
</tbody>
</table>

Table 1: Agriculture, Value Added % of selected CARICOM countries GDP.

CARDI’S STRATEGIC GOAL

Contributing to Food and Nutrition Security through the development of innovations that contribute to sustainable, climate resilient value chains.

Figure 3: CARDI’s Strategic Goal and Strategic Programmes for 2018-2022
Figure 4: Cross-cutting Issues

CARDI will also ensure a clear focus on the key cross-cutting themes of youth and gender, climate change, results-based management, inclusion and equity, information and communication technology (ICT), resource mobilisation and financial sustainability (Figure 4).

These are critical to attaining the strategic goal: contributing to food and nutrition security through the development of innovations that contribute to sustainable, climate resilient value chains.
Framing the Strategic Plan

The strategic programmes, goals and objectives are closely aligned to key regional and global developmental initiatives. Cognisant of the fact that decision-making and policy formation should be informed by evidence, CARDI will work to ensure that all research programmes are structured within an evidence-based framework.

While the Institute’s work will focus on the commodities identified by CARICOM as economically important to the region, it will not be limited to them. As stakeholder needs and national agricultural plans evolve over the strategic period, CARDI’s structure and approach has to be flexible to meet the demands of all.
National Plans and Policies

At the national level, CARDI's work will continue to be responsive to the mandate given by the various national governments acting on behalf of their stakeholders (farmers, extension workers and end users).

The Institute recognises the important role of the private sector in the development of the food and agriculture value chains. At the national level, CARDI will also work with the private sector to strengthen the food, agriculture and agribusiness value chains. This ensures that our research efforts generate relevant, timely and practical solutions.

Regional Plans and Policies

The ground-breaking Port of Spain Declaration signed by CARICOM leaders in 2007 to stop the scourge of non-communicable diseases informs the development of the strategic plan. Twenty-seven commitments were identified in the Declaration in which CARDI is endorsed as one of the organisations that have a key role in enhancing food security in the region.

The strategic plan is informed by the Community Agricultural Policy (CAP), that was adopted by CARICOM in 2011 and which sought to build on earlier commitments and initiatives, most notably the revised Treaty of Chaguaramas (2001); The Jagdeo Initiative (2004); The CARICOM Single Market and Economy (CSME) Single Development Vision (2009); The Liliendaal Declarations on Agriculture and Food Security, and Climate Change and Development (2009); Climate Change and the Caribbean: A Regional Framework for Achieving Development Resilient to Climate Change (2009-2015); and the Implementation Plan for Delivering Transformational Change 2011-21: Implementing the CARICOM Regional Framework for Achieving Development Resilient to Climate Change.

The CAP renews the focus on regional agricultural policy in light of the central importance of agriculture in the promotion of a CSME. It also recognises the new and increasingly challenging global policy framework characterised by rising input costs and higher more volatile food prices caused by the impact of the global financial and economic turbulence, more competitive markets, climate change and environmental challenges.

The CARICOM Regional Food and Nutrition Security Policy (RFNSP) and Action Plan adopted in 2010 also informs the Institute’s strategic plan. The Action Plan, which operationalises the RFNSP, is designed to contribute to improved standards of living, greater social security protection and sustained economic development covering several strategic actions under the four food and nutrition security dimensions of the policy (CARICOM Secretariat, 2011).

The revised OECS Regional Agricultural Plan of Action 2012-2022 and the Strategic Plan for the Caribbean Community 2015 - 2019: Repositioning CARICOM also provide guiding principles in the preparation of the CARDI Strategic Plan.

Global Plans and Policies

At the global level, the Institute subscribes to the 2030 Agenda for Sustainable Development and the 17 Sustainable Development Goals (SDGs) adopted by the United Nations Special Assembly in September 2015. Agriculture and food lie at the heart of the 2030 Agenda and the 17 SDGs, which collectively aim to end poverty and hunger while responding to a changing climate and sustainably managing natural resources.

The outcomes of the Small Island Development States (SIDS) Accelerated Modalities of Action (S.A.M.O.A) Pathway, the
Second International Conference on Nutrition (ICN2) and the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) (COP 21) have also contributed to the shaping of the current strategic plan. The agriculture sector features prominently in the Intended Nationally Determined Contributions (INDCs) which formed the basis of the 2015 Paris Agreement on Climate Change. FAO reports that over 94% of all countries identified adaptation and mitigation strategies for the sector, clearly indicating their willingness to respond to climate change by transforming and investing in the agriculture sectors.
CARDI has fully embraced the philosophy of managing for results and aiming towards impact achievement to effect change at national, regional and global levels. Much of CARDI’s work towards these efforts will be conducted through research and development projects, with emphasis resting heavily on its Theory of Change\textsuperscript{4} methodology and Impact Pathways\textsuperscript{5}.

CARDI’s Theory of Change methodology, recognised as both a process and product, is specific to its research and developmental efforts and is reflected in its programmatic framework for the strategic period 2018 – 2022 (Figure 5).

The programmatic framework emphasises and visually demonstrates the contribution of research and development activities towards the realisation of resilient development outcomes. These outcomes are tiered at the regional and global levels and contributing to their attainment will be the fulfilment of the Institute’s Strategic Goal for the current period. Key to achieving success is recognition that though CARDI’s Theory of Change has been captured in the framework presented, the environment it operates in is dynamic and CARDI will remain flexible to treat with the changing context in which it may find itself in working towards impact achievement.

The institutional programmes reflect the research and development agenda for the period and aligned to them are related sub-programmes, all having their individual Impact Pathways. Together they highlight how research and development projects will be streamlined into the programmatic framework and fit the strategic dimension of the Institute. Additionally, they demonstrate how programmatic impact delivery will be undertaken.

There are four programmes:
- Value Chain Services
- Institutional Strengthening
- Partnership and Strategic Alliances
- Policy and Advocacy.

Related to the programmes are 12 sub-programmes of which three set the Institute’s research agenda, namely:
- Commodity Improvement Programmes,
- Climate Change Mitigation and Adaptation
- Market Studies and Development.

\textsuperscript{4} Theory of Change is a methodology consisting of both a process and product, which outlines causal linkages, maps in reverse identified changes, highlights related preconditions and represents it graphically by way of an Impact/Outcome Pathway.

\textsuperscript{5} An Impact Pathway describes in detail the output to outcome and impact relations.
Figure 5: CARDI’s Impact Pathway
CARDI will institutionalise an effective planning, monitoring and evaluation system for all implemented activities, leading to a more accountable, transparent and efficient institute.
Transitioning into this strategic period requires a CARDI which is oriented to the evolving dynamics confronting the Caribbean and other regions. If impact achievement is to be realised, the modus operandi of the Institute must be tailored to responses which are innovative, climate-smart, industry-oriented, sustainable and scalable.

In re-orienting its focus, CARDI has positioned itself to work with others, recognising that within the value chain approach and in treating with industry development, the forging of relationships will be necessary for success. This is especially the case in treating with themes such as youth and gender, sustainability in the agricultural sector, and issues related to food and nutrition security and non-communicable diseases. Similarly, best practices related to topics within value chain services will be sought, with the understanding that the Institute, though a generator of information, is required to be a knowledge broker for the benefit of all. For these reasons, CARDI has adopted the value chain approach and streamlined its research and development activities into the Value Chain Services programme, as outlined below.

This programme is expected to adequately treat with challenges and opportunities which arise in the following sub-programmes:
• Commodity Improvement Programmes,
• Climate Change Mitigation and Adaptation
• Market Studies and Development.

Highlighted below is the programme’s Impact Pathway, which demonstrates how the programme will deliver in contributing towards the Institute’s strategic goal (Figure 6).
## Impact Pathway

![Impact Pathway Diagram](image)

### Sub-Programmes
- Commodity Improvement Programmes
- Climate Change Mitigation & Adaptation
- Market Studies & Market Development

### Programmatic Goal
An increased level of regional food & nutrition security

### Objectives
- To implement/adopt innovative, sustainable, climate smart food & agriculture systems
- To enable &/or enhance market & industry Competitiveness

### Expected Outputs
- Innovative sustainable climate smart food & agriculture systems
- Value Added Products
- Sustainable Value Chains &/or Clusters

### Expected Outcomes
- Increased / Consistent levels of commodity production
- Increased Revenue/GDP for identified industries

### Intervention Areas
- Technology transfer
- Integrated Pest Management
- Value-Added Product Development
- Agricultural Health and Food Safety Systems, inclusive of Post-Harvest Management
- Agro-Ecological, Organic and Sustainable Agriculture Systems
- Genetic Resources, Variety and Breed Improvement
- Renewable Energy Systems

*Figure 6: Impact Pathway: Value Chain Services*
YOUTH & GENDER

CARDI will give fair opportunity to women and youth in training and capacity building programmes, support them in entrepreneurship opportunities along the value chains while using innovative ways of communicating.
Strategic Programme 2: Policy and Advocacy

CARDI recognises the enabling environment as a critical element in effecting change as it embodies the authority from which all other stakeholders follow and allows for the smooth conduct of research and development implementation activities. Those bodies, which provide a facilitating and supporting role within the value chain approach, require direction and evidence upon which to base their decisions.

These decisions impact the disbursement of resources, implementation of research priorities, delivery of projects and services and realisation of impacts.

CARDI has embraced its responsibility and duty to generate and/or obtain empirical evidence and make it available to the facilitating and supporting bodies, through mediums which best allow for their uptake. This programme takes an active step beyond that of a knowledge broker and brings to bear CARDI’s coordinating role with its partners in identifying regional agricultural gaps and highlighting opportunities, collation of internal and external empirical evidence, linking them to higher-level objectives at the national and regional levels, priority setting and demonstrating areas of collaboration. Nowhere else is this better reflected than in the role CARDI has as chairs of the CARICOM-instituted Agriculture, Food and Nutrition Cluster and Research and Human Resources Thematic Group.

Over the next strategic period, the Institute will continue to leverage the use of traditional and new communication tools and processes, focusing on developing a strong corporate presence and brand, reaching out and engaging with stakeholders, informing policy development and generating and sharing relevant and timely information. Agriculture as an industry and a profession demands promotion, and more relevant information about the industry is needed in the public space. Such intervention widens the buy-in from the public and facilitates linkages within the value chain approach, which will lead to a greater appreciation of regional products and awareness of health and nutrition implications.
CARDI will pursue this agenda, recognising that taking a role in this activity will also highlight its brand and that of its partners, and spur the pursuit of excellence within the industry.

The sub-programmes which comprise this programme are:
- Knowledge Management
- Policy and Investment,
- Corporate Communications.

Collectively they will deliver in contributing towards the Institute’s strategic goal as reflected in the programme’s Impact Pathway (Figure 7).
## Impact Pathway

<table>
<thead>
<tr>
<th>SUB-PROGRAMMES</th>
<th>PROGRAMMATIC GOAL</th>
<th>OBJECTIVES</th>
<th>EXPECTED OUTPUTS</th>
<th>EXPECTED OUTCOMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge Management</td>
<td>CARDI as a credible research &amp; development organisation</td>
<td>To develop &amp; leverage appropriate knowledge management systems</td>
<td>Caribbean Agriculture Portal</td>
<td>Improved flow of relevant knowledge/information</td>
</tr>
<tr>
<td>Policy &amp; Investment Services</td>
<td></td>
<td>To inform the development of effective policies</td>
<td>Establishment &amp; maintenance of key databases</td>
<td></td>
</tr>
<tr>
<td>Corporate Communications</td>
<td>To Improve communication with internal &amp; external clients</td>
<td>Investment profiles geared towards attracting investments</td>
<td>Supportive policies for the strengthening of agriculture &amp; food value chains</td>
<td></td>
</tr>
<tr>
<td>Corporate Communications</td>
<td></td>
<td></td>
<td>Investment profiles geared towards attracting investments</td>
<td>A strong corporate brand</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Investment profiles geared towards attracting investments</td>
<td>Upgraded corporate website</td>
</tr>
<tr>
<td>Corporate Communications</td>
<td></td>
<td></td>
<td>Investment profiles geared towards attracting investments</td>
<td>Increased use of social media applications</td>
</tr>
<tr>
<td>Corporate Communications</td>
<td></td>
<td></td>
<td>Investment profiles geared towards attracting investments</td>
<td>Sustainable relationships with the media</td>
</tr>
<tr>
<td>Corporate Communications</td>
<td></td>
<td></td>
<td>Investment profiles geared towards attracting investments</td>
<td>Dissemination of timely and relevant information</td>
</tr>
</tbody>
</table>

### Intervention Areas
- Policy Guidance
- Development of Investment Profiles
- Stakeholder Consultations
- Caribbean Agriculture Portal (Website)
- Online and Intra-net Databases
- Training/Learning Platforms
- Publications
- Social Media
- Public Seminars

*Figure 7: Impact Pathway: Policy and Advocacy*
CARDI will treat with measures to reduce dependencies and mitigate risk arising from economic shocks in the global and regional sphere, allowing for it to become a more resilient institute in delivering its mandate.
Strategic Programme 3: Institutional Strengthening

A strong CARDI is expected to reflect a strong regional agricultural industry and it is in this programme where the core values of the Institute are especially highlighted. Partnerships, Integrity, Accountability, People Centred and Professionalism are all areas which impact the Institute as an agent of change. Conversely, these are the areas which CARDI seeks to create impact as it positions itself as an innovative, resilient, relevant and effective agricultural research and development institute.

One major step has been the adoption of a results-based management methodology as CARICOM is undertaking a shift towards managing for results, monitoring and evaluating progress and identifying progress towards stated impacts. CARDI aims to be congruent in that effort and, with regards to results-based management systems globally, will place it on par with other institutions and bodies thus raising the level of transparency and accountability. However, people lie at the heart of any change methodology and capacity must be built and supported, along with the systems and infrastructure that will support the achievement of impact realisation.

Recognising that disproportionate strength is not likely to bring about the achievement of sought impacts, this programme focuses not solely on CARDI but on its partners as well, highlighting an old adage that a chain is only as strong as its weakest link. In utilising the value chain approach, all partners must be strengthened as all stakeholders strive towards similar and related impact achievements. Institutional Strengthening will take place under the rubric of the following sub-programmes:

- Planning, Monitoring and Evaluation
- Corporate Services
- Resource Mobilisation

The programme’s Impact Pathway is graphically represented below (Figure 8).
Impact Pathway

<table>
<thead>
<tr>
<th>SUB-PROGRAMMES</th>
<th>PROGRAMMATIC GOAL</th>
<th>OBJECTIVES</th>
<th>EXPECTED OUTPUTS</th>
<th>EXPECTED OUTCOMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning, Monitoring</td>
<td>A resilient &amp; Efficient Institutional network</td>
<td>To develop &amp; coordinate Institutional systems &amp; actions</td>
<td>Standard Operating Procedures</td>
<td>Improved internal &amp; external coordination of systems &amp; actions</td>
</tr>
<tr>
<td>&amp; Evaluation</td>
<td></td>
<td></td>
<td>Process Manuals/ Guides</td>
<td></td>
</tr>
<tr>
<td>Corporate Services</td>
<td></td>
<td>To build infrastructural &amp; human resource capacity</td>
<td>Committee/ Group Trems of References</td>
<td>Increased infrastructure &amp; human resource capacity</td>
</tr>
<tr>
<td>Resource Mobilisation</td>
<td></td>
<td>To produce &amp; maintain a pool of resources</td>
<td>Specific &amp; relevant infrastructure resources</td>
<td>Increased level of available resources</td>
</tr>
</tbody>
</table>

**Intervention Areas**

- On-the-Job Regional Training
- Digital Management Information Systems
- Global Staff Exchanges

- Self-Financing and/or Sustainable Financing Mechanisms
- Institutional Guiding Documentation (e.g. Standard Operating Procedures)
CARDI will promote the adoption of climate smart agricultural practices by pursuing effective partnerships, capacity building opportunities and information generation and dissemination.
An underpinning and significant theme has been that of partnerships, reflected in the core values but given a level of priority as an institutional programme. This is significant as CARDI has a proud history of working together with others and through that history, the region has reaped the rewards from the benefits of collective action. CARICOM is predicated on the notion of cooperation of member states and member institutions along with the CARICOM Secretariat and as such, it is endemic to the function of CARDI and the execution of its research agenda towards the realisation of impact achievements.

CARDI recognises the importance of linkages between agriculture and other important sectors including tourism, health, education and water. This means that it is necessary to build linkages with institutions and stakeholders in these sectors.

Similarly, CARDI has built strategic alliances which have redounded to the benefit of the region through the undertaking of research and development activities, the mobilisation of resources and the coordination of efforts in response to needs or opportunities at the regional and global levels.

In moving forward in this new strategic period, CARDI aims to build upon such relationships and also engage in new partnerships and alliances where possible, all within the context of the value chain approach. It will also bring to bear new methodologies which are expected to result in more meaningful relationships such as the use of Innovation Platforms, which depart from the old paradigm of technology transfer and the typical linear thinking which flows from it to that of a multi-agent system of openness with respect to knowledge sharing and non-linear thinking. Sub-programmes which contribute to this programme are:

- Technical Cooperation
- Coordination
- Partnerships.

The Impact Pathway for this Programme is represented in Figure 9.
## Impact Pathway

<table>
<thead>
<tr>
<th>SUB-PROGRAMMES</th>
<th>PROGRAMMATIC GOAL</th>
<th>OBJECTIVES</th>
<th>EXPECTED OUTPUTS</th>
<th>EXPECTED OUTCOMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical Cooperation</td>
<td>Attainment of sound effective partnerships in order to conduct the activities essential to the efficiency of the value chain</td>
<td>To assist in the development of linkages between agriculture &amp; other sectors</td>
<td>Collaborative inter-sectional programme</td>
<td>A harmonised &amp; integrated research &amp; development industry within the agricultural sector relevant to the other sectors within the regional economies</td>
</tr>
<tr>
<td>Coordination</td>
<td></td>
<td>To coordinate implementation activities across the region</td>
<td>Harmonised plans</td>
<td></td>
</tr>
<tr>
<td>Partnerships</td>
<td></td>
<td>To establish partnerships for project interventions</td>
<td>Enhanced portfolio of MOUs with strategic partners</td>
<td></td>
</tr>
</tbody>
</table>

### Intervention Areas

- Innovation Platforms
- Linkages between Agriculture and other Sectors
- Regional and National Coordinating Mechanisms
- National, Regional and International Joint Actions
Financing the Strategic Plan

Like many publicly funded organisations, the limiting factor for CARDI’s expansion is the availability of finance. Core finances from member governments have been effectively frozen for over 30 years and the allocation of core resources for operations is minimal. CARDI relies on generation of external funding to conduct its work programmes. In an ideal situation, CARDI requires EC$29.8 million per annum for operations; of which EC$16.4 million will be needed for staff and administrative costs. Currently, member country contributions total EC$9.5 million (but there is usually some shortfall); a reasonable estimate of external funding is EC$13.4 million, leaving a funding deficit of EC$6.9 million (Figure 10).

Figure 10: Contributions of core and external funding (EC$M)
Therefore, the strategy to generate recurrent income, to address the financing shortfall is:

1. A portion of the profits (40%) generated by Caribbean Agricultural Commercial Services Hub (CACSH), CARDI’s commercial subsidiary, will accrue to the Institute to supplement core income. CACSH is in its early operational stages but will take advantage of opportunities generated by technologies generated by CARDI or the market;

2. Establishment of a CARDI Foundation, an endowment fund from which investment income would supplement core funding;

3. Improvement of CARDI’s systems that would allow for the generation of administrative fees for the management of externally funded projects located in the region. The Resource Mobilisation Unit will continue to be vigilant for opportunities of this nature, as well as opportunities for core benefits from external projects.

CARDI’s management will also continue to aggressively pursue arrears of member government contributions totalling EC$20.9 million as at 30th June 2017. These funds are targeted for use in recapitalising the Institute.

The Institute will be forced to operate at a sub-optimal level (core budget of EC$8.8 million as opposed to core budget of EC$16.4 million) and gradually expand as maintainable core revenues are generated.
CARDI will integrate traditional and new information and communication tools across all areas of our operations. Additionally, investments will be made to develop the Institute’s infrastructure and human capacity.
To enable CARDI to fulfil its mandate and operate efficiently and effectively in a rapidly changing environment, adjustments will need to be made to the institutional structure. These adjustments are reflected in Figure 11. Figure 12 outlines areas which will be strengthened to complement strategic objectives of the Institute for the upcoming five-year period.

Figure 11: Restructured Organogram of CARDI
Figure 12: Institutional Strengthening Areas

**GOAL:**
Contributing to Food and Nutrition Security through the development of innovations that contribute to sustainable, climate resilient value chains.

**BUILDING A SOUND SCIENCE, TECHNOLOGY AND INNOVATION FUNCTION**
- Intellectual Property
- Infrastructure & Equipment
- Publications
- Coordination
- Innovation Platforms
- Research Quality
- Project Management
- Information Technology
- Management Information Systems
- Digitisation of all Records
- Priority Setting
- Knowledge Management
- Partnerships

**BUILDING A ROBUST CORPORATE COMMUNICATIONS FUNCTION**
- Strengthening the CARDI Brand
- Building strong partnerships and strategic alliances
- Improving internal and external communications
- Improving visibility and outreach
- Social Media
- Image Building
- Publications

**BUILDING A ROBUST RESOURCE MOBILISATION FUNCTION**
- Monitoring and Evaluation of Projects
- Culture Change
- Standard Operating Procedures
- Project Cycle Management
- Environmental Scanning
- Databases of Projects, Donors etc.

**STRENGTHENING HUMAN RESOURCES FUNCTIONS**
- Ethics
- OJT Global
- Culture Change
- Orientation
- Occupational Health & Safety
- Disaster Mitigation & Management
- Capacity Building (Youth, Partners)
- Pensions & Health Care Reform
- Succession Planning
- Rewards & Recognition
- Whistle Blower
- Benefit Sharing
- HR Planning & Management
- Time Sheets

**STRENGTHENING FINANCIAL MANAGEMENT SYSTEMS**
- Overhaul FMIS
- Cost Accounting
- Benefit Sharing Systems
- Allocations (Overhead Expenses, Counterpart Contributions)
- Fraud Protection Systems
- Review, strengthen and implement policies and procedures for financial reporting

- Support to CACSH & CARDI Foundation
- Management Accounting
- Internal and External Audit Functions
- Business Continuity Plan
- Treasury Management
Implementing the Strategic Plan

The transformation and sustainability of regional agriculture demands an increase in the innovative capacity of the sector. CARDI will continue to build on its successes of the last 40 years to lead this process. CARDI is well positioned to contribute to the required process in view of the following strengths:

- A physical presence in 14 CARICOM member and associate states
- Access to key Caribbean policy makers at the national and regional levels
- A strong working relationship with governments, particularly Ministries of Agriculture in member states
- Recognition as the Regional Agricultural Research Institute in CARICOM under the Revised Treaty of Chaguaramas
- Close working relationships with farmers, regional and international research and development agencies and key stakeholders
- A multidisciplinary team of researchers
Beneficiaries

Direct

CARDI staff, farmers, farming groups, agripreneurs, researchers/academics, technicians, agronomists, extension officers, technocrats and policy makers, donors/sponsors, partners, national and regional media and outreach networks, Ministries of Agriculture, regional governments and general public.

Indirect

International organisations with an interest in agricultural and rural development, international media networks, international investors and non-partner agencies.

CARDI is repositioning itself to lead the process of transforming regional agriculture to international competitiveness. In this regard, the Institute has adopted an Agricultural Innovation System (AIS) approach to improve production and productivity throughout the value chains.

At the regional level, CARDI chairs the CARICOM Agriculture, Food and Nutrition Cluster and the CARICOM Research and Human Resource Development Thematic Group. These groups are being reformed to reflect AIS thinking, which will result in a stronger system for regional collaboration and collective action. This will help to ensure that the results of research and development activities are used to inform policy development in the region on areas related particularly to food and nutrition security in the context of climate change, worsening global instability and the declining economic realities of member states. The repositioning of these groups as regional innovation platforms will strengthen advocacy and assist in attracting donor funds to the region to fuel our sustainable development initiatives.

At the national level, the AIS approach will be implemented through innovation platforms and the adoption of multi-stakeholder processes which will be facilitated by CARDI. The Institute will adopt a deliberate strategy to strengthen National Innovation Systems (NIS) by building partnerships, improving linkages among stakeholders and promoting co-learning strategies. This process will be enabled by ICTs, which will be deployed to increase the innovative capacity of the NIS by significantly increasing the opportunities for learning, linkages and investment in the sector. This will be supported by continuous strengthening of our internal systems through a comprehensive programme of training and capacity building, investments in youth, a complete reorganisation of our talent management, finance and procurement systems and significant upgrades to the physical infrastructure.

CARDI will continue to foster partnerships with a wide range of organisations, including but not limited to Ministries of Agriculture, universities and other tertiary level institutions, farmers organisations, youth and women’s groups, national and
international research organisations, civil society, particularly community-based organisations and the private sector. These organisations will be natural constituents of the proposed national innovation platforms. Partnerships and the resultant investments will ensure the human, institutional and financial resources to meet the demands and objectives of the region’s strategic programmes.

The sustainability of the agriculture sector, now more than ever, requires that we continuously build innovative capacity. CARDI will emphasise research and development systems that result in innovations that lead to the development of novel products, services and management practices. These will enhance agricultural productivity, and improve agricultural products and efficiency across the value chains of targeted commodities. CARDI will encourage and promote sector innovations among investors.

Getting the word out on the latest innovations, including those developed within the region and those developed elsewhere and verified for suitability will facilitate their transition to commercial use. This includes the development and maintenance of Intellectual Property Rights (IPR) to protect our innovations and to monetise our knowledge streams. It is anticipated that a well-managed IPR process will enhance CARDI’s image and credibility as a scientific organisation. These actions will be closely tied to identified national priorities, arrived through a collaborative priority setting process.

The needs of the various member states are diverse and so CARDI has grouped countries according to their differing requirements, in order to enable more efficient delivery of goods and services:

**Group 1 countries:**

**Belize, Guyana and Jamaica**

These countries have the largest land areas for agriculture and they have considerable capacity for national research and development. In keeping with the philosophy of partnerships, CARDI will partner with the national institutions. Without a regional institute, there is always the possibility of work being carried out simultaneously; CARDI will ensure that this duplication of effort does not take place. These countries will play a significant part in regional food production, with large-scale production systems using the adequate land resources available. CARDI’s interventions will emphasise this type of production. Commodities that can be produced in large quantities will be targeted for agro-processing.
Group 2 countries:

Bahamas, Barbados, Cayman Islands and Trinidad and Tobago
These are also (by Caribbean standards) relatively large countries, but they rely on the industries of tourism and oil and natural gas for much of their GDP. Agriculture is a relatively small contributor to wealth. In spite of this, these countries have all recognised the need for a vibrant agriculture sector to ensure food security, mitigate against climate change (which may pose a threat to tourism) and to mitigate against the volatility of commodity prices. Agricultural land use will also contribute to the scenic environment expected by the tourist industry. There are often several national entities involved in agriculture and CARDI will partner with these for research and development.

A suitable type of activity in these countries is intensive systems with high capital input provided by partnering with the private sector. Other activities will include agri-tourism and industries that complete the value addition within the value chains; these industries can provide these services on a regional and national basis.

Group 3 countries:

Antigua and Barbuda, Dominica, Grenada, Montserrat, Saint Kitts and Nevis, Saint Lucia and Saint Vincent and the Grenadines
This is the OECS group of countries and they have often relied almost completely on CARDI as their research and development arm. However, many OECS countries do have limited national capacities in research and in extension and these capacities will need to be further developed with CARDI’s support. Food security has been embraced by these countries and each will attempt to produce as much food as possible. The farming population consists mainly of small holdings, which often have issues because of the steep topography of the territories. Another major problem for these small farmers is dealing with weather patterns such as drought and/or excessive rainfall. Because of these conditions on-farm research is necessary and investigations into small-scale mechanisation are also needed. High-value commodity products will be pursued; intensive and innovative systems will be developed.

In all the country groups, the value of partnerships is identified; closely related to this is the need to identify investment opportunities to support the thrust for increased food security. One of the reasons why Caribbean agriculture has declined is because of lack of investment. CARDI will be leading the shift in mentality that is needed to reverse this deficiency.
CARDI will engage in efforts to attract new external resources, while making efficient use of current subventions. Innovative approaches will be undertaken, all linked to programmatic and institutional sustainability.
Monitoring

In the face of declining public investments and increasing donor funding, it is important that CARDI’s operations be more efficient, open and accountable. This will ensure opportunities for greater collaboration and the generation of more impactful outcomes. To aid in this, CARDI’s monitoring and evaluation system will be results-based, thus making it compatible with regional and international standards.

Achieving the programme goals of this Strategic Plan will require CARDI to continually review and measure progress. Annual work programmes will be developed with clearly defined and measurable targets for each of the sub-programmes. These targets will be informed by annual milestones for the programme goals. The annual work programmes will indicate roles, responsibilities and timelines. Regular reporting will enable monitoring of the progress made throughout the year and indicate activities that may be lagging and need special attention.

An important activity will be a review process, which will allow for lessons to be learnt where progress is both satisfactory and also less than targeted. A comprehensive review will be carried out in the final year of the medium term, which will inform the planning for the next period, beginning in 2023.
CARDI will develop a robust strategy to work with partners across a diverse range of sectors to support the implementation of activities across the four strategic programmes.
CARDI is one of the oldest Caribbean regional institutions. The Revised Treaty of Chaguaramas in 2001 officially recognised CARDI as an Institute within the CARICOM system. Appendix 1 highlights the original charter of the Institute, which is still relevant today.

CARDI is the successor to the former UK-funded Regional Research Centre (RRC), which in turn traced its founding to the Trinidad-based Imperial College of Tropical Agriculture (ICTA).

The RRC was a Trinidad-based organisation with some limited outreach in other Caribbean countries. Among the original mandates of CARDI was to achieve the optimum decentralisation of resources. This decentralisation has been successfully achieved as evidenced by the achievements of CARDI which have been spread throughout its member countries.

New tomato varieties were as a result of research carried out in Trinidad. Before the mid-1970s, tomato tended to be a seasonal crop in the region as the varieties then available required the cooler night temperatures of the dry season to set flowering. The varieties developed by the early CARDI work can withstand warm nights; with the recent impact of global warming in the region this early work takes on more significance.

Also in the early years in Trinidad, CARDI developed much more productive varieties of cassava. In Barbados, a yam virus disease was rendering most of the production unattractive to purchasers. In early use of tissue culture, CARDI developed yams that were virus-free. CARDI also developed mitigation measures for the control of sugar cane borer, in Barbados which saved the country’s sugar industry millions of dollars.

In the Organisation of Eastern Caribbean States (OECS) during the 1980s, CARDI focused on the small farmers working on steep slopes. Many of these farmers were able to considerably improve their livelihoods with the help of CARDI interventions.

During the 1990s many regional countries saw the almost complete destruction of several ornamental plants, as well as some food crops such as sorrel, okra and soft fruits, by the invasive pink mealy bug. CARDI sourced Indian expertise, leading to the introduction of natural enemies which controlled this pest.

CARDI Jamaica developed effective feeds and feeding systems for the small ruminant industry. There was a need to restore mined out bauxite lands in central Jamaica. CARDI demonstrated that the restored lands could be used for small ruminants, allowing profitable operations in areas where mining had taken place. Another achievement in Jamaica was work that led to the understanding of the life cycle of the coffee berry borer, which led to a strategy which helps to reduce the damage done by this pest.

The export of callaloo (also known as bhaaaji and amaranth) from Jamaica to the USA was difficult for several years. However, CARDI developed protocols for this Jamaican industry that were acceptable to the USA. As a result about US$11 million per year has been saved in preclearance fees.
In more recent years, Trinidad and Tobago has been proud to be recognised as the home of scorpion pepper, one of the world’s hottest types. This recognition came out of CARDI’s hot pepper programme, which developed local varieties into stable types of peppers, now being grown and successfully marketed in the Caribbean and beyond.

In the Caribbean, CARDI has produced quality seeds of hot pepper and legumes for commercial use. Work in Belize with rice and corn has produced superior varieties of those crops, and seeds are produced for the industry in Belize and elsewhere.

Because the Caribbean climate allows development of many pests and diseases, there is a tendency by farmers to spend considerable resources on crop protection measures. CARDI developed and promoted IPM techniques, which minimise the use of chemicals while still producing a good crop.

Another source of waste for the farming industry is post-harvest spoilage. For many farmers, this has been reduced by following procedures and practices developed or recommended by CARDI.

Protected agriculture has become quite common in the region, but some farmers have lost money with structures that cannot withstand the region’s climate. Also farming practices in protected structures must be carefully developed. CARDI, under its protected agriculture research has identified suitable equipment as well as recommended methodologies for use under these structures.
APPENDICES
Appendix I

Charter of CARDI

1. To provide for the research and development needs of the agriculture of the region as identified in national plans and policies;

2. To provide an appropriate research and development services to the agricultural sector of member states;

3. To provide and extend the application of new technologies in production, processing, storage and distribution of agricultural products of member states;

4. To pursue for specified periods long-term research in pertinent areas;

5. To provide for the co-ordination and integration of the research and development efforts of member states where this is possible and desirable;

6. To undertake teaching functions, normally at the postgraduate level, limited to the development of the relevant research by any member state;

7. To seek to achieve the optimum decentralisation of facilities.

Extracted from the Agreement establishing the Caribbean Agricultural Research and Development Institute (1974)
CARIBBEAN AGRICULTURAL RESEARCH AND DEVELOPMENT INSTITUTE

STRATEGIC PLAN 2018 - 2022
Improving lives through agricultural research