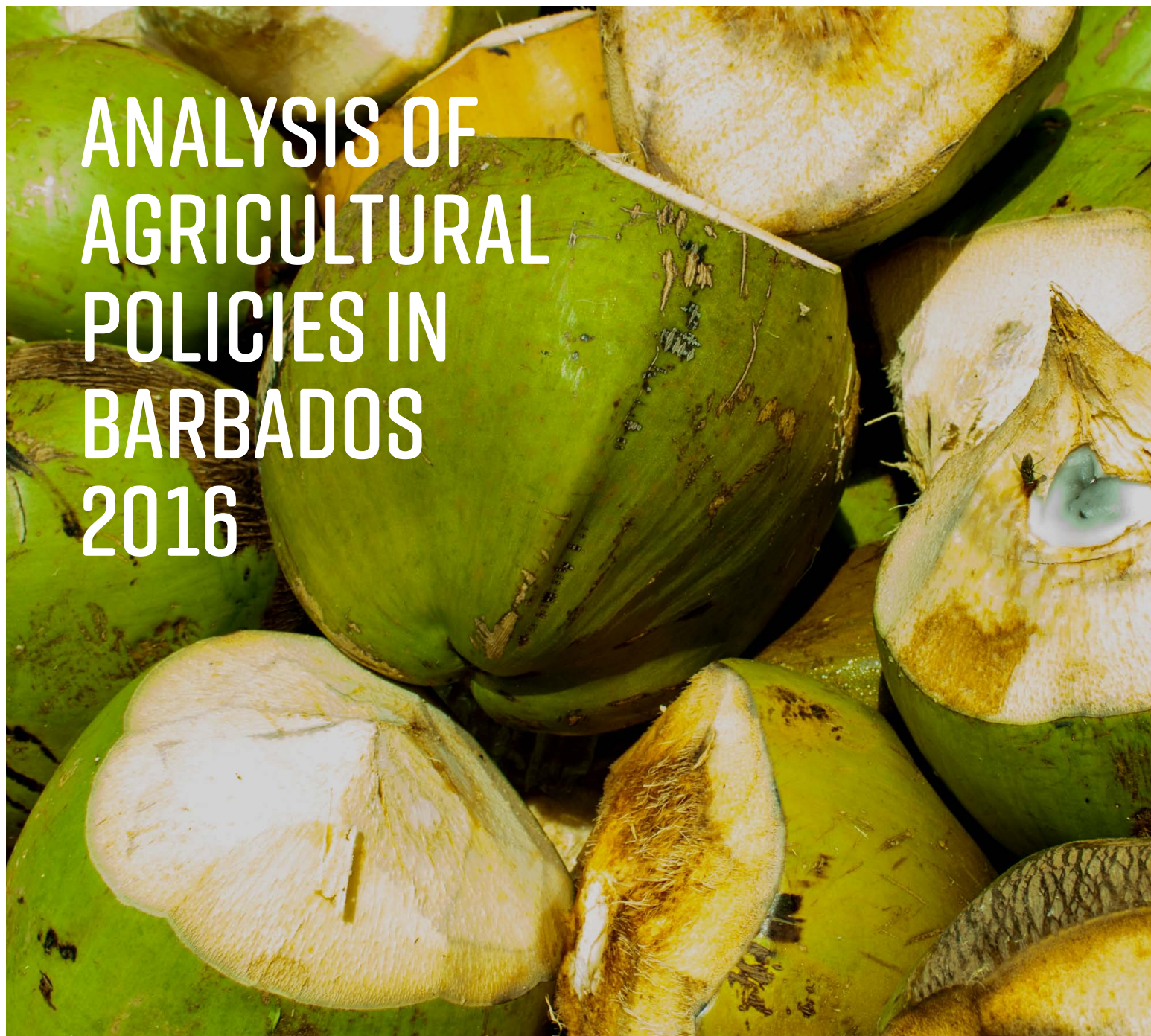


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2019

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ANALYSIS OF AGRICULTURAL POLICIES IN BARBADOS 2016



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ABSTRACT

The agricultural sector accounts for 3.8 percent of the GDP of Barbados and 2.9 percent of its jobs. The Government of Barbados considers agriculture to be one of the nation's potential growth drivers and supports it through a combination of incentives and concessions to agricultural producers, high border protection, and support to research and infrastructure. Support to producers in Barbados averaged 33.4 percent of gross farm receipts in the latest 3 years of the study (2012-2014), and a significant share of that support (38 percent) was provided in the form of transfers to general services. Total transfers arising from agricultural policy reached 1.1 percent of the national GDP. All types of support decreased during the period of study, but the share of price support in support to producers increased. Reorienting agricultural policy from input subsidies and per-hectare payments towards support to general services would be beneficial for agricultural competitiveness and build a foundation for sustainable growth in agriculture.

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ACRONYMS

AC	All Commodities
ACP	African, Caribbean and Pacific Group of States
ADF	Agricultural Development Fund
BADMC	The Barbados Agricultural Development and Marketing Corporation
BAMC	The Barbados Agricultural Management Company
BASIS	The Barbados Agricultural Statistical Information Service
BCIC	The Barbados Cane Industry Corporation
BICO	The Barbados Ice Cream Company Limited
BNSI	The Barbados National Standards Institution
BT	Budget Transfer
CARDI	Caribbean Agricultural Research and Development Institute
CARICOM	Caribbean Community and Common Market
CEPAL	The Economic Commission for Latin America and the Caribbean
CET	Common External Tariff
CPF	Country Programming Framework
CROSQ	CARICOM Regional Organisation for Standards and Quality
CSCT	Consumer Single Commodity Transfer
CSE	Consumer Support Estimate
CSME	CARICOM Single Market and Economy
DTF	Distance to Frontier
EPA	Economic Partnership Agreement
EPC	Effective Protection Coefficient
ERP	Effective Rate of Protection
ESR	Barbados Economic and Social Report
EU	European Union
FAO	Food and Agriculture Organisation of the United Nations
FOB	Free on board
GDP	Gross Domestic Product
GOB	Government of Barbados

GSSE	General Services Support Estimate
IDB	Inter-American Development Bank
IICA	Inter-American Institute for Cooperation on Agriculture
IMF	International Monetary Fund
LAC	Latin America and the Caribbean
MAFFW	Ministry of Agriculture, Food, Fisheries and Water Resource Management
MIS	Market Information System
MPS	Market Price Support
MGDS	Medium-Term Growth and Development Strategy
NAHFCA	National Agricultural Health and Food Control Agency
NPC	Nominal Protection Coefficient
NRP	Nominal Rate of Protection
NSP	National Strategic Plan
ODA	Official Development Aid
OECD	Organisation for Economic Co-operation and Development
PSE	Producer Support Estimate
SCT	Single Commodity Transfer
SPS	Sanitary and Phytosanitary
TSE	Total Support Estimate
UNEP	United Nations Environment Programme
USAID	United States Agency for International Aid
USDA	United States Department of Agriculture
UTT	University of Trinidad and Tobago
UWI	University of the West Indies
VAT	Value Added Tax
WDI	World Development Indicators
WEF	World Economic Forum
WTO	World Trade Organization

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INTRODUCTION

Although the agricultural sector of Barbados is small, and the costs of production are high, **the Government of Barbados considers the agricultural sector to be important for the country's development.** The government has developed a comprehensive system of incentives and concessions to agriculture through which farmers receive institutional support and services. An analysis of the allocation and efficiency of transfers to agriculture is necessary to improve outcomes and target policy actions to achieve the sustainable development of the sector.

This report presents a quantitative assessment of agricultural policy, applying the Producer Support Estimate (PSE) methodology to measure the level of agricultural support. This is the first attempt to apply this methodology in Barbados. The results of the estimates contribute to the IDB Agrimonitor database. The analysis covers the time period 2011-2014.

The first chapter of this report is focused on an analysis of the coordination between the government's declared policy goals and actions taken to support agriculture.

The second chapter provides a brief overview of agricultural policy, both domestic and international.

The results of the estimates and international comparisons are presented in the third chapter of this report, which also describes sub-sector specific policy measures. A brief description of the value chains for selected commodities is presented as part of the PSE estimates to provide additional insight into the distribution of policy costs and benefits they provide. This reports also identifies situations in which the indicators reflect non-policy related characteristics of the value chain. The indicators reflect the level and structure of agricultural support in Barbados and are compared to the other countries in the region.

The report concludes with recommendations for policymakers, based on the insights provided by the quantitative analysis herein.

**THE GOVERNMENT
HAS DEVELOPED A
COMPREHENSIVE
SYSTEM OF INCENTIVES
AND CONCESSIONS TO
AGRICULTURE THROUGH
WHICH FARMERS RECEIVE
INSTITUTIONAL SUPPORT
AND SERVICES**

1. GENERAL OVERVIEW OF AGRICULTURAL POLICY



1.1. AGRICULTURE'S ROLE IN THE ECONOMY OF BARBADOS

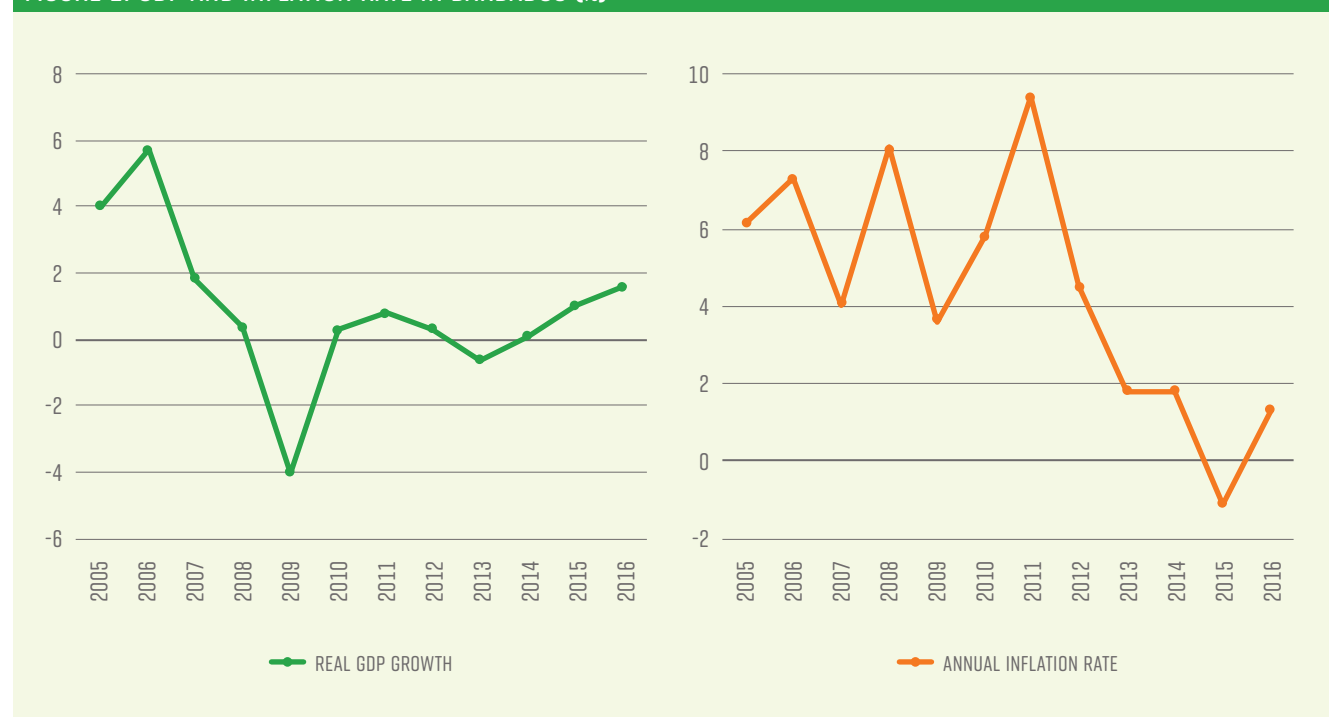
**AGRICULTURE IS NOT A MAJOR CONTRIBUTOR TO GDP,
BUT IT IS CRUCIAL FOR SUSTAINABLE DEVELOPMENT**

In recent years, economic growth in Barbados has been gaining speed; the GDP growth of 1 percent in 2015 was followed by a 1.6 percent growth rate in 2016 (Figure 1). This rate mainly re-

flects progress in the tourism sector, but it also includes the construction, renewable energy, and agriculture sectors. The level of inflation remains low, and the unemployment rate declined from 11.3 percent in 2015 to 9.9 percent in 2016. The average income level and GDP per capita remain among the highest of Latin American and Caribbean countries. Both the World Bank and the OECD consider Barbados to be a high-income developed country. The diversification of the economy is one of the main policy goals for the Government of Barbados, and it recognizes agriculture as a potential driver of growth.

Agriculture has not been a major contributor to GDP (3.8 percent of GDP in 2015, (Ministry of Finance and Economic Affairs, 2015)), nor to employment (2.9 percent in 2015) in the country (Table 1). However, the sector is crucial for the sustainable social and economic development of Barbados as a source of employment for the rural population, provider of inputs for the growing agro-processing industry, and a potential source of export revenue.

FIGURE 1: GDP AND INFLATION RATE IN BARBADOS (%)



Source: The Central Bank of Barbados online statistics, retrieved from <http://data.centralbank.org.bb/default.aspx>

TABLE 1: SELECTED MACROECONOMIC INDICATORS, BARBADOS

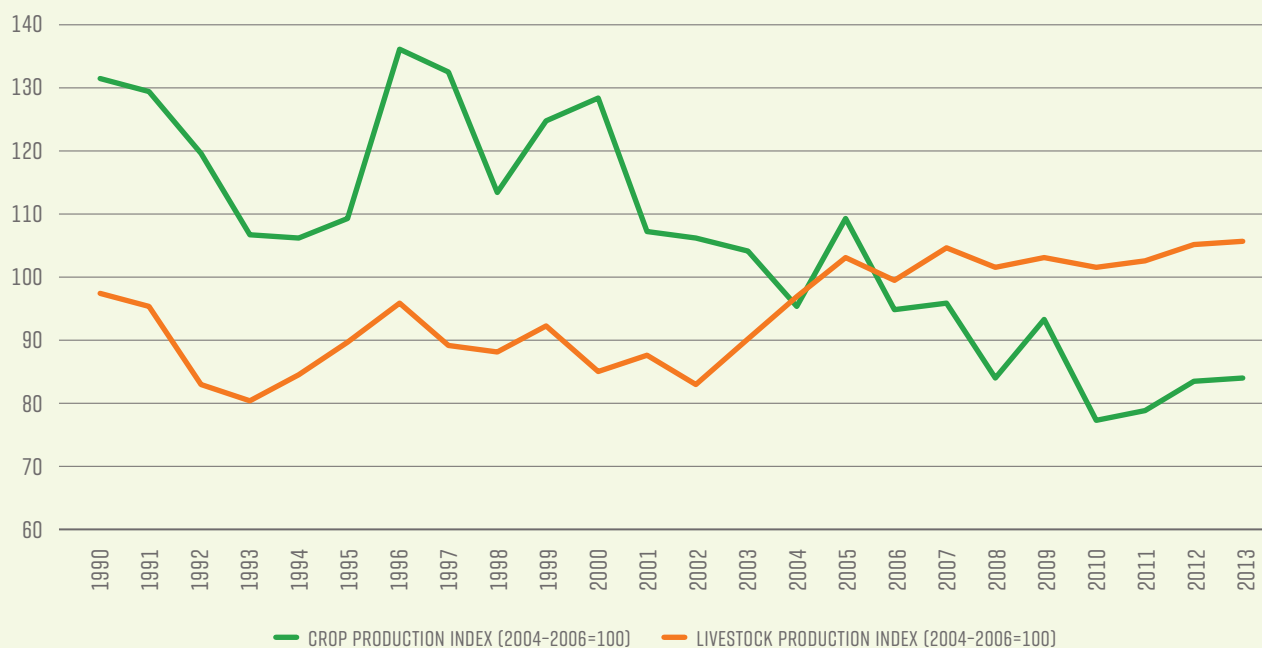
INDICATOR	UNIT	1995	2010	2014	2015
GDP (CONSTANT 1974 BDS\$)	BDS\$ MLN	842.10	1,097.60	1,110.90	1120.4
GDP GROWTH	%	2.00	0.30	0.1	1.0
GDP PER CAPITA (CONSTANT 2010 US\$)	US\$	12,876.16	15,906.19	15,877.97	15,971.01
POPULATION	THOUSAND PERSONS	265.00	280.00	283.0	284.2
% POPULATION IN RURAL AREAS	%	66.7	67.9	68.4	68.5
SHARE OF AGRICULTURE IN GDP	%	6.20	4.40	3.40	3.8
SHARE OF AGRICULTURE IN EMPLOYMENT	%	4.60	2.74	2.73	2.9
FOOD EXPORTS (% OF MERCHANDISE EXPORTS)	%	39.18	32.87	33.44	33.81
FOOD IMPORTS (% OF MERCHANDISE IMPORTS)	%	18.26	24.91	19.74	21.49
AGRI-FOOD TRADE BALANCE	US\$ MLN	N/A	-227.64	-246.54	-257.98
TRADE (% OF GDP)	%	91.55	96.58	85.65	83.86
AGRICULTURAL LAND	SQ. KM	190	150	140	140
SHARE OF ARABLE LAND (% OF LAND AREA)	%	37.2	27.9	25.5	25.5

Source: World Bank World Development Indicators database, retrieved from <http://data.worldbank.org/data-catalog/world-development-indicators> and The Central Bank of Barbados online statistics, retrieved from <http://data.centralbank.org.bb/default.aspx>; World Trade Organization, 2014

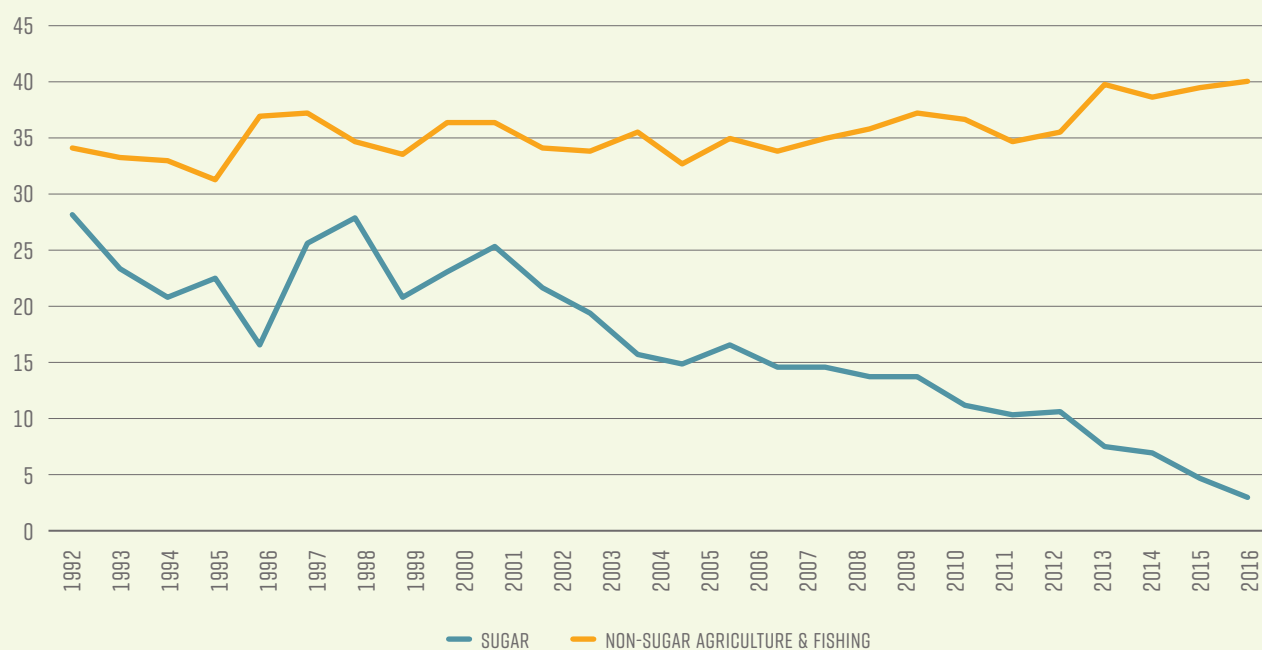
AGRICULTURE IS GROWING, BUT SUGAR PRODUCTION HAS BEEN FALLING FOR 15 YEARS

Agriculture has been growing in recent years. While overall crop production has fallen considerably since the early 1990s, in the past 5 years it has demonstrated some recovery (Figure 2). Live-stock production, on the contrary, is now higher than it was 20 years ago and has grown at 4 percent per year on average for the past 5 years.

Sugar was traditionally the main agricultural commodity in Barbados and a major export crop, but it has lost much of its importance in the past two decades. The recent recovery in crop production is mainly due to the development of non-traditional sub-sectors, such as fruits and vegetables, root crops, and herbs and spices, while sugar production has been falling for 15 consecutive years (Figure 3). Drought conditions slowed growth in 2014-2015, but agricultural value added still increased by 2.1 percent.

FIGURE 2: CROP AND LIVESTOCK PRODUCTION INDICES FOR BARBADOS

Note: 2004-2006 = 100. Source: World Bank World Development Indicators database, retrieved from <http://data.worldbank.org/data-catalog/world-development-indicators>

FIGURE 3: SUGAR AND NON-SUGAR AGRICULTURE VALUE ADDED IN BARBADOS, 1974 CONSTANT PRICES (BDS\$ MILLIONS)

Source: The Central Bank of Barbados online statistics, retrieved from <http://data.centralbank.org.bb/default.aspx>

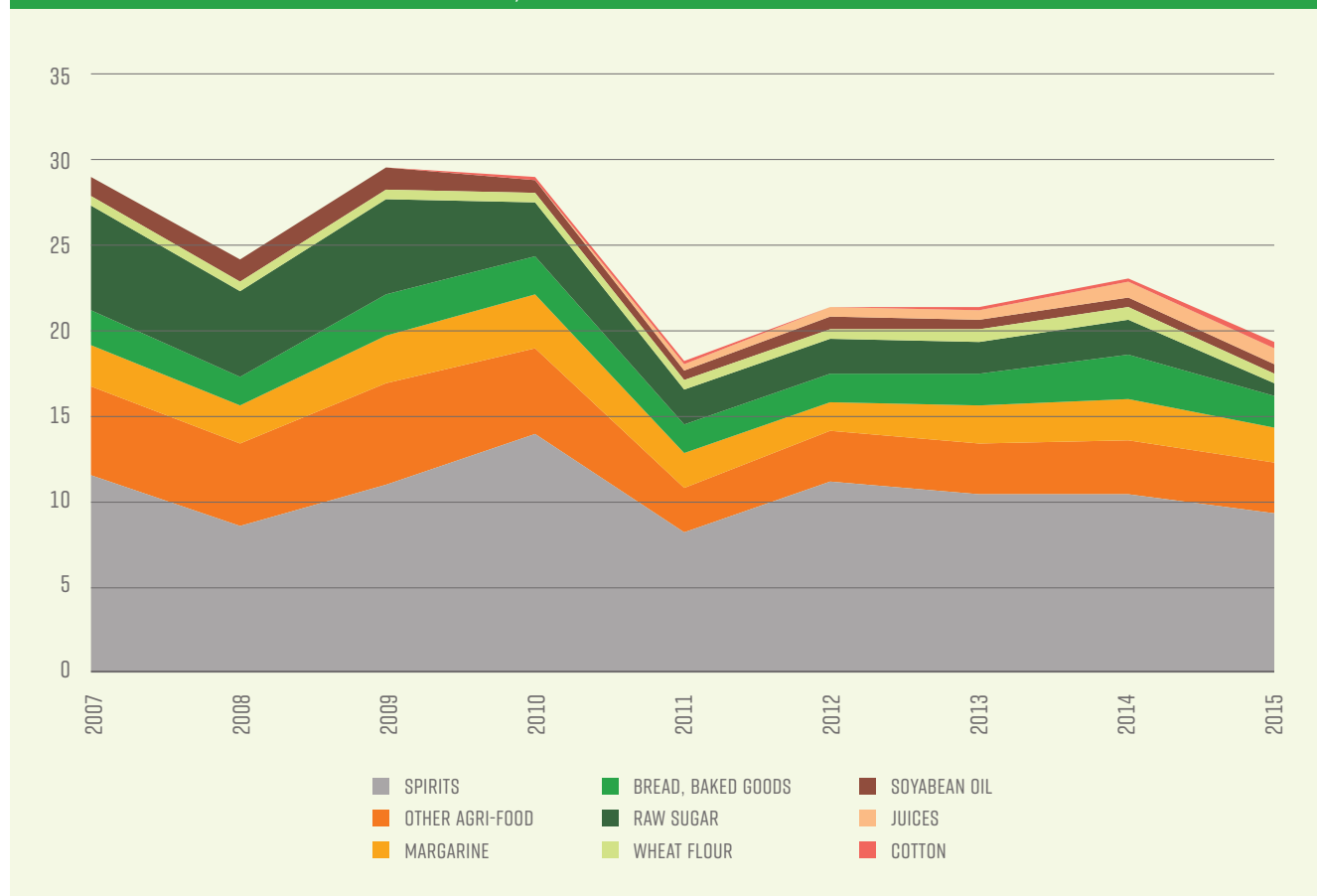
THE EXPORT OF SUGAR IS IN DECLINE

While agri-food exports' share of total exports is about 33 per cent, these exports consist mostly of spirits and processed food, with primary agriculture's share of total exports under 2 percent in 2014.

Alcoholic beverages (traditionally rum) still account for the major part of export revenue among food and agricultural products. Sugar exports have been steadily declining, and while sugar is still the biggest export revenue earner among non-processed agricultural commodities, its share of total merchandise exports decreased from 6 percent in 2007 to 0.8 percent in 2016.

Non-traditional agricultural exports are developing, focusing on high value products such as fruits, root crops, and vegetables. The export of cotton also grew slightly and the prospects for further market expansion are considered good (Figure 4).

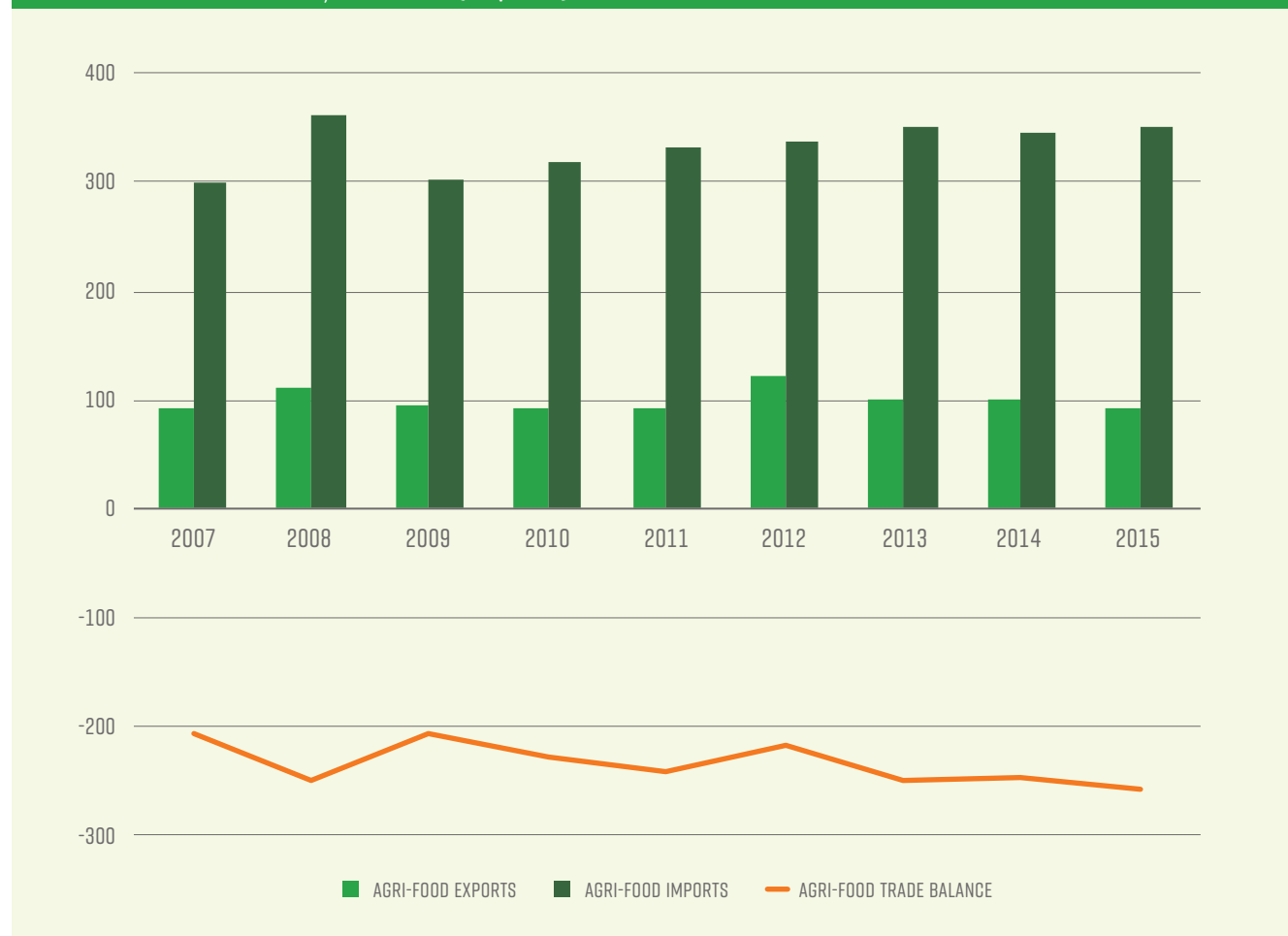
FIGURE 4: AGRI-FOOD EXPORTS OF BARBADOS, 2007-2015 (% OF TOTAL MERCHANDISE EXPORTS)



Source: World Trade Organization, 2015; The United Nations Commodity Trade Statistics Database (UN Comtrade), 2017, retrieved from comtrade.un.org

At the same time, Barbados is a major agri-food importer, with an agri-food import bill reaching US\$351 million in 2015 (Figure 4). It mostly imports meat, dairy, and prepared food, but it also imports fresh fruits and vegetables. The United States, the EU, and Trinidad and Tobago are the main trade partners for Barbados.

FIGURE 5: AGRI-FOOD TRADE, BARBADOS (US\$ MLN)



Source: World Trade Organization, 2014; The United Nations Commodity Trade Statistics Database (UN Comtrade), 2017, retrieved from comtrade.un.org

DEVELOPED INFRASTRUCTURE IS AN ADVANTAGE

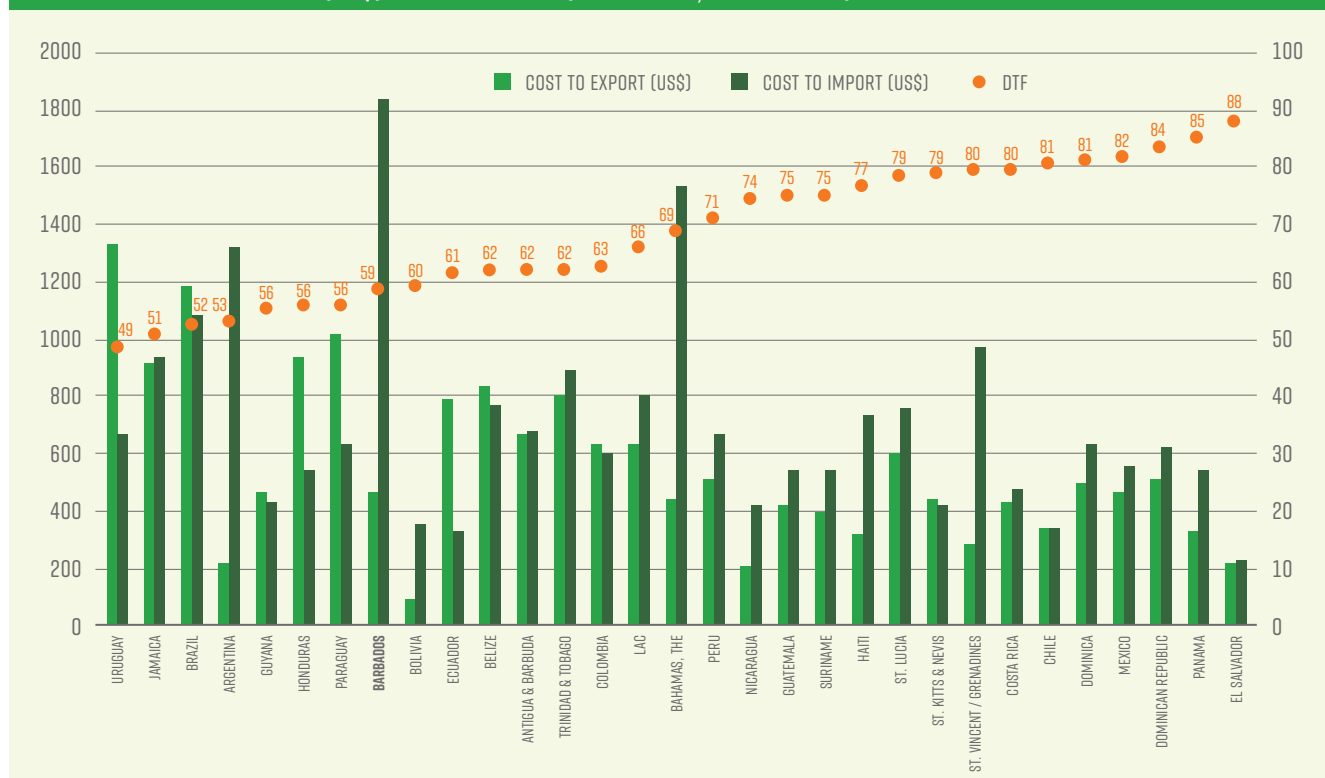
In the 2014-2015 edition of the World Economic Forum (WEF) Global Competitiveness Index, Barbados ranked 55th out of 144, down from 42nd place in 2012. The WEF Global Competitiveness Report estimates the country's overall infrastructure development at 5.6 out of 7, better than OECD high-income countries' average value of 5.5, placing Barbados in 22nd place.

REGULATORY BARRIERS TO DOING BUSINESS ARE EXCESSIVE

However, there are multiple regulatory obstacles to doing business in Barbados, which ranks 117th out of 190 economies in the 2017 World Bank Doing Business Report due to poor contract enforcement, land administration, and difficulties in registering businesses. The country stands 122nd on the ease of trading across borders, with the costs of imports much higher than the regional average and a Distance to Frontier (DTF) of 59 (in 2016).¹ The costs of export, on the other hand, are lower than in most neighboring countries (Figure 5).

While damaging the overall Doing Business ranking of the country, high import transaction costs combined with low export transaction costs are in line with the country's strategy to promote exports and restrict imports. However, the WTO Trade Policy Review of Barbados mentioned that the country has made considerable trade facilitating efforts and simplified the customs clearance process since the previous review conducted in 2008 (World Trade Organization, 2014).

FIGURE 6: COSTS OF TRADE (US\$) AND DTF VALUE (RIGHT AXIS, IN MILLIONS)



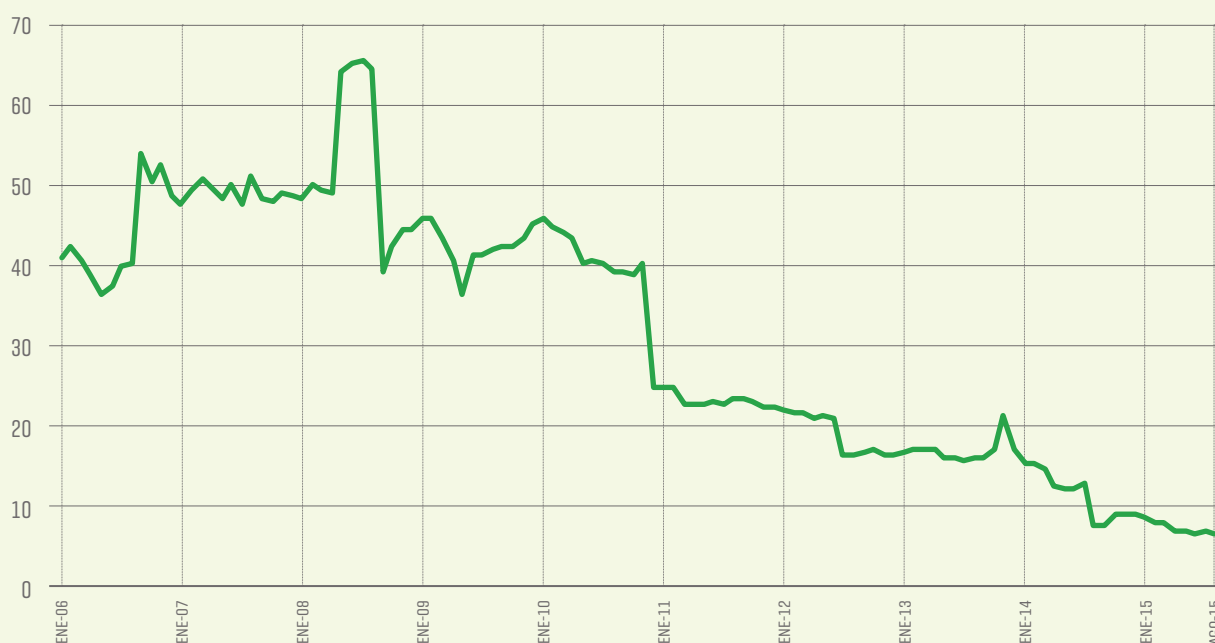
Source: World Bank, 2016.

1. DTF: The distance to frontier score is an estimate of the level of regulatory performance of the country or region on a scale from 0 to 100, where 0 represents the lowest performance and 100 represents the "frontier," i.e., the best performance (World Bank, 2016).

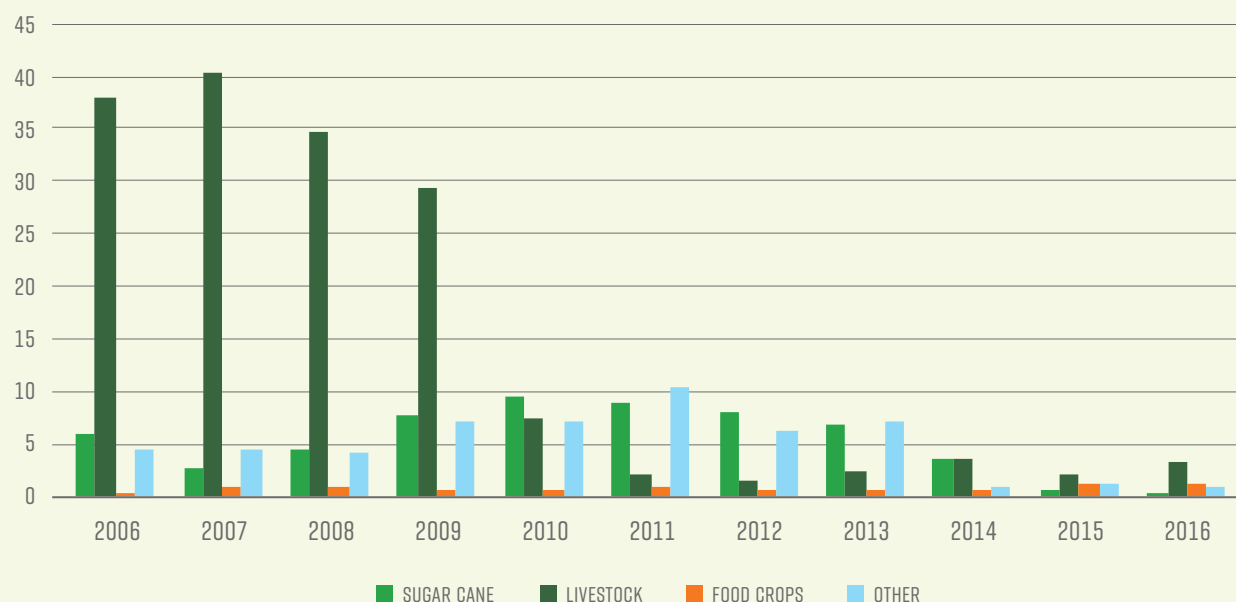
LENDING TO AGRICULTURE PLUMMETED AFTER THE FINANCIAL CRISIS

Agriculture used to be one of the main borrowers in Barbados' economy in the 1990s. However, commercial banks' lending to agriculture fell sharply in 2010, and in 2014-15, loans disbursed were five times lower than in 2010-11, mostly because lending to the livestock sector almost stopped (Figure 6, Figure 7). The sugarcane sub-sector also nearly stopped borrowing. While the decline in lending was economy-wide, issues such as low investment attractiveness and lack of collateral are particularly pressing in the agricultural sector.

FIGURE 7: COMMERCIAL LOANS TO AGRICULTURE (BDS\$ MLN)



Source: The Central Bank of Barbados online statistics, retrieved from <http://data.centralbank.org.bb/default.aspx>

FIGURE 8: COMMERCIAL LENDING TO AGRICULTURE BY SUB-SECTOR (BDS\$ MLN)

Source: The Central Bank of Barbados online statistics, retrieved from <http://data.centralbank.org.bb/default.aspx>

1.2. CHALLENGES FACING THE AGRICULTURAL SECTOR

SCARCE NATURAL RESOURCES, LACK OF INFRASTRUCTURE AND INFORMATION, AND LOW COMPETITIVENESS SLOW AGRICULTURAL DEVELOPMENT

• SMALL SIZE OF THE COUNTRY

The small size of the country (its population is only 280,000, and total land area is 43,176 ha) determines a limited local market for agriculture; at the same time, local production is insufficient to fulfill the demand for food items. Its small size also means Barbados has very scarce water and land resources (Government of Barbados, 2013a). Ninety percent of farmers in Barbados continue to operate holdings of 0.5 hectares or less (Rawlins, 2013), and therefore face higher costs in the absence of economies of scale.

• CLIMATE CHANGE AND NATURAL DISASTERS

While Barbados has not been seriously affected by any recent natural disasters, the vulnerability of its agricultural sector to such

events is evident. In addition, water resources are scarce,² and the country is prone to droughts (the island was affected by serious droughts in 2008, 2009, and early 2016).

• HIGH FOOD IMPORT BILL

High dependence on food imports and on imported inputs for agriculture means the country is dependent on the economic situation of trade partners and global economic trends. It also leads to vulnerability to international price shocks. At the same time, high trade protection prevents competition, limits productivity growth, and leads to higher prices for consumers.

• LIMITED SECTOR INFORMATION

Collection and analysis of agricultural statistics in Barbados, though more advanced than in its Caribbean neighbors, is still limited. Access to information on the financial status of farmers, production, yields, and prices is crucial for efficient policymaking. At the same time, it ensures fair competition and allows farmers to make informed production decisions.

• OBSOLETE AND INSUFFICIENT INFRASTRUCTURE

While overall infrastructure development in Barbados exceeds that of most LAC countries, the agricultural and agro-processing sectors suffer from aging and a lack of capacity in roads and water supply infrastructure. Inadequate physical infrastructure is mentioned as one of the main challenges for the development of agriculture in Barbados by the Caribbean Development Bank's report (2015) and by a CEPAL, FAO, and IICA report (2014). Climate resilience of infrastructure also needs improvement.

• LOW COMPETITIVENESS

Rawlins (2013) notes the country's low agricultural productivity and mentions that without current high border protection, the poultry, pork, tomato, cauliflower, and lettuce sub-sectors would not be able to compete with imports domestically. Sugar production is operating at a loss due to high production costs. With the lowest yields in the region of 48.3 tons per hectare (t/ha), the sector cannot compete in EU markets without government support (see section 2.9.1). The productivity of the vegetable sector is also low: yields of tomatoes (17.5 t/ha) are only 40 percent of yields in the Dominican Republic.³ Outdated technology is also an impediment to the sector's development.

2. According to FAO, Barbados belongs to the top 10 of the world's most water scarce countries (less than 1000 m³ freshwater resources per capita).

3. At the same time, productivity of root crops (cassava, sweet potatoes, yams) is high.

• PRAEDIAL LARCENY

Despite actions taken by the government, praedial larceny (theft of produce) remains a serious issue, causing losses for Barbadian farmers and discouraging investment.⁴

1.3. STRATEGIC OBJECTIVES OF AGRICULTURAL POLICY, MAIN DOCUMENTS, AND IMPLEMENTING INSTITUTIONS

FOOD SECURITY, COMPETITIVENESS, AND SUSTAINABILITY OF PRODUCTION ARE THE MAIN OBJECTIVES OF AGRICULTURAL POLICIES

One of the main characteristics of agricultural policy in Barbados is its integration into the government's overall economic development efforts. The policy goals and strategies are defined in long term (the National Strategic Plan (NSP), the Medium-Term Strategic Plan, and the Medium-Term Growth and Development Strategy (MGDS)) as well as in short-term documents, and annual policy changes are discussed in budget proposals.

A) THE NATIONAL STRATEGIC PLAN (NSP) 2006-2025

This key document presents sectoral long-term strategies for agriculture, focused on the following objectives: increased agricultural output, efficient land use, food security, export promotion, and rural development.

The plan also proposes increasing competitiveness through the development of certain priority crops: cotton, sugar and sugar products, and high value-added crops. An understanding of the importance of strengthening the links between tourism and agriculture is among the points of emphasis of this long-term strategy.

4. Though there were no estimations of the monetary value of such losses in Barbados, an FAO study "An Analysis of the State of Praedial Larceny in Member States of CARICOM" revealed that 98 percent of the farmers in the CARICOM region were affected by praedial larceny, with 18 percent of the value of farm output being stolen (FAO, 2013).

B) THE MEDIUM-TERM STRATEGIC PLAN 2010-2014

This document outlines the programs to be implemented in the mid-term. Agricultural technology adoption and food security were the main objectives for this period, though infrastructure development and increased competitiveness were also among its goals.

C) BARBADOS MEDIUM-TERM GROWTH AND DEVELOPMENT STRATEGY (MGDS) 2013-2020

This most recent mid-term planning document describes agriculture as one of the most important sectors of the Barbados economy. The actions to support agricultural growth and development proposed in the MGDS are attempting to tackle the challenges listed above in section 1.2. At the same time, the document lacks programming for certain interventions, providing a list of best intentions without detailing the mechanisms to support or budget for them, and it does not contain any measurable performance indicators.

For each indicated challenge, the document lists several “strategies” to address the challenges; however, many of the listed strategies are in fact planned outcomes, while some are beyond the scope of public policy. **The following table summarizes the suggested actions for each issue, which include promoting best practices and new products, amending existing and developing new legislation, and reorganizing the Ministry of Agriculture, Food, Fisheries and Water Resource Management (MAFFW) and its subsidiaries.**

TABLE 2: SUMMARY OF CHALLENGES AND ACTIONS FOR AGRICULTURAL DEVELOPMENT IN THE MGDS (2013-2020)

ISSUE	ACTIONS
PRAEDIAL LARCENY	<ul style="list-style-type: none"> • Strengthening the Praedial Larceny Prevention Act. • Educating law enforcement agents, farmers, and the general public. • Introducing Certificates of Purchase by Farmers. • Creating a Praedial Larceny Squad.
FOOD AND NUTRITION SECURITY	<ul style="list-style-type: none"> • Creating a National Food and Nutrition Security Policy and Action Plan. • Promoting sustainable production and processing and improvement of dietary habits. • Enacting a Food Security Act and developing a Food Import Policy. • Initiating support to the small ruminant and rabbit industries.
NON-TRADITIONAL PRODUCT DEVELOPMENT AND AGRO-PROCESSING	<ul style="list-style-type: none"> • Promoting cassava production and use for food and feed. • Promoting breadfruit flour and sweet potato flour. • Establishing a multi-purpose agro-processing plant. • Exploring strategies for production of a variety of value-added products from sugarcane.
ACCESS TO INFORMATION AND POST-HARVEST INFRASTRUCTURE	<ul style="list-style-type: none"> • Facilitating access to market information (developing a Market Information System (MIS), including a demand survey, commodity/production surveys to feed into the MIS, an Agricultural Census, and a study to determine the seasonality for crops). • Establishing packing houses.
RESEARCH AND DEVELOPMENT	<ul style="list-style-type: none"> • Promoting the adoption of protected agriculture systems. • Expanding plant clinics and assisting farmers in using Integrated Pest Management methods. • Expanding the Tissue Culture Laboratory to produce disease-free planting material for cassava and sweet potato. • Creating a bank of genetic material.
EXPORTS AND INVESTMENT PROMOTION	<ul style="list-style-type: none"> • Reorganizing the Inspectorate System and providing the necessary Human Resources support to facilitate the export of products of animal origin. • Amending requisite Regulations to allow persons to travel with their pets.
BUILDING HUMAN RESOURCE CAPACITY	<ul style="list-style-type: none"> • Training personnel in key agricultural agencies; facilitating the use of applied science and technology to promote alternative and green agriculture (in the framework of EU-funded Barbados Human Resource Development Strategy 2011-2016). • Creating a national agricultural strategy (Strategic Plan for the Agriculture and Fisheries sectors) and engaging the IDB's support for the organizational and operational strengthening of the MAFFW (IDB-funded project "Strengthening the Service Delivery Capacity of the MAFFW").
FISHERIES	<ul style="list-style-type: none"> • Improving data collection. • Implementing and enforcing measures to prevent illegal fishing. • Involving fishermen in national social security schemes. • Training, education, and certification/accreditation. • Increasing financing for fisheries research and development. • Identifying new markets for the distribution of fish; promoting fish as a safe, affordable, nutritious, and high-quality food; promotion and projects for creating value-added fish products and value-added products from fish processing waste. • Creating micro-financing programs; developing proper fish handling, display, and storage infrastructure; financing maintenance of boatyard facilities. • Improving governance and legislation: good governance practices and procedures for government facilities; fisheries policies legislation, guidelines, and standards with the focus on sustainability. • Introducing sustainable technologies.
GREEN GROWTH STRATEGIES	<ul style="list-style-type: none"> • Strengthening agricultural cooperatives in order to improve profitability of production and encourage using sustainable practices. • Implementing institutional strengthening and training for extension services. • Conducting a feasibility study on creating a sustainable agriculture and fisheries microcredit scheme, focusing on accessing clean and more efficient technologies.

THE MINISTRY OF FINANCE AND ECONOMIC AFFAIRS IS RESPONSIBLE FOR PLANNING AND BUDGETING, AND THE MAFFW FOR IMPLEMENTATION

The Ministry of Finance and Economic Affairs is responsible for mid-term planning for all sectors and also prepares budgetary proposals. The Ministry of Agriculture, Food, Fisheries and Water Resource Management (MAFFW)⁵ formulates agricultural policy in accordance with the mid-term plans.

Several government agencies are financed by loans and grants from the agricultural budget. This practice is due to be reformed following IMF requirements as it hampers the transparency of budget funding. Some of those agencies are engaged both in policy implementation and in the production, processing, and trade of agricultural products. The agencies and funds engaged in agricultural policy implementation include, among others:

- Barbados Agricultural Development and Marketing Corporation (BADMC)
- Barbados 4-H Foundation
- Soil Conservation Unit (Scotland District development)
- Barbados Agricultural Management Company (BAMC)
- Pesticides Control Board
- Barbados Water Authority
- Agricultural Development Fund
- Rural Development Commission
(Rural Enterprise Fund) (outside MAFFW since 2009)
- Barbados Cane Industry Corporation (BCIC)

The MAFFW develops food safety policy in coordination with the Ministry of Health and the Barbados National Standards Institution (BNSI); the development of the National Agricultural Health and Food Control Agency (NAHFCA) began in 2011, per recommendation of the IDB and FAO.

BNSI, within the Ministry of Industry, International Business, Commerce and Small Business Development, operated in cooperation with the private sector, develops food safety standards, executes quality control, and issues certifications. The Ministry of Health develops standards for poultry and milk processing.

5. In 2011-2012, the Ministry of Agriculture, Food, Fisheries, Industry and Small Business Development; in 2009-2011, the Ministry of Agriculture.

BOX 1: THE BARBADOS AGRICULTURAL DEVELOPMENT AND MARKETING CORPORATION (BADMC)

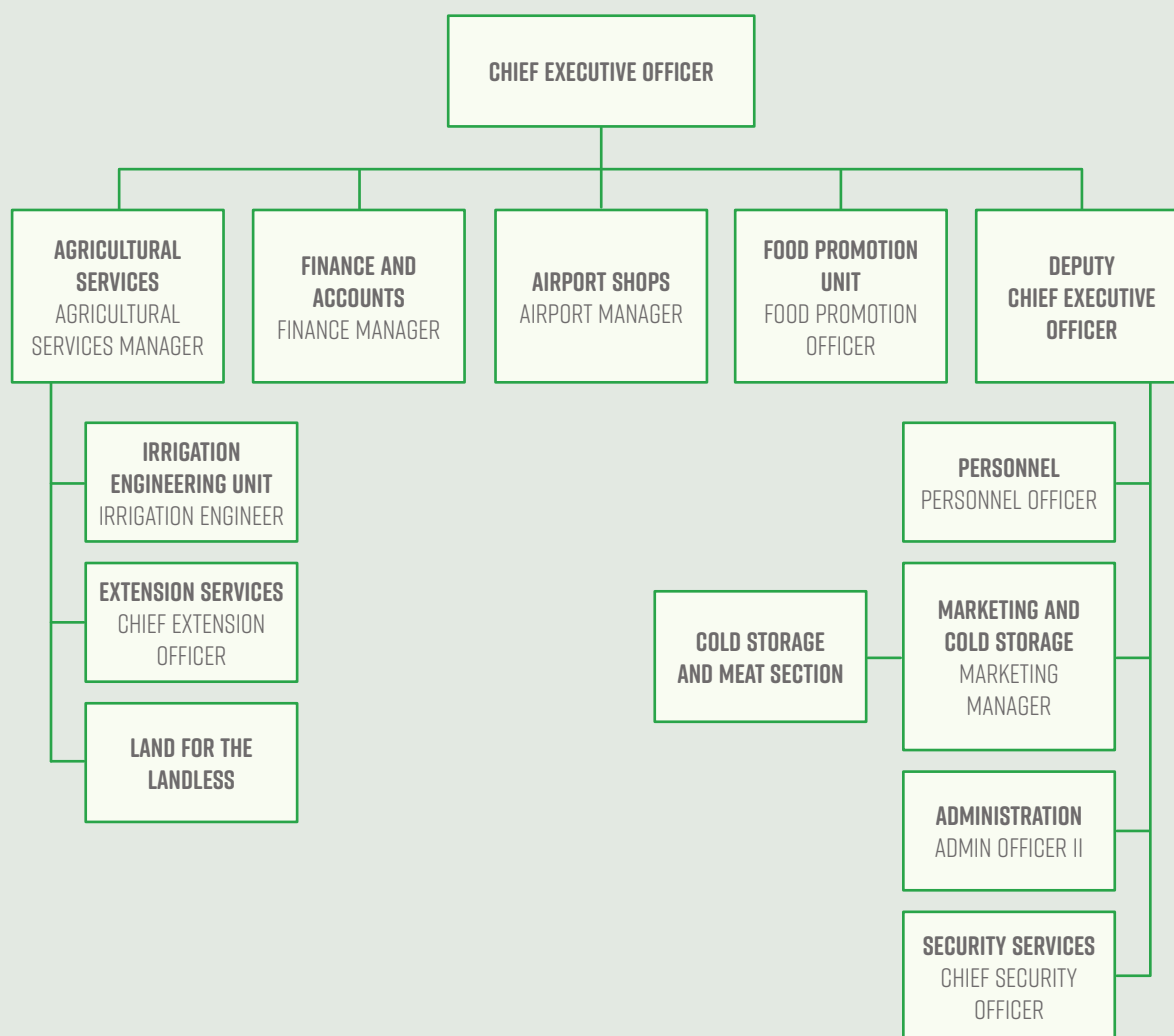
The Barbados Agricultural Development and Marketing Corporation (BADMC) is a state-owned enterprise that receives off-budget financing and is involved both in regulation and commercial activity. BADMC operates the irrigation development program.

BADMC's commercial State Trading Enterprise is engaged in meat and vegetables trading, including: poultry parts, onions, local beef products, local black belly lamb cuts, cassava, and sweet potato and breadfruit flours. BADMC is the sole state trading enterprise for poultry and onions.

BADMC sells the following **inputs to farmers**:

- Seeds
- Fertilizers
- Insecticides
- Herbicides
- Fungicides
- Spraying equipment
- Drip irrigation equipment

The structure of BADMC is presented below:



1.4. BUDGET TRANSFERS TO AGRICULTURE

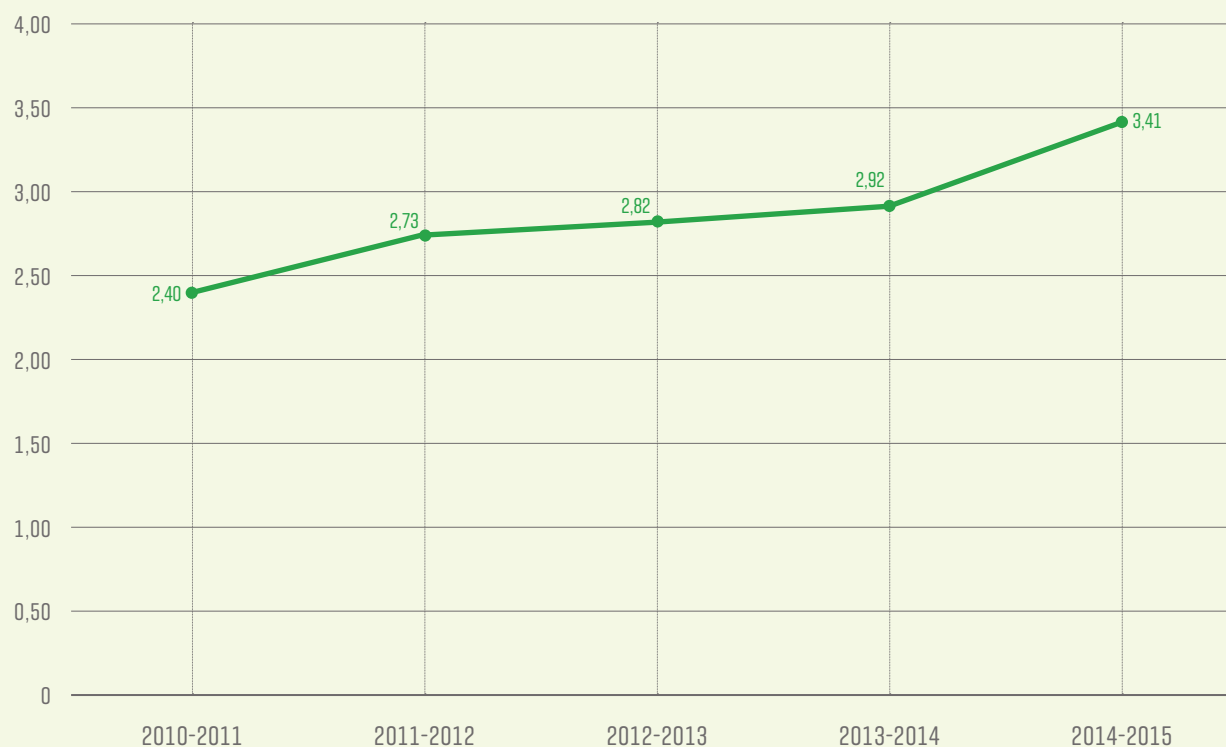
POLICY GOALS AND BUDGETING ARE DISCONNECTED

The link between the medium-term goals and strategies described in the previous section and the annual budget allocations is weak. None of the documents listed above has a budgeting section. The budget classification remained unchanged for the period of study.

SHARE OF AGRICULTURE IN BUDGET INCREASED

Budget transfers to agriculture increased significantly over the past 5 years, as did the share of agriculture in the total budget expenditures of Barbados (Figure 8). Section 3.3.2 provides a detailed analysis of the composition of and trends in budget transfers to agriculture.

FIGURE 9: SHARE OF AGRICULTURE-RELATED EXPENDITURES IN TOTAL BUDGET EXPENDITURES IN BARBADOS (%)



Source: Calculated from the Accountant General's Reports (various years).

THE BUDGET LACKS TRANSPARENCY

Many grants and subsidies are distributed through the Agricultural Development Fund (ADF) and other revolving funds, therefore, the amount of total transfers to agriculture may differ from the official budget reports.

BADMC's budget lacks transparency; more detailed reporting of its budget, transfers, and activities, as well as regular performance evaluations, is recommended.

2. AGRICULTURAL AND RURAL DEVELOPMENT POLICY



2.1. OVERVIEW OF POLICY PROGRAMS AND ACTIONS

Public policy support in Barbados is provided in the form of machinery and equipment costs compensation ("Incentive Program"), income tax and import duty (for inputs) concessions, and subsidized loans, as well as information and extension services.

BARBADOS ACTIVELY COOPERATES WITH INTERNATIONAL ORGANIZATIONS (FAO, IDB, IICA) TO DEVELOP ITS POLICY PROGRAMS

The FAO Country Programming Framework (CPF) 2012-2016, co-funded by the Government of Barbados, the EU, the Inter-American Development Bank, and the Caribbean Development Bank, is focused on strengthening institutions and capacity building in research, plant and animal health, food safety, and marketing, the areas crucial for long-term sustainable development.

Barbados and FAO have worked together to develop a national Food and Nutrition Security Policy and Action Plan (FAO and Government of Barbados, 2012). Barbados participates in FAO's regional initiatives, such as support to the cassava (Promotion and Marketing of Cassava, started in 2014) and small ruminants sectors' development. FAO's Food Zone Project was initiated in 2013, focused on the development of certain land areas designated for exclusive agricultural use.

Programs for developing value-added products from non-traditional commodities (cassava and breadfruit), implemented with the assistance of FAO and other international organizations, deliver benefits to those sub-sectors. At the same time, producers of non-traditional crops still suffer from a lack of research and development, poor marketing systems, and strong competition from imports.

DOMESTIC POLICY IS FOCUSED ON MARKET ACCESS, RESEARCH AND DEVELOPMENT, INFRASTRUCTURE DEVELOPMENT, AND FOOD SAFETY

The Government of Barbados has developed a vast program of various incentives to agriculture and is constantly expanding this program (Box 2). These incentives are provided for export promotion, irrigation and other on-farm infrastructure development, research and development, and implementation of best practices in post-harvest technology.

BOX 2: OVERVIEW OF AGRICULTURAL INCENTIVES DEVELOPMENT (2001-2015)

In 2001, incentives included price support for cotton and sugar farmers, technical assistance and training, and (mostly) compensation of the costs of post-harvest on-farm structures,⁶ export promotion and productivity enhancement measures, organic farming, farm security systems, and soil conservation measures (see Table 3). Local market expansion measures included the requirement to supply 60 percent of the school meal program with local milk, meat, and fresh produce. The Land for the Landless Programme, which provides land, training, extension, and other services to farmers who cannot obtain land on market conditions, was also established in 2001.

From 2002 on, the pig and poultry industries were mentioned in policy documents among the priority sectors. Irrigation systems refurbishing was also a policy focus.

In 2003, milk producers were included in the incentive schemes. Disaster relief measures were first proposed in 2004. In 2006, additional measures for the sugar industry and milk support were proposed, including a US\$150 million project for sugarcane electricity, ethanol and refined sugar production, and the establishment of the Dairy Board.

In 2007, in addition to continued measures of support to the sugar and dairy sub-sectors, a National Agricultural Health and Food Control Authority was announced.

In 2008, the information system for agriculture was modernized. An incentive scheme was modified so that farmers could receive subsidies up front, before costs were incurred. A new program and incentives for irrigation were introduced. BADMC received a new function, becoming a supplier of inputs to farmers. Support to youth in agriculture increased. Infrastructure development was supported by granting duty-free concessions on imports of equipment and machinery used for storage and marketing facilities.

In 2010, water rates were reduced and water for irrigation began to be measured separately. In 2013, a major policy development was the beginning of the sugar industry restructuring. The incentive program for local hotels to use more local produce was also initiated, whereby tax incentives and waivers to the tourism sector are tied to proof of using local produce suppliers. In 2015, additional actions to support the dairy industry were proposed.

6. A percent share of costs or amount to be compensated and the maximum amount per farmer and year is declared in the Agricultural Incentive Program.

Source: Barbados Financial Statements and Budgetary Proposals: Ministry of Finance and Economic Affairs, various years; Agricultural Incentive Program: Ministry of Agriculture, Food, Fisheries and Water Resource Management, 2016.

AGRICULTURAL POLICY TAKES CLIMATE CHANGE ISSUES INTO ACCOUNT

Barbados partnered with the United Nations Environment Programme (UNEP) in its efforts to transform Barbados into an environmentally friendly economy. A Green Economy Scoping Study (GESS) started in 2009 and indicated agriculture as one of the target areas for transformation into a green economy (Moore et al., 2014).

The programs and actions for public support to agriculture are summarized in Table 3.

TABLE 3: AGRICULTURAL PUBLIC SUPPORT PROGRAMS IN BARBADOS (2011-2016)

POLICY	DESCRIPTION
AGRICULTURAL INCENTIVE PROGRAM	<p>Partial compensation of the costs of:</p> <ul style="list-style-type: none"> • Spraying and weed control equipment (50% cost rebate). • Irrigation systems (50-75% cost compensation). • Pasture development (per-hectare cost rebate). • Orchard development. • Organic farming certification. • Agricultural and agro-processing machinery cost compensation. • Land cultivation (per-hectare subsidies and cost rebates). • Resource protection subsidies. • Livestock development. • Post-harvest infrastructure support and costs compensation. • Farm security (50%).
AGRICULTURAL CONCESSIONS PROGRAM	<ul style="list-style-type: none"> • Duty-free import of agricultural inputs, including live animals, planting materials, fertilizers and other chemicals, and machinery and equipment.
EXPORT PROMOTION	<ul style="list-style-type: none"> • International transportation costs compensation for primary agricultural products (30%, max. Bds\$10,000); • Compensation of 75% of the costs of feasibility studies, new market evaluations, and quality assurance scheme implementation.
TAX CONCESSIONS	<p>Income tax deductions:</p> <ul style="list-style-type: none"> • The amount equal to the following percentages of capital expenditures on agricultural machinery (new or imported into Barbados for the first time) can be deducted from taxable income: sugarcane harvesters, 10% or 15%; other machinery, 18%; sugar refining machinery, 40%.
SUBSIDIZED LOANS	<p>Subsidized loans through the Agricultural Development Fund (ADF) at preferential interest rates (6.5%, compared to average commercial banks' prime loan rate of 8.2%).</p>
IMPORT DUTIES	<ul style="list-style-type: none"> • Average applied tariff for agricultural goods is 33.9%; • Some commodities receive very high border protection: whole chicken, 184%; sweet potatoes and cassava, 160%; milk, 141% (cheese, 0%); beans, 40%; cotton, 5%.
AGRICULTURE HEALTH AND FOOD CONTROL PROGRAMME	<p>Co-funded by the IDB (US\$28 mln total cost):</p> <ul style="list-style-type: none"> • Management reform; • Review of existing food safety legislation; • Upgrade of existing laboratory facilities.
INFRASTRUCTURE DEVELOPMENT	<ul style="list-style-type: none"> • Irrigation and water systems are operated by BADMC; • Investments in on-farm irrigation are subsidized; • The Rural Development Commission provides loans and technical assistance for rural housing and small businesses; • Grants to the Barbados Agricultural Society through MAFFW.
MARKETING AND PROMOTION	<ul style="list-style-type: none"> • The BADMC Food Promotion Unit researches, develops, and organizes the processing and marketing for local produce in order to create value-added products from cassava, breadfruit, and sweet potato; • Farmers' markets are operated by MAFFW.
STATE PARTICIPATION IN TRADE	<ul style="list-style-type: none"> • BADMC is a trader of poultry and onions and an exporter of cotton; • Output is sold by farmers to BAMC for further marketing.
LAND FOR THE LANDLESS PROGRAMME	<ul style="list-style-type: none"> • Land lease or license arrangements to farmers who otherwise would not be able to access land; • Technical support, infrastructure, extension services, and marketing assistance are provided.
SCOTLAND DISTRICT DEVELOPMENT	<ul style="list-style-type: none"> • Grants for agricultural projects in the Scotland District; • 10-year tax holiday for investments in fruit production, processing, and marketing; • Orchard development subsidy (Bds\$5 per tree for a maximum of 1,000 trees per farmer).
TRAINING	<p>4-H Youth Programme:</p> <ul style="list-style-type: none"> • Promotes involvement of young people in agriculture.
SUGAR INDUSTRY SUPPORT	<ul style="list-style-type: none"> • Cane Replanting Incentive Scheme Programme: Per-acre subsidy for planted cane (Bds\$550 per acre for force-back planting and Bds\$450 per acre for conventional planting of sugarcane); • Sugar producer BAMC receives grants compensating their losses; • Cane industry restructuring: BCIC received financing for developing a sugar and energy producing facility.
DAIRY INDUSTRY INCENTIVES	<p>Dairy fixed costs rebate:</p> <ul style="list-style-type: none"> • 25% for the components of dairy housing, maximum of Bds\$40,000; • 40% of the cost of components for a milking parlor, maximum Bds\$60,000.
COTTON RESEARCH & DEVELOPMENT FUND	<ul style="list-style-type: none"> • Grants to research institutions for cotton studies.
INVESTMENT IN NON-SUGAR CROP PRODUCTION	<ul style="list-style-type: none"> • US\$10 mln production grant incentive initiative (2014); • Tax holidays for investment in cotton.
FARM TO HOTEL INCENTIVE SCHEMES	<ul style="list-style-type: none"> • Tying tourism incentives to increased use of local produce (starting in 2013-14).

Source: Author's compilation.

2.2. AGRICULTURAL INCENTIVE PROGRAM

THE AGRICULTURAL INCENTIVE PROGRAM PROVIDES COMPENSATION OF THE COSTS OF FIXED INPUTS, INVESTMENTS IN INFRASTRUCTURE, AND ENCOURAGES ORGANIC FARMING AND INNOVATIONS

Incentives to farmers are mostly provided in the form of compensation for equipment and machinery costs. The cotton and sugar industries continue to be the focus of public policy efforts; however, their importance to the Barbadian economy is diminishing with root crops and other value crops taking their place.

In addition to providing cost compensation and per-hectare payments to farmers, the government, through the Agricultural Incentive Program, encourages environmentally friendly, sustainable production and management practices; supports export promotion, irrigation, and other on-farm infrastructure development; and supports innovations, advanced technology adoption, and implementation of best practices in post-harvest management. According to FAO's assessment, the Incentive Program contributed significantly to technological advancements in the sector (FAO and Government of Barbados, 2012).

SUBSIDIES ARE DISTRIBUTED BY THE ADF AND FARMERS' REGISTRATION IS REQUIRED

The Agricultural Development Fund (ADF) was established to provide incentives to farmers: they must apply to the ADF in order to receive these incentives. To become eligible for incentives, the farmers must be registered with the Agricultural Services Unit of the Ministry of Agriculture. An extension officer visits the farm to confirm the eligibility of the costs before compensation.

2.3. SUBSIDIZED LOANS

LOANS AND GRANTS FROM THE ADF CONTRIBUTE TO THE AMOUNT OF SUPPORT TO AGRICULTURE

Subsidized loans are provided through the Agricultural Development Fund (ADF), managed by Enterprise Growth Fund Limited, which was established in 2001 (L.R.O. 2002. Chapter 252b, 2002).

The ADF provides loans for working capital, new technology, and implementing best practices in agriculture and fisheries, as well as incentives, technical assistance, and grants to the agricultural sector. The loan size ranges between Bds\$50,000 and Bds\$1 million. The loan portfolio is divided into so-called social and commercial loans, where support to farmers is considered a social grant and commercial loans are for-profit activities for the fund. Collateral is required for all loans.

Loans are issued at preferential interest rates (6.5 percent, compared to the average commercial banks' prime loan rate of 8.2 percent) with a maturity period of 7 years or less. Loans for up to 10 years are also available, but the interest rate for years 8 to 10 is higher. The eligibility of any proposed project for financing is determined by the MAFFW on a case-by-case basis.

LOANS ARE DISTRIBUTED AMONG A LIMITED NUMBER OF BORROWERS

In 2014, the ADF approved only one loan of Bds\$400,000, while in 2013, it made 6 loans amounting to Bds\$701,000. In 2015-2016, seven applications were received, of which three, with a total value of Bds\$510,000, were approved. Recorded loan disbursements for 2013 and 2014 amounted to Bds\$501,000 and Bds\$351,000, respectively. Grants distributed by the ADF varied from Bds\$13.6 million in 2013 to Bds\$0.8 million in 2014. There were no capital injections to the fund in 2014 (Table 4). The ADF also opens lines of credit for parastatals.

This complicated and non-transparent system of financing support to agriculture creates difficulties in estimating the total value of transfers to the sector and makes it hard to assess the efficiency of the funds' distribution. There is no long- or even mid-term planning of the capital injections in the parastatals, and the financing is very volatile.

TABLE 4: ADF LOANS AND GRANTS (BDS\$)

	2009	2010	2011	2012	2013	2014
REVOLVING LINES OF CREDIT AT YEAR-END						
EXCLUSIVE COTTONS OF THE CARIBBEAN INC. 6.5%	504,136	504,136	504,136	504,136	504,136	504,136
BARBADOS PIG FARMERS CO-OP SOCIETY 3%	0	75,000	61,147	33,527	–	–
BARBADOS AGRICULTURAL DEVELOPMENT AND MARKETING CORPORATION	65,000	65,000	–	65,000	3,647	3,647
GRANTS DISBURSED						
BARBADOS AGRICULTURAL DEVELOPMENT AND MARKETING CORPORATION	0	598,160	–	1,000,000	–	726,685
BARBADOS AGRICULTURAL MANAGEMENT CO. LTD.	7,779,868	9,896,143	2,576,036	3,498,000	6,808,074	–
BARBADOS CANE INDUSTRY CORPORATION	–	–	–	0	2,910,000	60,858
BARBADOS AGRICULTURAL SOCIETY	10,500	0	–	99,287	713	6,000
MINISTRY OF AGRICULTURE, FOOD, FISHERIES AND WATER RESOURCE MANAGEMENT	–	–	–	0	3,893,750	–
BARBADOS COTTON INDUSTRY	250,000	–	–	–	–	–
SOUTHERN MEATS INC.	838,491	500,000	–	–	–	–
TOTAL GRANTS	8,878,859	10,994,303	2,576,036	4,597,287	13,610,000	793,543
LOANS						
APPROVED	–	430,000	4,600,000	65,000	701,000	400,000
DISBURSED COMMERCIAL	–	810,000	600,000	3,350,000	501,000	351,000
DISBURSED SOCIAL PROJECTS	–	11,880,000	2,580,000	6,100,000	–	–
BUDGET FUNDS RECEIVED						
CAPITAL FROM THE GOVERNMENT	0	11,849,330	4,000,000	13,102,000	4,000,000	0

Source: Enterprise Growth Fund Limited Annual Report, 2014.

2.4. PRICE CONTROLS AND STATE TRADING

PRICE CONTROLS WERE IN EFFECT DURING THE PERIOD OF STUDY

The wholesale and retail prices of chicken wings, chicken backs and necks, turkey wings, and regular sugar were state-controlled during the period of study, but that regulation, aimed at protecting local consumers, has since been discontinued. At the same time, there was a tendency to substitute the production and import of the regulated commodities with similar, non-regulated types of products, i.e., differently cut chicken meat.

TABLE 5: REGULATED PRICES IN BARBADOS (BDS\$)

COMMODITY	WHOLESALE	RETAIL
CHICKEN WINGS	4.28 PER KG OR 1.94 PER LB	5.36 PER KG OR 2.43 PER LB
CHICKEN BACKS AND NECKS	1.76 PER KG OR 0.80 PER LB	2.29 PER KG OR 1.04 PER LB
TURKEY WINGS	6.05 PER KG	8.05 PER KG
REGULAR SUGAR	1.38 PER KG OR 0.63 PER LB	1.52 PER KG OR 0.69 PER LB

Source: Ministry of Agriculture, Food, Fisheries and Water Resource Management.

GOVERNMENT AND STATE-OWNED ENTERPRISES ARE INVOLVED IN COMMERCIAL ACTIVITY IN BARBADOS, THUS AFFECTING THE AGRICULTURAL AND FOOD MARKETS

The Barbados Agricultural Development and Marketing Corporation (BADMCO) is the sole state trading enterprise for poultry (HS 0207) and onions (HS 0703.101). It imports onions free of duty to stabilize local prices. Processors are allowed to import these commodities independently by obtaining a license from BADMC, which is issued for a given quantity established based on their production capacity.

2.5. AGRO-FOOD TRADE POLICY AND REGULATIONS

BARBADOS IS AN ACTIVE PARTY IN VARIOUS TRADE AGREEMENTS

Barbados is a founding member of CARICOM and participates in the CARICOM Single Market and Economy (CSME). Barbados has been a WTO member since 1995 and ratified the CARIFORUM-EU Economic Partnership Agreement (EPA) in 2014 (to replace the ACP grouping and Cotonou Agreement).

Barbados has bilateral CARICOM trade agreements with Colombia, Cuba, Costa Rica, the Dominican Republic, and Venezuela and must reciprocate the tariffs of those countries, with the exception of Venezuela (World Trade Organization, 2014).

Barbados is a party to the Caribbean Basin Initiative (CBI), which provides duty-free access to the United States market subject to rules of origin, and the Caribbean-Canada Trade Agreement (CARIBCAN), which provides duty-free access to Canadian markets.

Barbados is an active participant of the CARICOM Regional Organisation for Standards and Quality (CROSQ), responsible for the harmonization and implementation of standards across the Community.

IMPORT PROTECTION IS HIGHER THAN CARICOM AVERAGE

In 2000, Barbados applied a WTO-compliant tariff regime, with most of the agricultural commodities' tariffs bound at 100 percent. Barbados' average applied tariff is 15.9 percent, and 33.9 percent for agricultural goods, which is higher than the CARICOM average (Table 5). Some agricultural tariffs reach 216 percent. CARICOM's Common External Tariff (CET) is capped at 20 percent for industrial goods and 40 percent for agricultural goods, but it is applied in Barbados with some exceptions.

The commodities included in the analysis in this study receive very high border protection: the tariff on poultry meat reaches 184 percent, beans 40 percent, sweet potatoes and cassava 160 percent, milk 141 percent (cheese 0 percent), and cotton 5 percent.

A VAT rate of 17.5 percent is applied on top of the customs duty. Basic food items such as frozen meat, fish, potatoes, onions, citrus fruits, rice, and sugarcane, sold by farmers to the Barbados Agricultural Management Company Ltd., are taxed at a zero rate. Starting September 1, 2015, a new VAT basket of basic food items was adopted and many previously zero-rated food items became subject to VAT. Exports of goods are also zero-rated (Value Added Tax Act (Amendment) of 2011).

Twenty-four Harmonized System (HS) categories of products have import quotas under the special safeguards regime, including meat, milk, and vegetables.

IMPORT PERMITS ARE REQUIRED FOR MEAT AND PLANTS

Sanitary restrictions are in place for the importation of animals, meat, and meat products. Import permits are required for plants and plant products, creating additional protection of the domestic markets.

IMPORT DUTY CONCESSIONS ARE AN INCENTIVE FOR AGRICULTURE

The concessions allowing duty-free imports are applicable to the following items: live animals, planting material, machinery and equipment, agricultural chemicals, veterinary medicaments, hand tools, irrigation machinery and equipment, and inputs for organic farming. Some vehicles and other inputs may be eligible if approved by the MAFFW.

TABLE 6: TARIFFS APPLIED BY BARBADOS ON AGRICULTURAL IMPORTS (2014)

DESCRIPTION	# OF LINES	AVERAGE (%)	RANGE (%)	VARIANCE	BOUND AVERAGE (%)
TOTAL	6,507	15.9	0-216	1.6	82.3
WTO AGRICULTURE	1,119	33.9	0-216	1.3	111
• ANIMALS AND PRODUCTS THEREOF	161	63.7	0-184	1.1	135
• DAIRY PRODUCTS	24	46.3	0-141	1.3	115.4
• FRUIT, VEGETABLES, AND PLANTS	347	37.4	0-216	1.1	107.9
• COFFEE AND TEA	30	17.5	5-40	0.7	100
• CEREALS AND PREPARATIONS	135	20.7	0-135	1.1	100.3
• OIL SEEDS, FATS AND OILS, AND THEIR PRODUCTS	95	21.2	0-158	1.3	133.9
• SUGARS AND CONFECTIONARY	22	23.9	5-60	0.7	105
• BEVERAGES, SPIRITS, AND TOBACCO	146	45.5	5-141	0.9	102.2
• COTTON	6	5	5-5	0	100
• OTHER AGRICULTURAL PRODUCTS N.E.S.	153	9.4	0-40	1.3	99.6

Source: World Trade Organization, 2014.

EXPORT REGULATIONS

EXPORT PROMOTION REQUIRES FARMERS' CONTRIBUTION

Export promotion is among the policy priorities in Barbados and is focused on access to markets, including value chain strengthening through international transportation costs compensation for primary agricultural products (30 percent, max. Bds\$10,000) and through compensation of 75 percent of the costs of feasibility studies, new market evaluations, and quality assurance scheme implementation.

Exporters and suppliers to the hospitality sector also receive loans from the Export Development Fund (renamed the Agricultural Payment Guarantee Fund).

Export promotion efforts led to the expansion of value-added crops exports, however, compliance with international food safety requirements still needs a lot of attention. While there were no reported rejections of Barbadian exports, food safety issues limit Barbadian companies' access to international markets.^{7,8} The government is reforming the system of safety control in order to incorporate preventive, rather than reactive, actions, which will involve better practices along the whole value chain. The system of food product traceability, while included in mid-term plans, has not been established yet.

Cotton exporters are taxed: exported cotton is subject to a levy (Bds\$0.17 per pound), which goes to the Barbados Cotton Growers' Association.

2.6. FISCAL POLICY: TAX CONCESSIONS

UP TO 15-YEAR TAX HOLIDAYS ARE AVAILABLE TO INVESTORS IN AGRICULTURE

The following fiscal incentives are available for the agri-food sector:

- 1. Investment Allowance.** Reduces the value of assets imported into Barbados for the first time:
 - By 40 percent in the case of the manufacturing and refining of sugar and the manufacturing of products from clay or limestone.
 - In general by 20 percent.
- 2. Agricultural Cash Rebate (Income Tax Allowance).** Agricultural businesses can claim a rebate on agricultural machinery (new or imported into Barbados for the first time). The amount equal to the following percentage of the capital expenditure can be deducted from taxable income:
 - Sugarcane harvesters: 10 percent or 15 percent.
 - Other machinery: 18 percent.
 - Sugar refining machinery: 40 percent.

7. According to the Barbados Delegation of the Inter-American Institute for Cooperation on Agriculture (IICA), many companies do not have access to international markets due to incompliance (IICA, 2016).

8. EPA implementation unit representatives in Barbados mentioned that SPS and food safety issues are a major limiting factor for exports from Barbados to the EU (CARICOM Secretariat, 2012).

3. Export Allowance. Sugar exporters (outside CARICOM, not receiving benefits under the Fiscal Incentives Act, 1974) benefit from a reduced tax on profits from exports. A cumulative tax rate of 2.8 percent is applied if the company exports more than 80 percent of its products.

4. Fiscal Incentives. The Fiscal Incentives Act provides to manufacturers of an “approved product” (including investors in new technology in agriculture) a full exemption from taxes and duties for varying periods, up to a maximum of 15 years.

Income tax holidays for 10 years are provided to investors in cotton production, processing, and marketing and to investors in fruit production in the Scotland District.

At present, it was not possible to obtain information on the monetary value of the transfers farmers received in the form of fiscal incentives. If this information becomes available, it will be included in the quantitative analysis in section 4.1, which will increase the estimates of support.

2.7. FOOD SAFETY AND INSPECTION SERVICES

FOOD SAFETY CONTROL SYSTEM, VETERINARY, AND PHYTOSANITARY SERVICES ARE BEING REFORMED WITH THE GOAL OF ENSURING FOOD SAFETY AND QUALITY

The Plant Protection Section and Veterinary Services within the Ministry of Agriculture are responsible for sanitary and phytosanitary (SPS) issues. The quarantine service mostly controls the risks of introduction of pests and diseases from other countries into Barbados.

The National Agricultural Health and Food Control System has been undergoing updates since 2007 in order to meet international standards. The MAFFW is in the process of establishing a National Agricultural Health and Food Control Agency (NAHFCA) to take over responsibility for sanitary and phytosanitary control and ensure compliance with international standards (World Trade Organization, 2014).

The IDB-funded US\$28 million Agriculture Health and Food Control Programme has been implemented to create an agricultural health and food control system in compliance with international standards.

2.8. RURAL INFRASTRUCTURE DEVELOPMENT

2.8.1. IRRIGATION

IRRIGATION AND WATER SYSTEMS ARE OPERATED BY BADMC; INVESTMENTS IN ON-FARM IRRIGATION ARE SUBSIDIZED

Agricultural policy has included irrigation systems development since the 1980s. The BADMC Irrigation Unit is responsible for the operation and maintenance of irrigation systems and irrigation water supply to farmers. BADMC performs routine maintenance of the irrigation system and meter readings. It offers compensation for irrigation equipment purchasing costs⁹ and subsidized water for irrigation. Irrigation equipment can be imported free of import duties. The amount of the transfer to the producer from the irrigation water subsidy was not identifiable in the budget data.

2.8.2. RURAL DEVELOPMENT PROGRAM

RURAL DEVELOPMENT IS FINANCED UNDER THE RURAL DEVELOPMENT PROGRAM

The Program's objectives include:

- Improving the quality of life in rural areas.
- Sustainable development in agriculture.
- Increasing the output of agricultural products.

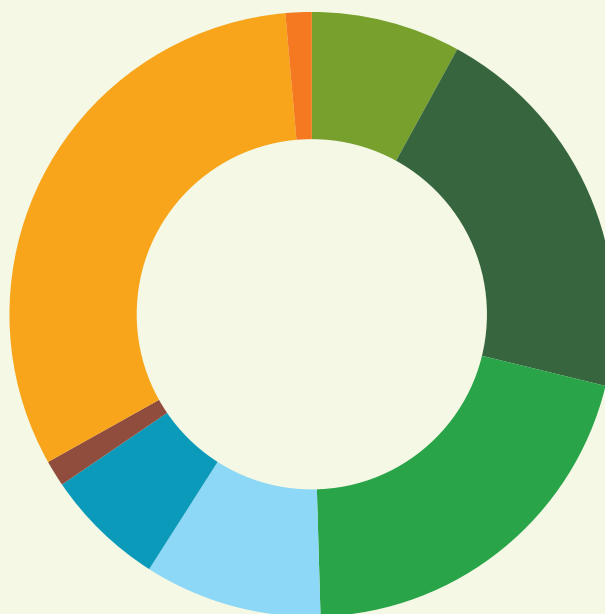
The Rural Development Commission (RDC) operates a rural enterprise fund that provides loan financing for rural development, mainly for small agricultural business, as well as for other business enterprises in rural areas. The number of enterprise loans decreased from 67 in 2013 to 45 in 2014.

The MAFFW's Soil Conservation Unit is responsible for the Scotland District development.

9. Since 1999, farmers have been able to receive a subsidy for installing the approved irrigation systems (50-75 percent, maximum Bds\$60,000 for one farmer, Bds\$72,000 if two farmers share the system). In 2008, a subsidy of 50 percent of the costs (max. Bds\$7,500 per farm per annum) of cleaning, drainage, and refurbishment of existing farm wells was introduced.

FIGURE 10: RURAL ENTERPRISE FUND LOANS BY USE (%) 2014

- LIVESTOCK (PIG, POULTRY) **32%**
- SMALL RUMINANTS **1%**
- MANUFACTURING **8%**
- SERVICES (RETAIL, TAXI, COSMETOLOGY, MOTORCYCLE REPAIR) **21%**
- VEGETABLE PRODUCTION **21%**
- FISHING **10%**
- BAKING **6%**
- BANANA PRODUCTION **1%**



Source: Barbados Economic and Social Report, 2014.

2.9. MARKETING AND PROMOTION

GOVERNMENT RELIES ON PUBLIC COMPANIES FOR MARKETING AGRICULTURAL COMMODITIES

The government's marketing policy is mainly implemented by BADMC. It operates the Southern Farmers' Market for local farmers. The BADMC Food Promotion Unit researches, develops, and organizes the processing and marketing for local produce in order to create value-added products from cassava, breadfruit, and sweet potato. The government's marketing efforts are also reflected in the food industry-supported "Buy Local" campaign.

2.10. INFORMATION SYSTEM

THE INFORMATION SYSTEM FOCUSES ON VOLUMES AND PRICE DATA FOR CROPS AND LACKS FINANCIAL INFORMATION

BADMC is responsible for the market information system. Local food crop wholesale and retail prices are obtained from local supermarkets on a weekly basis and published by BADMC. BADMC used to collect data on prices paid to farmers, but this was discontinued due to a lack of resources.

The Barbados Agricultural Statistical Information Service (BASIS) was initiated in 1982 and provides weekly and monthly production data for most crops and livestock commodities as well as price data for selected root crops and vegetables. It also provides local and regional market reports and forecasts.

However, the information system mostly focuses on vegetables and root crops. No price information on livestock is included in the system, though the dairy and small ruminants sub-sectors are named among the policy priorities. The system provides no financial information, such as the costs of production and farming inputs, profitability, and other key financial measures. The historical data required for policy analysis is also missing.

3. EVALUATION OF SUPPORT TO AGRICULTURE



3.1. METHODOLOGY

The application of the Producer Support Estimate (PSE) methodology developed by the OECD (OECD, 2010) provides a standardized quantitative method to measure support provided to the agricultural sector. The OECD has used this method to develop official calculations for various countries since 1987.

The methodology comprises a set of indicators measuring the transfers to and from economic agents as a result of agricultural

policy. Transfers to agricultural producers that benefit individual farmers or groups of farmers are measured by the Producer Support Estimate (PSE). Transfers that benefit the agricultural sector as a whole, rather than individual farmers, are measured by the General Services Support Estimate (GSSE). Transfers to the first consumers of agricultural production (agro-processors) are included in Consumer Support Estimate (CSE). PSE, GSSE, and budget transfers to CSE are combined to provide a measurement of total policy transfers to the agricultural sector called the Total Support Estimate (TSE). Single commodity transfers (SCT) estimate the effect of the support policy on individual commodities. PSE, CSE, and SCT are often measured in percentage form. PSE% and SCT% measure the share of transfers in total farm receipts (from output sales plus budget transfers); CSE% measures the share of transfers to (from) consumers in consumption expenditures at farm gate. See Annex 1 for the glossary of the indicators used in this section.

The PSE indicator measures transfers to producers arising from agricultural policy and focuses on two components of support: 1) support to producer prices, measured by Market Price Support (MPS), and 2) support through budget transfers (BT). The price support policy analysis is based on comparing observed market conditions with a benchmark situation. The aggregated effect of the policy in the supply-demand model is measured by the price ratios in situations with and without the program. Thus, output producers' prices (farm gate prices) are compared with the prices that would be expected if there were no policy interventions, e.g., market equilibrium, or reference prices. The effect of the public policy is measured by the difference between market and reference prices. If the difference between market and reference output prices is positive, it means that the policy causes benefits to producers. If negative, it means that the policy is leading to an implicit taxation of farmers.

3.2. DATA DESCRIPTION

This study covers the period of 2010-2014. This is the first attempt to include Barbados in the Agrimonitor list of countries for the estimation of the level of support to agriculture. The selection of commodities for analysis includes both standard Market Price Support (MPS) commodities, for comparison with the rest of the Agrimonitor database, and commodities that are the focus of government policy, such as roots and vegetables. OECD recommends that the average share of the sum of the values of the selected set of representative commodities (MPS commodities) in the total value of agricultural production for the last 3

years be no less than 70 percent, and the share of each selected commodity be bigger than 1 percent. The representative set of commodities selected in Barbados is presented in Figure 11. The average share of MPS commodities in Barbados' value of production for the past 3 years reached 75.4 percent. The major share of the value of agricultural output in Barbados comes from sugar and livestock production. At the same time, the government set the goal of occupying regional high value-added crops niche markets: while those commodities' share in total production is lower than that of the traditional crops, they have been included in the analysis as it is very valuable to understand the structure and trends of support to those sub-sectors. Some commodities initially selected for analysis have been excluded due to lack of available data: eggs, breadfruit, and onions are examples.

Production data was obtained from the Economic and Social Report (2014 and earlier issues), and for sugar, from the Central Bank of Barbados and Barbados Agricultural Management Co. Ltd.

Producers' prices for crops are the wholesale prices reported by the MAFFW; farm gate prices for crops were not collected in Barbados in the period of study. However, since farmers sell their produce directly on those markets, and the distance from farm to market is not very far, the wholesale price can be considered an appropriate proxy for the farm gate price. For poultry, farm gate prices were calculated from the observed wholesale price provided by the MAFFW. For cassava, milk, and cotton, farm gate prices were reported by the MAFFW.

Reference prices are average export and import unit values for exported and imported commodities, respectively, with the exception of cassava (for which the export price from Brazil was used), yam (for which the Jamaica reference price was used), poultry (for which the US producer price of poultry, marketing year weighted average, adjusted for transportation costs was used) and milk, where an implicit milk reference price was calculated. The average unit values at the border were adjusted for marketing margins (processing, transportation, and handling costs) in order to ensure comparability with the observed farm gate prices.

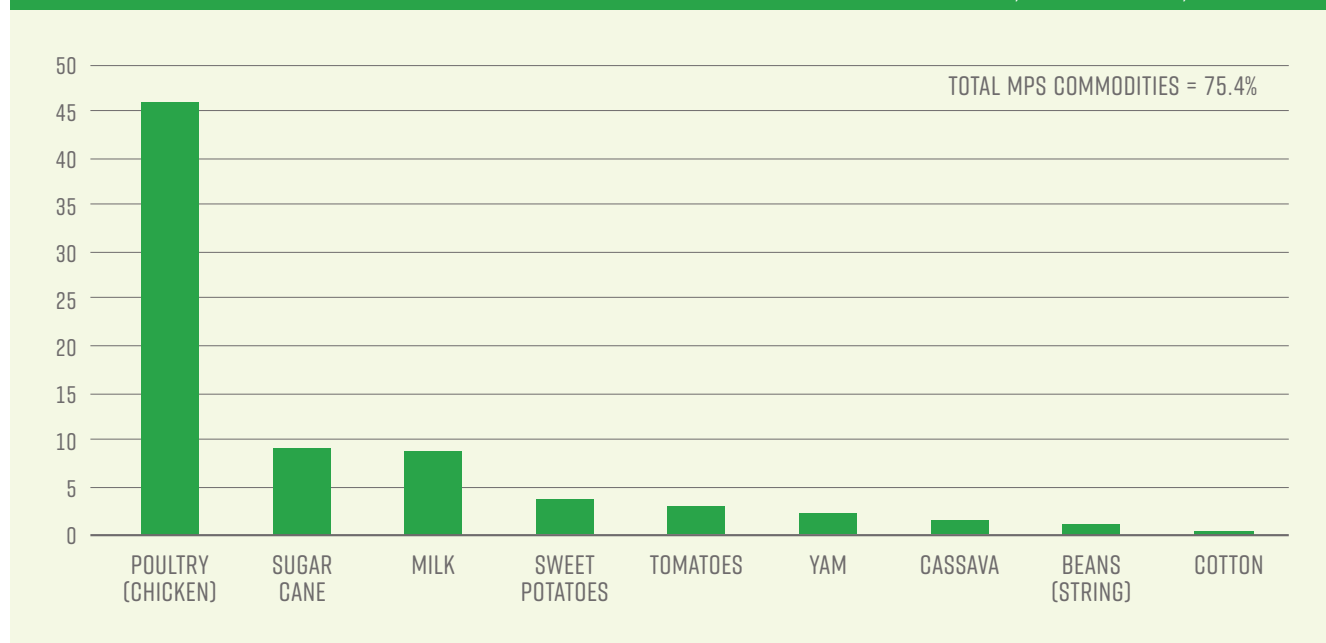
The exchange rate of the Barbados dollar is tied to the US dollar, and experts agree that it has resulted in an overvaluation of the national currency (World Trade Organization, 2014). The IMF indicates a moderate overvaluation, within a range of 2.5-8.0 percent from its equilibrium level (IMF, 2014). The overvaluation of the currency means that the PSE underestimates the level of support. However, since the overvaluation is not very noticeable, no adjustments to the exchange rate have been made in this

THE EXCHANGE RATE OF THE BARBADOS DOLLAR IS TIED TO THE US DOLLAR, AND EXPERTS AGREE THAT IT HAS RESULTED IN AN OVERVALUATION OF THE NATIONAL CURRENCY

study, both because no conventional alternative exchange rate for this period was available, and in order to ensure comparability within the Agrimonitor database.

Since a small share of local cassava and cotton output is used for animal feed, the Excess Feed Costs (EFC) adjustment has been made to exclude double counting of support to crops consumed by livestock.

FIGURE 11: SHARE OF MPS COMMODITIES OF TOTAL VALUE OF AGRICULTURAL PRODUCTION IN BARBADOS (% , 3-YEAR AVERAGE, 2012-2014)

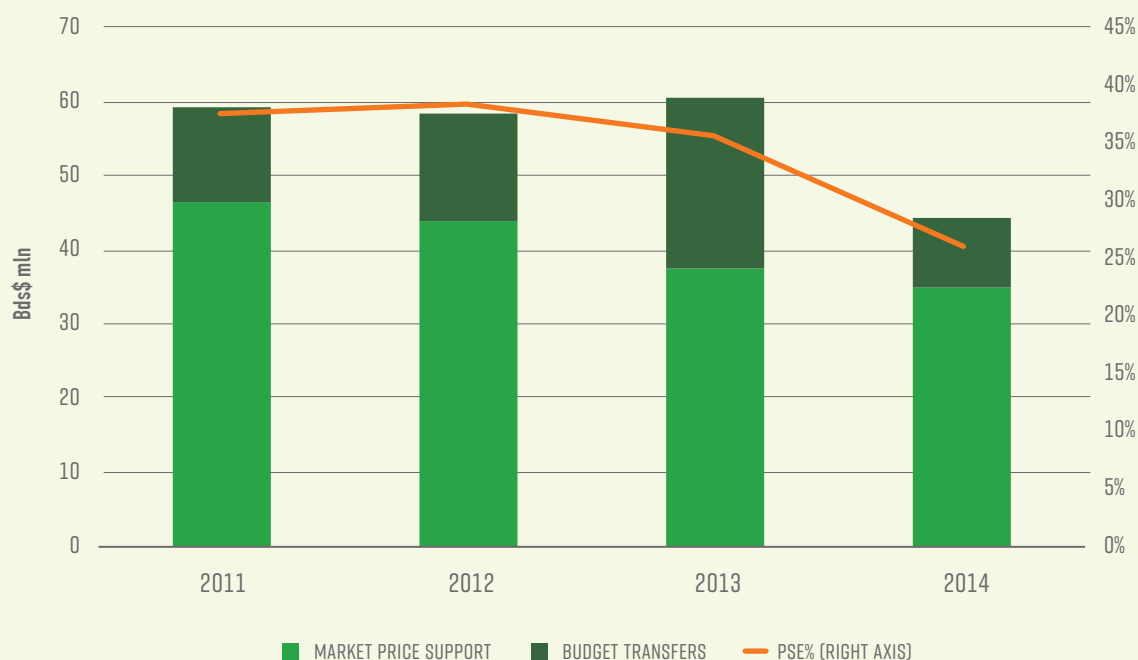


Source: Author's estimates based on Economic and Social Report data, various years.

3.3. RESULTS: LEVEL AND STRUCTURE OF SUPPORT TO PRODUCERS

SUPPORT TO PRODUCERS IS HIGH

The total value of the transfers farmers in Barbados received as a result of agricultural support policy was, on average, 33.4 percent of total farm receipts in the latest 3 years covered by the study (2012-2014). For most Latin American and Caribbean countries, the role of MPS is decreasing over time. For Barbados, the trend in the composition of support is unusual: while MPS is decreasing, its share of total PSE increased in 2014 as the role of direct support from budget to producers diminished (Figure 12).

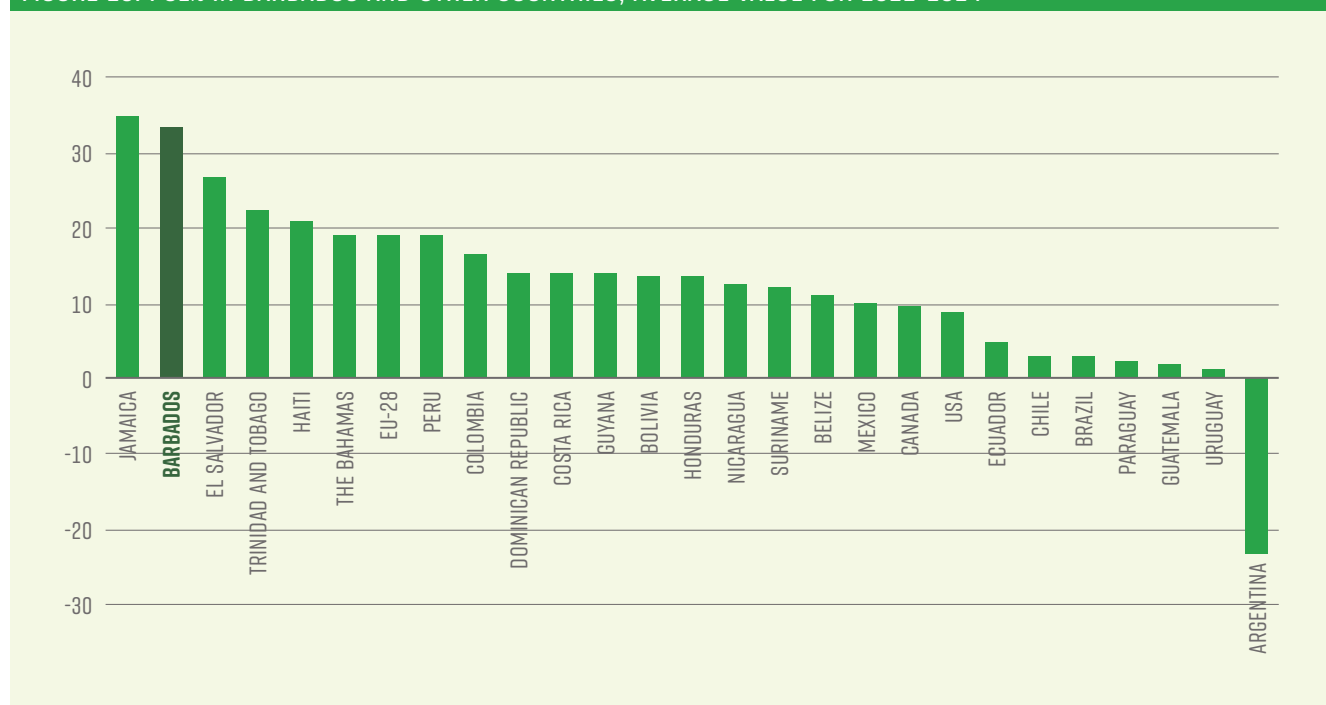
FIGURE 12: PRODUCER SUPPORT ESTIMATE COMPOSITION IN BARBADOS (2011-2014)

Source: Author's estimates.

PRICE SUPPORT IS A MAIN FORM OF SUPPORT, REFLECTING HIGH IMPORT TARIFFS AND OTHER BARRIERS TO TRADE

Market price support is directly affecting production decisions, and therefore, potentially distorting markets and trade. On average, in 2011-2014, MPS represented 72 percent of the national PSE. Budget transfers, on the other hand, decreased in 2014. Transfers to agricultural producers individually resulting from agricultural policy, as measured by PSE, reached Bds\$44.5 million, or US\$22.2 million in 2014 (Table 7). The value of MPS has been decreasing steadily since 2011, and budget transfers to individual producers were volatile and consisted mostly of grants to sugar producers, which decreased sharply in 2014.

While the size of the agricultural sector is relatively small in Barbados, the percent share of the transfers in total farm receipts is one of the highest in the region and higher than in the EU, United States, and Canada (Figure 13).

FIGURE 13: PSE% IN BARBADOS AND OTHER COUNTRIES, AVERAGE VALUE FOR 2012-2014*

* Dominican Republic, Trinidad and Tobago, and OECD countries 2013-2015; Uruguay 2011-2013; Costa Rica, Ecuador, and Honduras 2010-2012; El Salvador 2011-2012; Guatemala 2009-2011; Nicaragua 2009-2010; Bolivia 2008-2009. Source: Author's estimates.

3.3.1. SUPPORT TO PRODUCERS BY COMMODITY

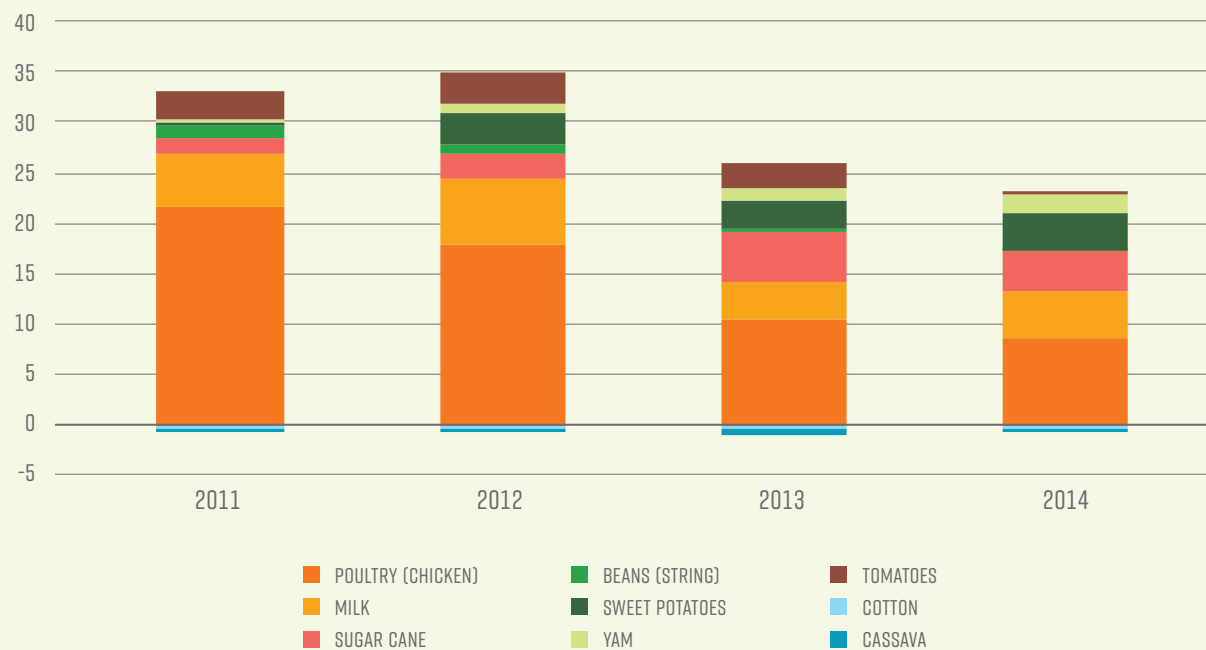
POULTRY, MILK, AND SUGAR WERE THE MOST SUPPORTED COMMODITIES

The level of support to agricultural producers in Barbados is highly dependent on the level of support to the poultry, milk, and sugar sub-sectors, since their contribution to the total value of output is high. Looking at the levels of MPS in monetary value and at producers' SCT in percentage form by commodity reveals that while support to livestock and sugar dominates in the composition of the country's MPS, other crops receive higher support in terms of the share of their gross receipts (i.e., yams, sweet potatoes, and tomatoes in some years (Figure 14, Figure 15)).

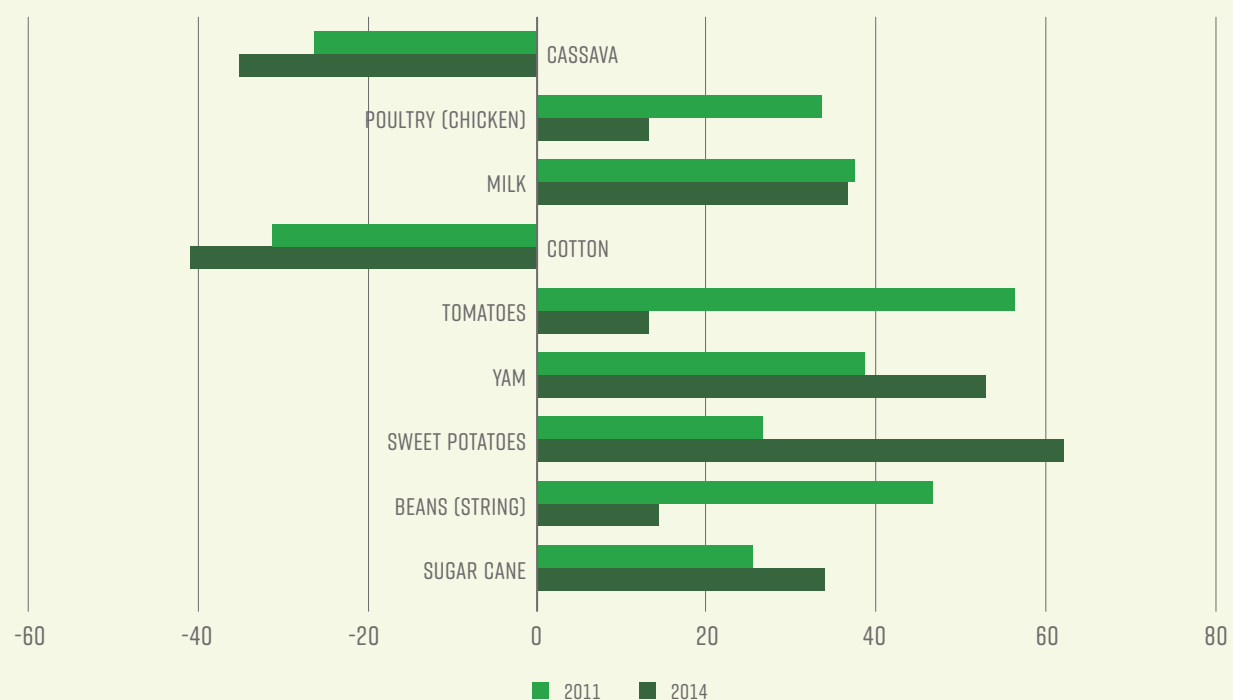
TABLE 7: SUPPORT ESTIMATE IN BARBADOS (BD\$ MLN, 2011-2014)

INDICATOR	UNIT	2011	2012	2013	2014
I. TOTAL VALUE OF PRODUCTION (AT FARM GATE)	BD\$ MLN	145.20	138.24	150.00	163.08
I.1. OF WHICH, SHARE OF MPS COMMODITIES (%)	%	71.34	79.27	67.85	64.35
II. TOTAL VALUE OF CONSUMPTION (AT FARM GATE)	BD\$ MLN	152.01	144.61	163.03	176.16
II.1. OF WHICH, SHARE OF MPS COMMODITIES	BD\$ MLN	108.44	114.63	110.62	113.35
III.1. PRODUCER SUPPORT ESTIMATE (PSE)	BD\$ MLN	59.26	58.32	60.48	44.46
A. SUPPORT BASED ON COMMODITY OUTPUTS	BD\$ MLN	46.24	44.03	37.35	35.06
A.1. MARKET PRICE SUPPORT	BD\$ MLN	46.24	44.03	37.35	35.06
• SUGARCANE	BD\$ MLN	1.53	2.57	5.07	4.02
• BEANS (STRING)	BD\$ MLN	1.10	0.76	0.40	0.13
• SWEET POTATOES	BD\$ MLN	0.36	3.10	2.53	3.63
• YAMS	BD\$ MLN	0.45	0.94	1.52	1.88
• TOMATOES	BD\$ MLN	2.85	3.13	2.37	0.39
• COTTON	BD\$ MLN	(0.05)	(0.04)	(0.11)	(0.28)
• MILK	BD\$ MLN	5.32	6.59	3.70	4.73
• POULTRY (CHICKEN)	BD\$ MLN	21.61	17.87	10.40	8.49
• CASSAVA	BD\$ MLN	(0.18)	(0.02)	(0.53)	(0.44)
• NON-MPS COMMODITIES	BD\$ MLN	13.25	9.13	12.01	12.50
A.2. PAYMENTS BASED ON OUTPUT	BD\$ MLN	-	-	-	-
B. PAYMENTS BASED ON INPUT USE	BD\$ MLN	12.94	13.26	19.23	8.67
B.1. VARIABLE INPUT USE	BD\$ MLN	2.58	3.50	9.72	0.06
B.2. FIXED CAPITAL FORMATION	BD\$ MLN	9.54	9.14	8.92	7.99
B.3. ON-FARM SERVICES	BD\$ MLN	0.82	0.62	0.59	0.62
C. PAYMENTS BASED ON CURRENT A/AN/R/I, PRODUCTION REQUIRED	BD\$ MLN	0.08	0.03	0.00	0.00
C.1. BASED ON CURRENT RECEIPTS/INCOME	-	-	-	-	-
C.2. BASED ON CURRENT AREA/ANIMAL NUMBER	-	0.08	0.03	0.00	0.00
D. PAYMENTS BASED ON NON-CURRENT A/AN/R/I, PRODUCTION REQUIRED	BD\$ MLN	-	-	-	-
E. PAYMENTS BASED ON NON-CURRENT A/AN/R/I, PRODUCTION NOT REQUIRED	BD\$ MLN	-	-	-	-
F. PAYMENTS BASED ON NON-COMMODITY CRITERIA	BD\$ MLN	-	-	-	-
G. MISCELLANEOUS PAYMENTS	BD\$ MLN	-	1.00	3.89	0.73
III.2. PERCENTAGE PSE	%	37.47	38.49	35.74	25.89
IV. GENERAL SERVICES SUPPORT ESTIMATE (GSSE)	BD\$ MLN	40.50	39.62	36.59	32.90
H. AGRICULTURAL KNOWLEDGE AND INNOVATION SYSTEM	BD\$ MLN	13.23	12.79	12.10	11.55
H.1. AGRICULTURAL KNOWLEDGE GENERATION	BD\$ MLN	4.86	5.22	4.99	4.54
H.2. AGRICULTURAL KNOWLEDGE TRANSFER	BD\$ MLN	8.37	7.57	7.11	7.01
I. INSPECTION AND CONTROL	BD\$ MLN	5.37	5.50	5.13	4.70
I.1. AGRICULTURAL PRODUCT SAFETY AND INSPECTION	BD\$ MLN	0.52	0.75	0.75	0.68
I.2. PEST AND DISEASE INSPECTION AND CONTROL	BD\$ MLN	4.84	4.75	4.38	4.01
I.3. INPUT CONTROL	BD\$ MLN	-	-	-	-
J. DEVELOPMENT AND MAINTENANCE OF INFRASTRUCTURE	BD\$ MLN	21.90	21.32	19.36	16.65
J.1. HYDROLOGICAL INFRASTRUCTURE	BD\$ MLN	-	-	-	-
J.2. STORAGE, MARKETING, AND OTHER PHYSICAL INFRASTRUCTURE	BD\$ MLN	21.90	21.22	19.36	16.64
J.3. INSTITUTIONAL INFRASTRUCTURE	BD\$ MLN	-	0.10	0.00	0.01
J.4. FARM RESTRUCTURING	BD\$ MLN	-	-	-	-
K. MARKETING AND PROMOTION	BD\$ MLN	-	-	-	-
L. COST OF PUBLIC STOCKHOLDING	BD\$ MLN	-	-	-	-
M. MISCELLANEOUS	BD\$ MLN	-	-	-	-
V.1. CONSUMER SUPPORT ESTIMATE (CSE)	BD\$ MLN	(46.92)	(43.93)	(36.71)	(31.65)
O. TRANSFERS TO PRODUCERS FROM CONSUMERS (-)	BD\$ MLN	(45.16)	(42.42)	(35.73)	(32.61)
O.1. OF WHICH, SHARE OF MPS COMMODITIES (%)	BD\$ MLN	32.22	33.63	24.24	20.98
P. OTHER TRANSFERS FROM CONSUMERS (-)	BD\$ MLN	(6.49)	(6.08)	(5.33)	(5.22)
P.1. OF WHICH, SHARE OF MPS COMMODITIES (%)	BD\$ MLN	4.63	4.82	3.62	3.36
Q. TRANSFERS TO CONSUMERS FROM TAXPAYERS	BD\$ MLN	4.73	4.58	4.37	6.21
Q.1. COMMODITY SPECIFIC TRANSFERS TO CONSUMERS	BD\$ MLN	-	-	-	-
Q.2. NON-COMMODITY SPECIFIC TRANSFERS TO CONSUMERS	BD\$ MLN	4.73	4.58	4.37	6.21
R. EXCESS FEED COSTS	BD\$ MLN	(0.01)	(0.00)	(0.02)	(0.03)
V.2. PERCENTAGE CSE	%	(31.86)	(31.37)	(23.13)	(18.62)
V.3. CONSUMER NAC	BD\$ MLN	1.47	1.46	1.30	1.23
VI.1. TOTAL SUPPORT ESTIMATE (TSE)	BD\$ MLN	104.49	102.51	101.44	83.57
S. TRANSFERS FROM CONSUMERS	BD\$ MLN	51.65	48.50	41.06	37.83
T. TRANSFERS FROM TAXPAYERS	BD\$ MLN	59.33	60.09	65.71	50.96
U. BUDGET REVENUES (-)	BD\$ MLN	(6.49)	(6.08)	(5.33)	(5.22)
VI.2. PERCENTAGE TSE	%	1.20	1.18	1.16	0.96

Source: Author's estimates.

FIGURE 14: MARKET PRICE SUPPORT BY COMMODITY IN BARBADOS (2011-2014, BDS\$ MLN)

Source: Author's estimates.

FIGURE 15: PRODUCERS SINGLE COMMODITY TRANSFER IN BARBADOS (2011-2014, %)

Source: Author's estimates.

3.3.1.1. SUGAR SUB-SECTOR POLICY ANALYSIS

POLICY INCLUDES SUBSIDIES, PER-HECTARE PAYMENTS, AND GRANTS AS WELL AS RESTRUCTURING

The government has been attempting to address the downturn in the sugarcane industry (see Box 3) since the 1990s. Sugar producers received guaranteed prices as well as technical assistance. Since 2006, the government has been considering a US\$150 million project supporting sugarcane electricity, ethanol, and refined sugar production. Incentives for growing fuel cane varieties in Barbados were also discussed. The IDB, in its 2011 study of the Barbados sugarcane industry, recommended the reorientation of Barbados' sugarcane industry to only produce ethanol.

SUGAR TRADE IS REGULATED

Farmers in Barbados supply sugar to the factories at fixed prices. The Ministry of Agriculture, Food, Fisheries and Water Resource Management issues export permits for sugar. BAMC is the sole importer and exporter of raw sugar. A Bds\$0.90 per kg levy is imposed on raw sugarcane imports.

AT THE SAME TIME, INCENTIVES FOR REPLANTING PROMOTE EXPANSION OF PRODUCTION

At the same time, a production stimulating program has been put in place: the Cane Replanting Incentive Scheme provides a per-acre subsidy for planted cane (Bds\$550 per acre for force-back planting and Bds\$450 per acre for conventional planting of sugarcane).

The Cane Industry Restructuring Project (CIRP), initiated in 1997, has been promoted by the Barbados Cane Industry Corporation (BCIC) since 2007. The project focuses on the production of specialty sugar, ethanol, and molasses and the co-generation of electricity from bio-mass. It received Bds\$1.5 million of financing in 2011-12, and the same amount was planned for the project in 2013; however, only Bds\$136,000 was budgeted. In addition, according to the annual report of the Enterprise Growth Fund Limited on ADF activities, in 2012, the Barbados Cane Industry Corporation received a Bds\$2.9 million grant from the ADF. The ADF's report does not provide details on the spending of those funds, and no performance evaluation report is publicly available.

In spite of its negative returns and unclear prospects, local people consider sugarcane growing to be an important part of the rural landscape and lifestyle, as well as an important component of crop rotation. However, the taxpayers' costs of supporting this sub-sector are very high (Table 7), and the declining trend in production is irreversible.

IN SPITE OF ITS NEGATIVE RETURNS AND UNCLEAR PROSPECTS, LOCAL PEOPLE CONSIDER SUGARCANE GROWING TO BE AN IMPORTANT PART OF THE RURAL LANDSCAPE AND LIFESTYLE, AS WELL AS AN IMPORTANT COMPONENT OF CROP ROTATION. HOWEVER, THE TAXPAYERS' COSTS OF SUPPORTING THIS SUB-SECTOR ARE VERY HIGH, AND THE DECLINING TREND IN PRODUCTION IS IRREVERSIBLE

TABLE 8: BUDGET SUPPORT TO SUGAR SUB-SECTOR (BDS\$ THOUSAND)

DESCRIPTION	2010-11	2011-12	2012-13	2013-14	2014-15
MAFFW SUGARCANE DEVELOPMENT	80.99	81.84	12.17	–	5.08
RESTRUCTURING OF SUGARCANE INDUSTRY (OPERATED BY BAMC)	–	1,500.00	136.33	–	–
GRANT TO BARBADOS CANE INDUSTRY CORPORATION FROM ADF	–	–	–	2,910.00	–
GRANTS TO BAMC FROM ADF	2,576.03	3,498.00	6,808.07	–	–

Source: Barbados Agricultural Management Co. Ltd., various years.

BOX 3: SUGAR SUB-SECTOR CHARACTERISTICS

The sugarcane industry is in a deep recession; plans for its revival are based on ethanol and electricity production.

In the period of study, sugar was produced in two factories operated by the Barbados Agricultural Management Company (BAMC). The Andrews Sugar Factory is now being renovated and transformed into a multi-purpose facility. This multi-purpose sugar-based project was launched in 2013, but because of financing issues it is now due for commissioning in 2017. The Portvale Sugar Factory suffered a fire and was not operational between November 2013 and March 2014. BAMC has its own cane farms and also collects cane from independent producers. Sugarcane farmers supply cane to the factories at fixed prices.

High costs, reduced export prices, negative returns: public support is a precondition for the sugar industry's survival.

The land area under sugarcane cultivation, area harvested, and cane production have been declining since the 1960s. In 2014, at 179.7 thousand tons, sugarcane production represented only 33 percent of its level in the year 2000. Productivity also keeps falling, decreasing from 62.1 t/ha in 2000 to 48.3 t/ha in 2014, lower than most of the world's sugar producing countries (Figure 25).

FIGURE 16: SUGAR PRODUCTION AND EXPORTS IN BARBADOS, THOUSAND TONS

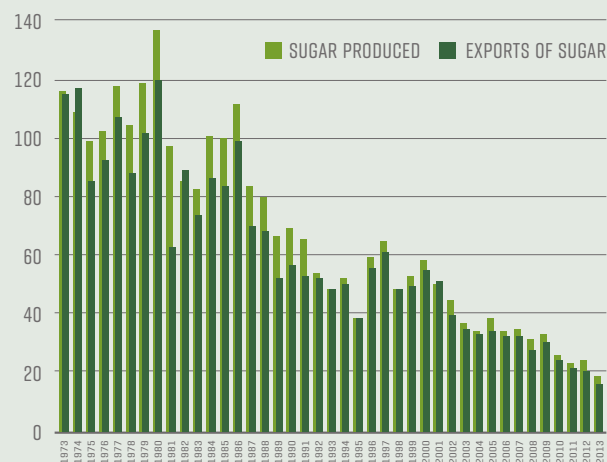


FIGURE 17: SUGAR YIELDS BY COUNTRY, T/HA



Source Figure 16: The Central Bank of Barbados online statistics, retrieved from: <http://data.centralbank.org.bb/default.aspx> Barbados Agricultural Management Co. Ltd., various years.

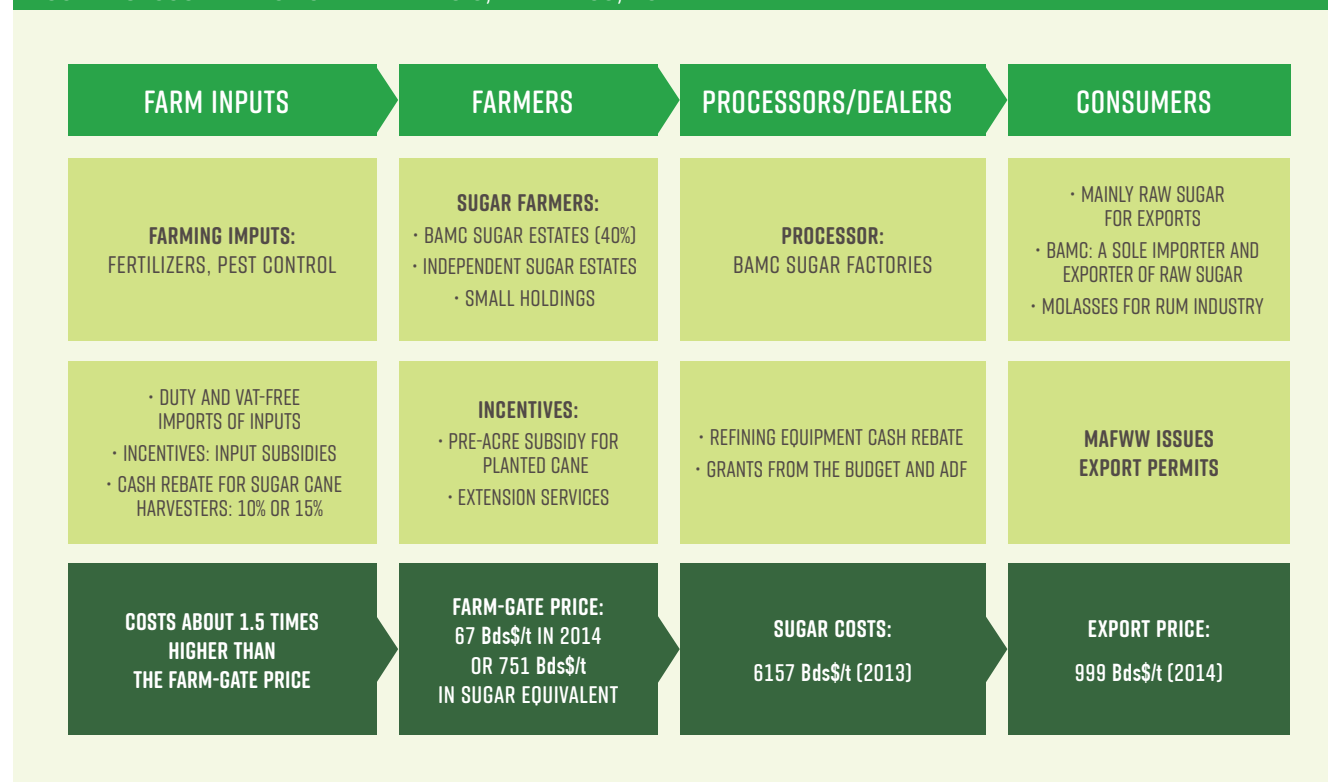
Source Figure 17: FAOSTAT.

THE RETURNS ARE NEGATIVE

The sugar production value chain, from sugarcane growing to sugar manufacturing, brings negative returns in Barbados (Figure 26). According to FAO, the costs of sugarcane production in Barbados are very high. After rising from US\$49.20 per ton of cane in 2005 to US\$72 by 2009, costs became nearly 1.5 times higher than the farm gate price farmers received from factories (US\$50.00 in 2009) (FAO and Government of Barbados, 2012). While the costs of sugarcane growing are not available for recent years, given the decline in productivity and production, it is not likely that the situation has improved since then. Trade liberalization and changes in the EU trade regime, resulting in a decline in sugar prices, created additional difficulties for the sector (Rawlins, 2013).

BAMC's sugar factories have been operating at net loss since the mid-nineties, and the company is only operational because of government grants. The value of sugarcane purchased from farmers constitutes only a fraction of raw sugar production costs, and sugar production costs are considerably (several times) higher than the export price (Figure 19).

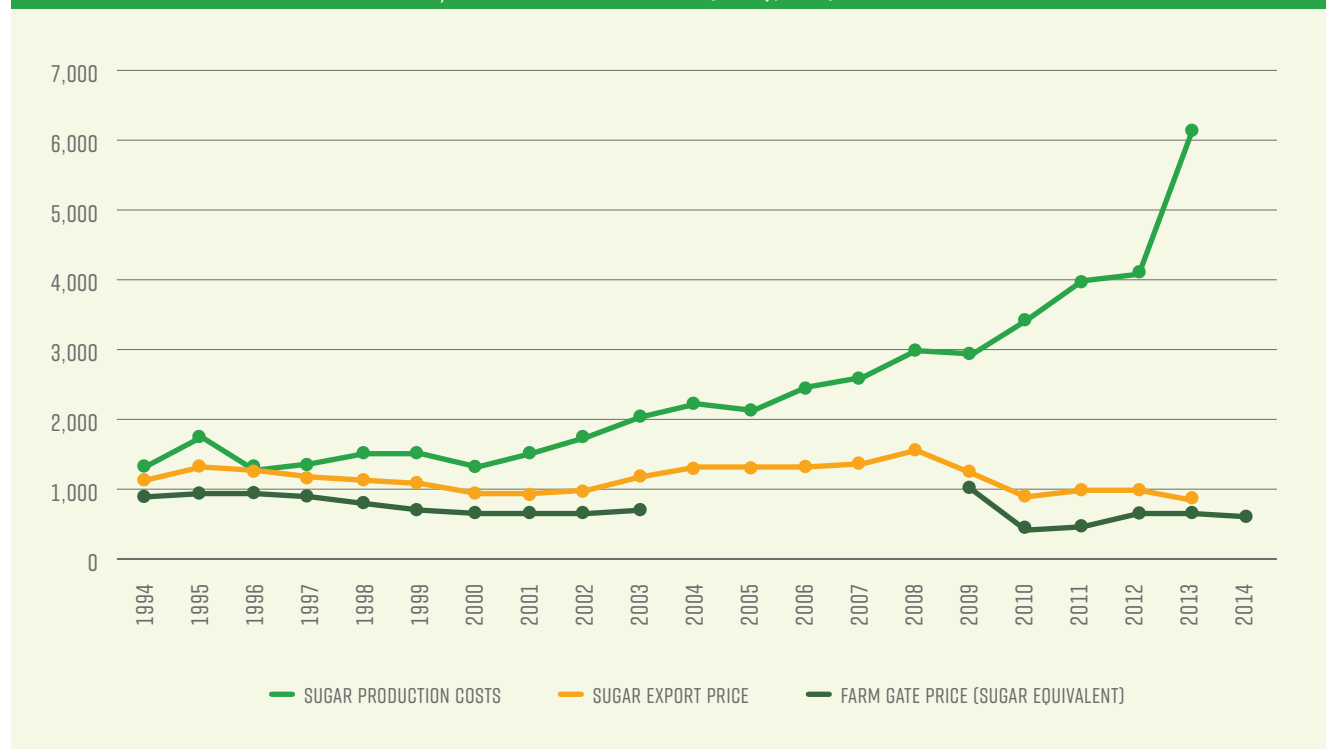
FIGURE 18: SUGAR VALUE CHAIN ANALYSIS, BARBADOS, 2014



Source: Agricultural Incentive Program; The Central Bank of Barbados online statistics, retrieved from: <http://data.centralbank.org.bb/default.aspx>; Barbados Agricultural Management Co. Ltd., various years.

BAMC's activities are funded by grants from the ADF. BAMC annual reports indicated that the company received Bds\$27.5 million in 2013 and Bds\$28.2 million in 2014 of budget funds to compensate for its losses; however, government budget expenditure data does not reflect these funds.

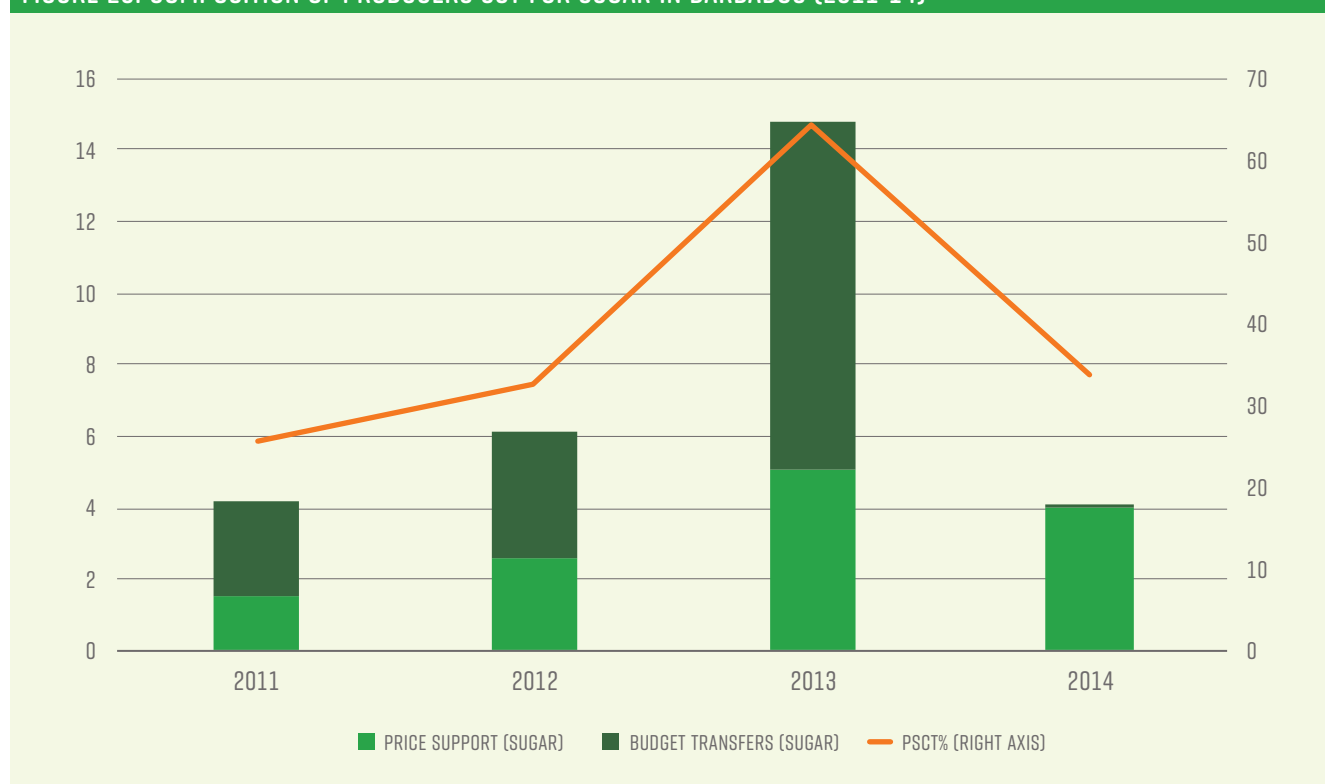
FIGURE 19: SUGAR COSTS AND PRICES, BARBADOS 2011-2013 (BDS\$/TON)



Source: The Central Bank of Barbados online statistics, retrieved from: <http://data.centralbank.org.bb/default.aspx>; Barbados Agricultural Management Co. Ltd., various years.

SUGAR PRODUCERS ARE MODERATELY SUPPORTED

While sugar prices are much higher than the export price, this difference is not transferred to the farm gate level. Sugar producers in Barbados are subsidized, as in many major sugar-producing countries, but the level of support to sugar producers is moderate, fluctuating between 26 and 64 percent of gross farm receipts in the period of study.

FIGURE 20: COMPOSITION OF PRODUCERS SCT FOR SUGAR IN BARBADOS (2011-14)

Source: Author's estimates.

SUPPORT OF THE SUGAR SUB-SECTOR THROUGH GOVERNMENT GRANTS IS NOT SUSTAINABLE, RESTRUCTURING MEASURES ARE NEEDED

The PSE methodology analyzes the policy effect at the farm gate and does not take into account policy outcomes at the processing level; however, without a sustainable processing industry, the support to sugarcane farmers will not have any desirable effect. Returns remain negative at all levels of the sugar producing value chain, and the process of transforming the sugar industry into a biofuel producer is currently jeopardized by low oil prices. The transfers to sugarcane farmers and sugar producers from taxpayers are volatile and made on an ad hoc basis, and the policy does not require any efficiency estimation of those expenditures. Sugar processing only operates because it is supported by grants from the budget and ADF, a situation that is not sustainable in the long term.

3.3.1.2. COTTON SUB-SECTOR POLICY ANALYSIS

COST REBATES, PER-HECTARE PAYMENTS FOR LAND BROUGHT UNDER CULTIVATION, AND TECHNICAL ASSISTANCE ARE AVAILABLE FOR THE COTTON SUB-SECTOR

Since 2001, cotton producers have received a guaranteed price of \$4.80 per pound for seed cotton. While the export of high-quality cotton lint attracts premium prices, they do not benefit farmers (Figure 21). However, as more and more cotton is produced by a vertically integrated holding, there is no information regarding the benefits from high export prices for the holding participants. The concept of sector development for the future envisages the expansion of cotton processing inside the country, which will allow Barbados to export high value-added products, e.g., yarns and fabrics, as opposed to cotton lint bales. The Cotton Research and Development Fund provides knowledge generation services to the sub-sector.

COTTON IS IMPLICITLY TAXED

The guaranteed government price for cotton is lower than the price producers could receive for their output in the absence of any public policy in this sub-sector. The main challenge for the cotton industry is the shrinking area of land under cultivation. Weed and pest issues and increased rainfall were the main reasons for the production slowdown in the decade of the 2000s. Premium quality and premium prices may damage competitiveness internationally, where the demand for lower quality cotton and fabrics prevails. Domestic production of high-quality end products is the way to overcome this obstacle. The guaranteed farm gate price should be reconsidered, as it does not benefit farmers.

**THE GUARANTEED
GOVERNMENT PRICE FOR
COTTON IS LOWER THAN
THE PRICE PRODUCERS
COULD RECEIVE FOR THEIR
OUTPUT IN THE ABSENCE
OF ANY PUBLIC POLICY
IN THIS SUB-SECTOR**

BOX 4: COTTON SUB-SECTOR CHARACTERISTICS

The cotton sub-sector is on the path to growth

The cotton variety produced in Barbados is premium quality cotton with high productivity that attracts premium prices. Exclusive Cottons of the Caribbean (ECCI) is a vertically integrated company and acts as the sole marketing channel for cotton. However, in the 2000s, it experienced difficulties with production, productivity, and the marketing of Barbadian cotton (FAO & Government of Barbados, 2012).

In 2013 and 2014, cotton farming started to recover after four years of reduced production in which the cultivation areas were extremely small and the sub-sector was on the border of sustainability (Figure 21). At the same time, average productivity of seed cotton production was very low, falling from 1100 kg/ha in 2010 to 552 kg/ha in 2014, among the lowest levels in Latin America (Figure 22).

FIGURE 21: COTTON - AREA PLANTED/LINT PRODUCTION. BARBADOS

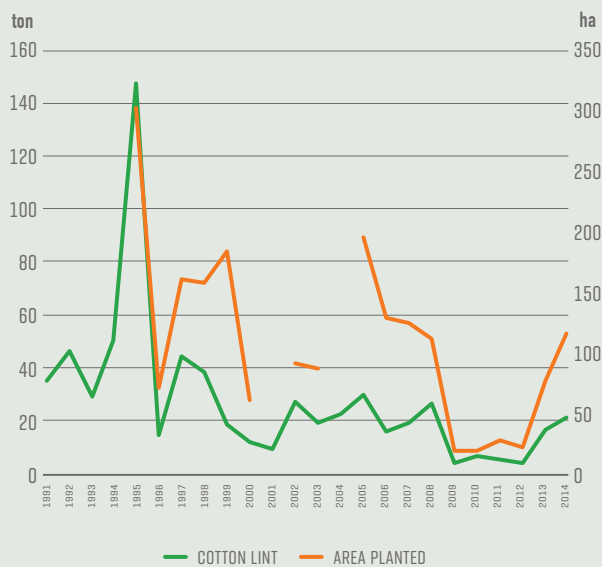
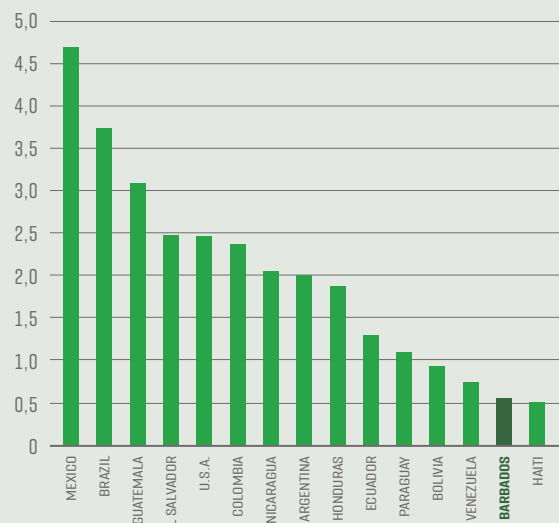
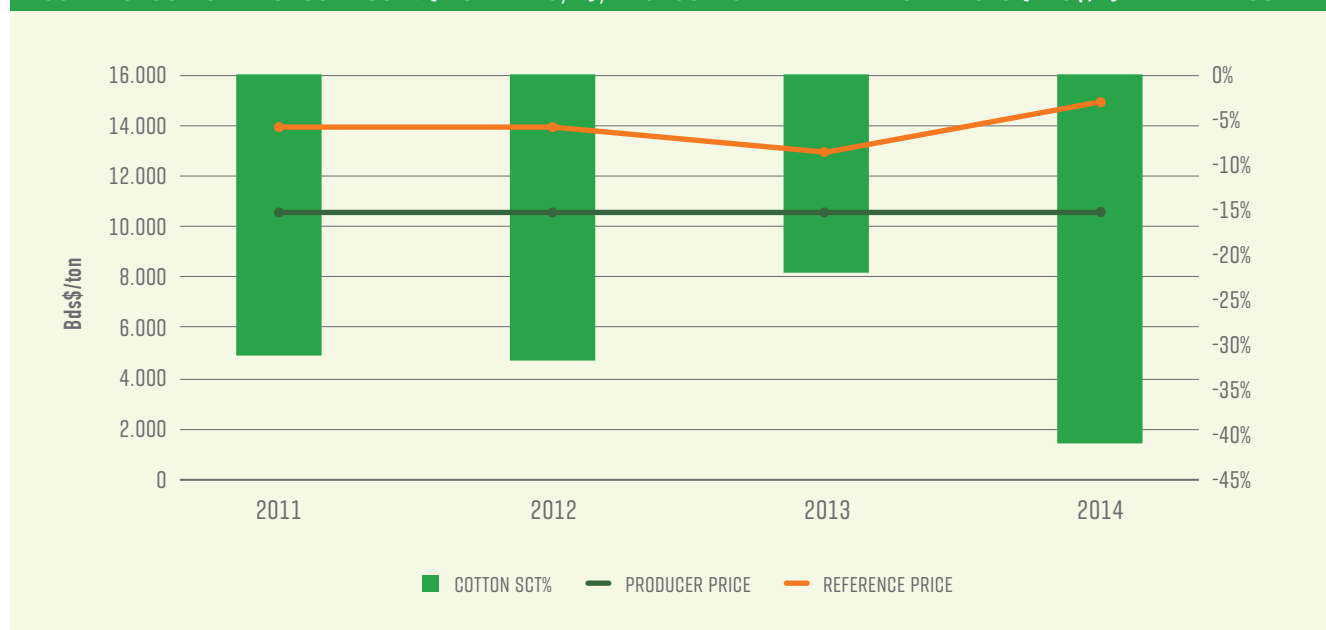


FIGURE 22: SEED COTTON YIELDS IN 2014 (T/HA)



Source Figure 21: Barbados Economic and Social Report, 2014.

Source Figure 22: FAOSTAT; Barbados Economic and Social Report, 2014.

FIGURE 23: COTTON PRODUCER SCT% (RIGHT AXIS, %), PRODUCERS AND REFERENCE PRICES (BDS\$/T) IN BARBADOS

Source: Author's estimates.

3.3.1.3. CASSAVA SUB-SECTOR POLICY ANALYSIS

BARBADOS PARTICIPATES IN FAO'S REGIONAL INITIATIVE FOR CASSAVA VALUE CHAIN DEVELOPMENT

While there were no cassava-specific budget transfers during the period of the study, currently the transformation of cassava into a cash crop is among the government's declared policy goals. The government cooperates with FAO in its regional cassava production and marketing development project. FAO assists in the development of the industry by providing access to research and technology and, since 2014, through the Promotion and Marketing of Cassava Project, a regional initiative for value chain development. CARDI also provides assistance in disease control services and capacity building. In 2014-15, the productivity of cassava farms was evaluated and a potential for increasing yields was discovered. Forty-two extension and other officers were trained in methods of assessment and reduction of harvest and post-harvest losses in cassava. Bakers were advised on how to use cassava flour with the goal of replacing up to 40 percent of imported wheat flour with local cassava. Contract arrangements between farmers and first processors were also studied for potential improvements (Barbados Economic and Social Report, 2015). The potential for adding value to the cassava production chain includes feed, flour, starch, and ethanol production, and Barbados, with its high productivity, is well-positioned for realizing this potential.

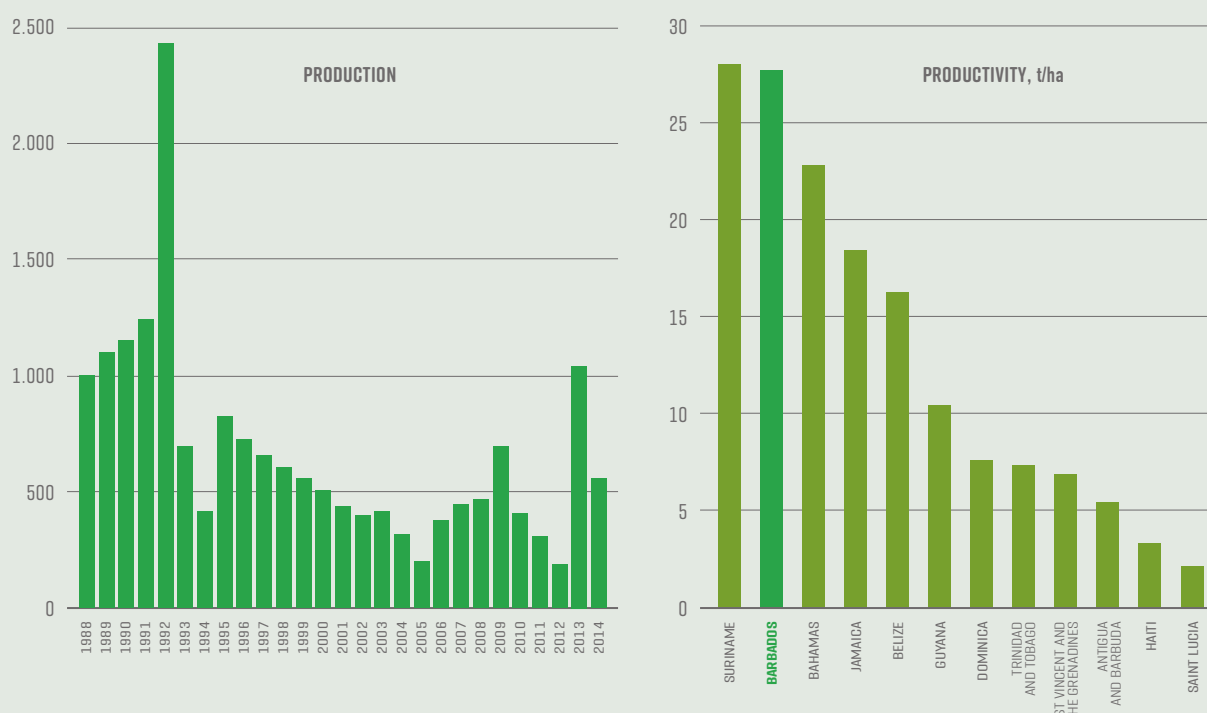
THE POTENTIAL FOR ADDING VALUE TO THE CASSAVA PRODUCTION CHAIN INCLUDES FEED, FLOUR, STARCH, AND ETHANOL PRODUCTION, AND BARBADOS, WITH ITS HIGH PRODUCTIVITY, IS WELL-POSITIONED FOR REALIZING THIS POTENTIAL

BOX 5: CASSAVA SUB-SECTOR CHARACTERISTICS

Volatile production but high yields

Cassava production has been volatile in the past and is still far from its 1992 peak (Figure 24). At the same time, Barbados has a competitive advantage in the region, as productivity was at its highest historical level in 2014, with the second-highest yields in the region.

FIGURE 24: CASSAVA PRODUCTION IN BARBADOS, TONS, AND CASSAVA YIELDS BY COUNTRY, 2014 (TONS/HA)

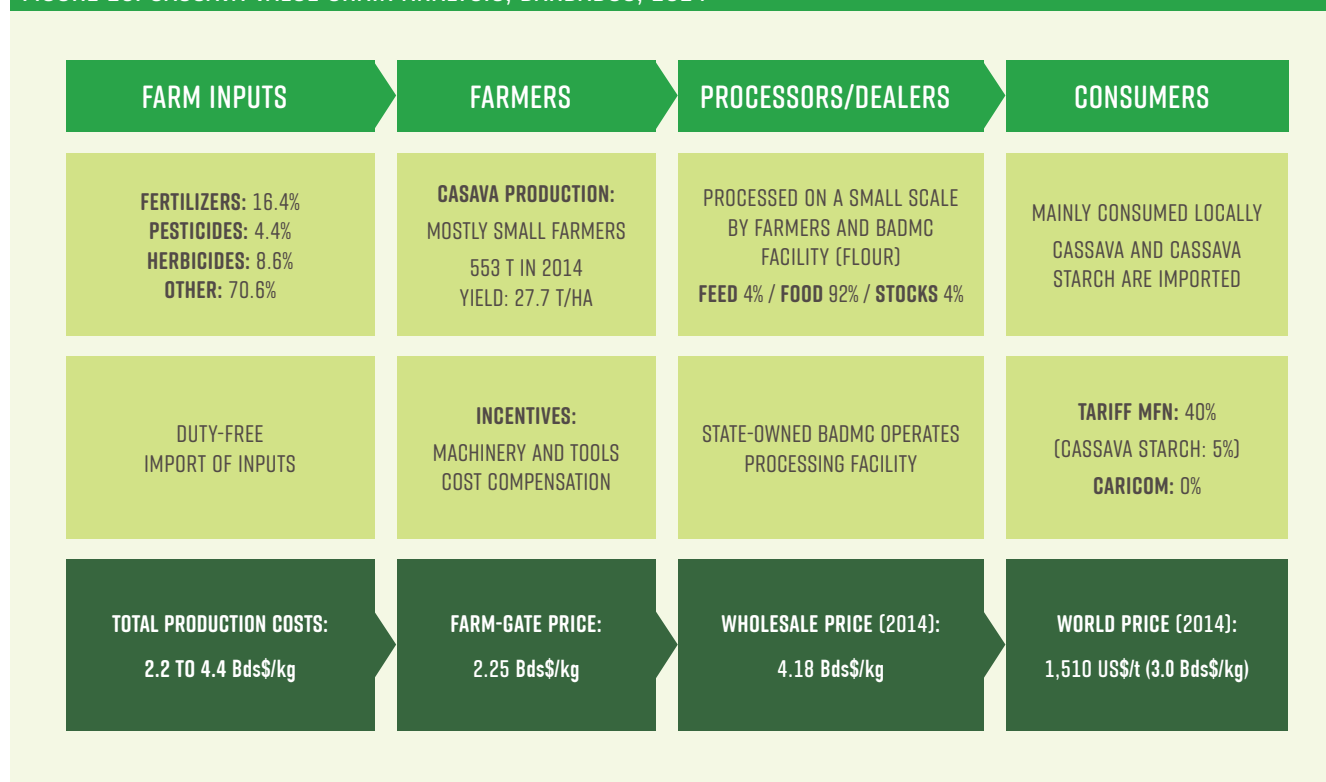


Source Figure 24: FAOSTAT; Barbados Economic and Social Report, 2014.

VALUE CHAIN DEVELOPMENT IS A CHALLENGE

Cassava is mostly produced on small farms and marketed on fresh markets (Figure 23). BADMC's Food Promotion Unit established a small-scale cassava processing facility, producing flour for the baking industry. In 2014, studies to estimate the costs of cassava production were conducted in the framework of the FAO study of cassava industry potential in CARICOM. The report indicated that a yield of at least 26 t/ha (achieved by Barbados in 2014) is required to break even in cassava processing. While the exercise is considered successful, the majority of cassava output is still sold on fresh markets. Post-harvest losses remain one of the main issues in the cassava value chain (FAO, 2014b).

FIGURE 25: CASSAVA VALUE CHAIN ANALYSIS, BARBADOS, 2014

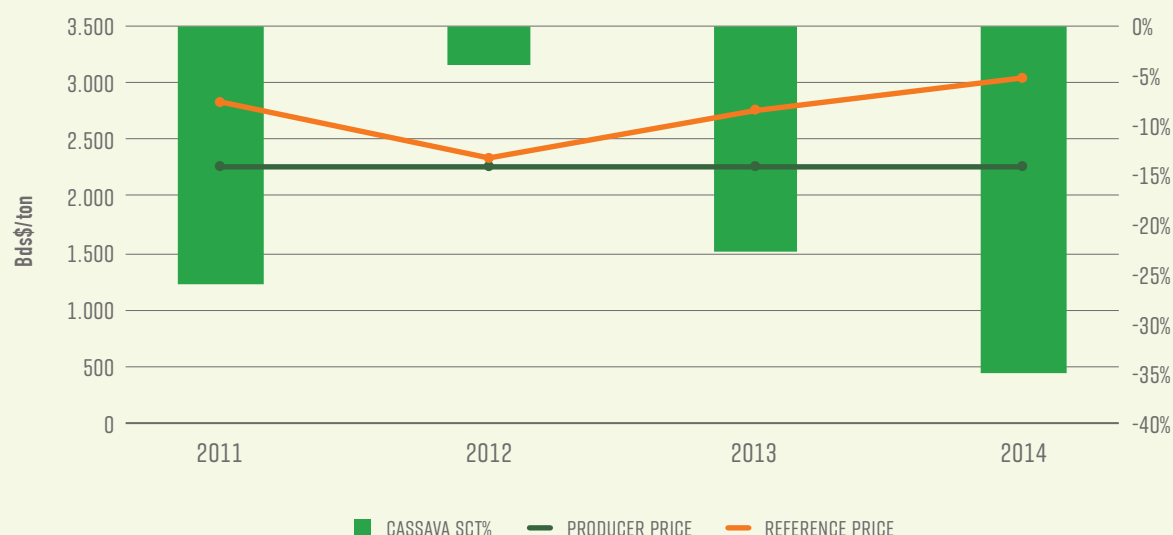


Source: Barbados Economic and Social Report, 2014; UN Comtrade; FAO, 2014b; MAWFF, 2016.

CASSAVA PRODUCERS WERE IMPLICITLY TAXED BY THE POLICY

The cassava farm gate price was lower than the reference price, indicating an implicit taxation of primary producers, which is likely explained by the state agencies' (BADMC, BAMC) participation in the value chain. At the same time, the wholesale price was higher than the reference price, reflecting high middlemen margins, which may potentially harm the international competitiveness of the cassava sub-sector.

Cassava farm gate prices were stable in the observed time period, while reference prices started to increase in 2013, increasing the negative price gap. **Low farm gate prices in combination with the high yields recently demonstrated by the sub-sector create an opportunity if production costs remain modest and sufficient general services support, such as research and development and necessary certification, is provided.**

FIGURE 26: CASSAVA PRODUCER SCT% (RIGHT AXIS, %), PRODUCERS AND REFERENCE PRICES (BD\$\$/T) IN BARBADOS

Source: Author's estimates.

3.3.1.4. LIVESTOCK SUB-SECTOR POLICY ANALYSIS

POLICY INCLUDES SUPPORT TO SMALL RUMINANTS, SUBSIDIES AND BORDER PROTECTION FOR POULTRY AND TARIFFS, AND DEMAND SUPPORT FOR MILK

Support to livestock is largely focused on small ruminants, including a national breeding program, training in insemination techniques, and assistance in feeding through a forage nursery that provides seedlings and food to several small ruminant farmers.

Poultry producers enjoy product-specific input subsidies and preferential credit from the ADF for poultry production facilities upgrades. Tariff protection was in the range of 20-184 percent in 2011-2014.

Milk producers are protected by high tariffs (141 percent), keeping imports from growing; however, competition from imported skim milk powder is still strong.

The quota supply system, offering higher prices for milk supplied in quota, was in place until July 2011. In 2012, the Pinehill Dairy faced an oversupply of fresh milk, partly due to restricted exports to Trinidad and Tobago, and in response to this crisis, milk production decreased by 30 percent in 2013.

Dairy sub-sector development was included in the 2015 budgetary proposal suggesting, among other measures, a subsidy for the sector at a fixed rate of Bds\$1.17 per kg, financed by the tax on the milk (5 to 10 percent).

Barbados milk production, like in other Caribbean countries, is linked to the school milk supply program. According to current requirements, at least 60 percent of the milk needs of the school meals program and all other government institutions must be sourced locally. This program supports demand for locally produced milk, benefitting both producers and consumers.

THE MAIN CHALLENGES FOR LIVESTOCK SECTOR PRODUCERS INCLUDE THE HIGH COST OF FEED AND OTHER INPUTS AS WELL AS A LACK OF STOCK QUALITY

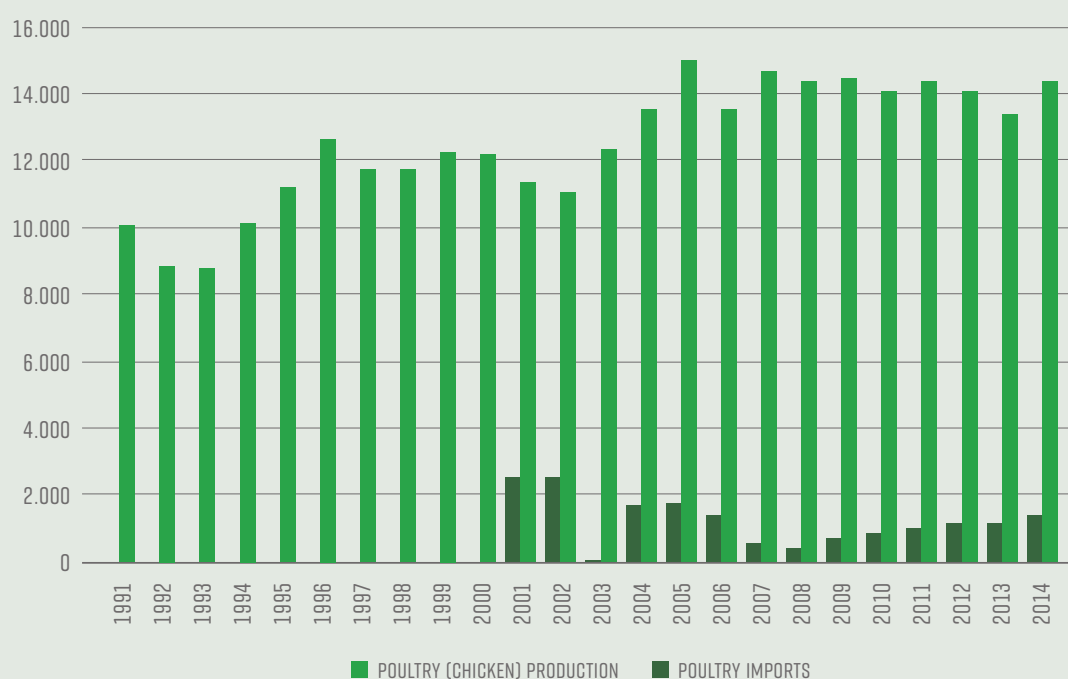
BOX 6: LIVESTOCK SUB-SECTOR CHARACTERISTICS

The Livestock sub-sector is growing steadily

The main challenges for livestock sector producers include the high cost of feed and other inputs as well as a lack of stock quality. The level of production has been stable for most livestock sub-sectors in the past 10 years.

The poultry industry is meeting Barbados' demand for whole chicken and eggs; however, some of the parts for the processing industry are imported (Figure 26).

FIGURE 27: BARBADOS POULTRY PRODUCTION AND IMPORTS, TONS



Source Figure 27: Barbados Economic and Social Report, 2014.

Continued on the next page

BOX 6: LIVESTOCK SUB-SECTOR CHARACTERISTICS

Barbados is nearly self-sufficient in pork, the beef sub-sector is small, and small ruminant production is increasing

The pork sub-sector benefited from a MAFFW stock upgrade program. Local producers fulfill about 75 percent of domestic demand for fresh pork and 35 percent of processors' demand for cuts. The beef sub-sector is small and has so far been unsuccessful in competing with imports. Mutton production has been growing recently (increased threefold since 2001); however, it is mostly produced by small farmers.

Milk sub-sector is among the most successful in the Caribbean

Barbados is one of the leading milk producers in the Caribbean. Domestic milk producers fulfill between 62 percent and 72 percent of local demand (Figure 27). Milk productivity is growing, and it is currently higher than in other Caribbean countries, except Suriname. However, it is only one-third of Argentina's yields. Milk production costs are high. Milk processing is a monopsony, as most farmers supply their production to the Pinehill Dairy. The Barbados Ice Cream Company (BICO) Limited is a smaller milk purchaser.

FIGURE 28: BARBADOS MILK PRODUCTION AND IMPORTS, TONS, AND MILK PRODUCTIVITY BY COUNTRY, TONS/ANIMAL*



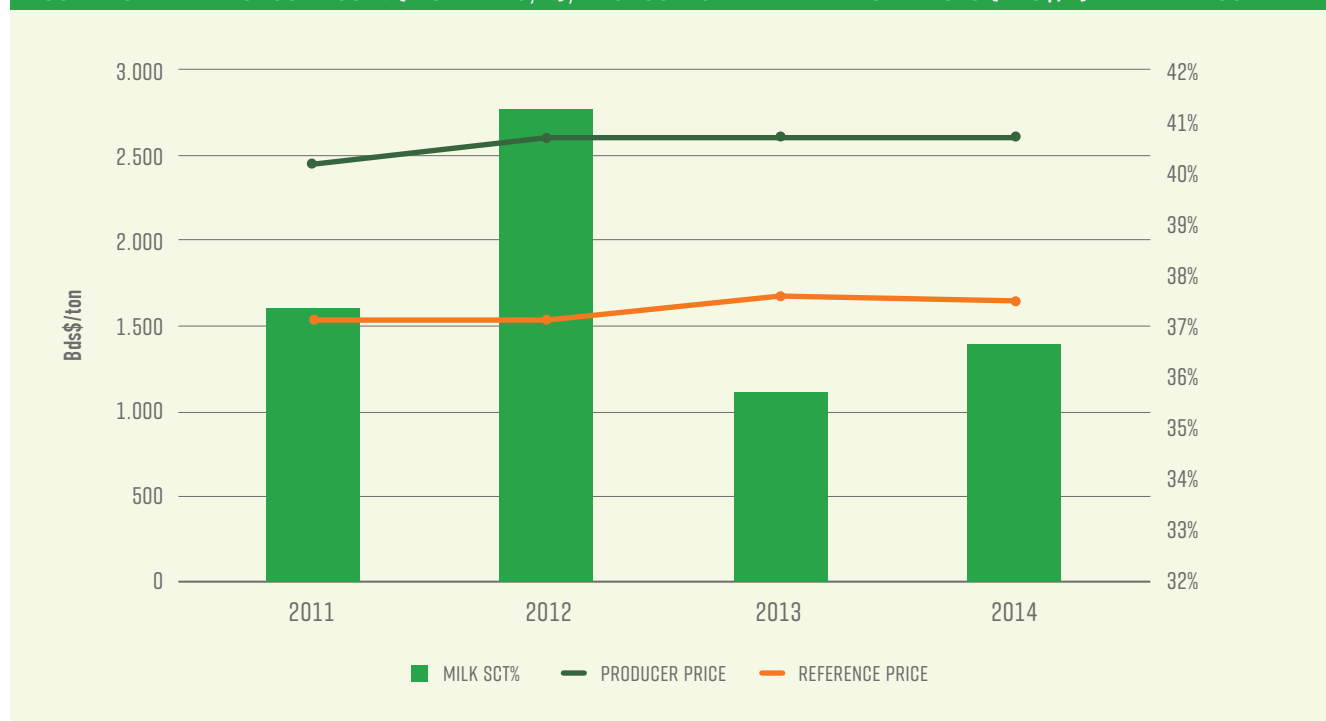
(*) Fresh milk imports before 2005.

Source Figure 28: Barbados Economic and Social Report, 2014; FAOSTAT, 2017.

MILK PRODUCERS ARE PROTECTED BY IMPORT DUTIES

Support to milk producers remains relatively high due to continued import protection measures. The milk sub-sector demonstrated an ability to adapt to market needs and maintain competitive productivity. At the same time, farmers remain vulnerable due to the existence of the monopsony of Pinehill Dairy.

FIGURE 29: MILK PRODUCER SCT% (RIGHT AXIS, %), PRODUCERS AND REFERENCE PRICES (BDS\$/T) IN BARBADOS



Source: Author's estimates.

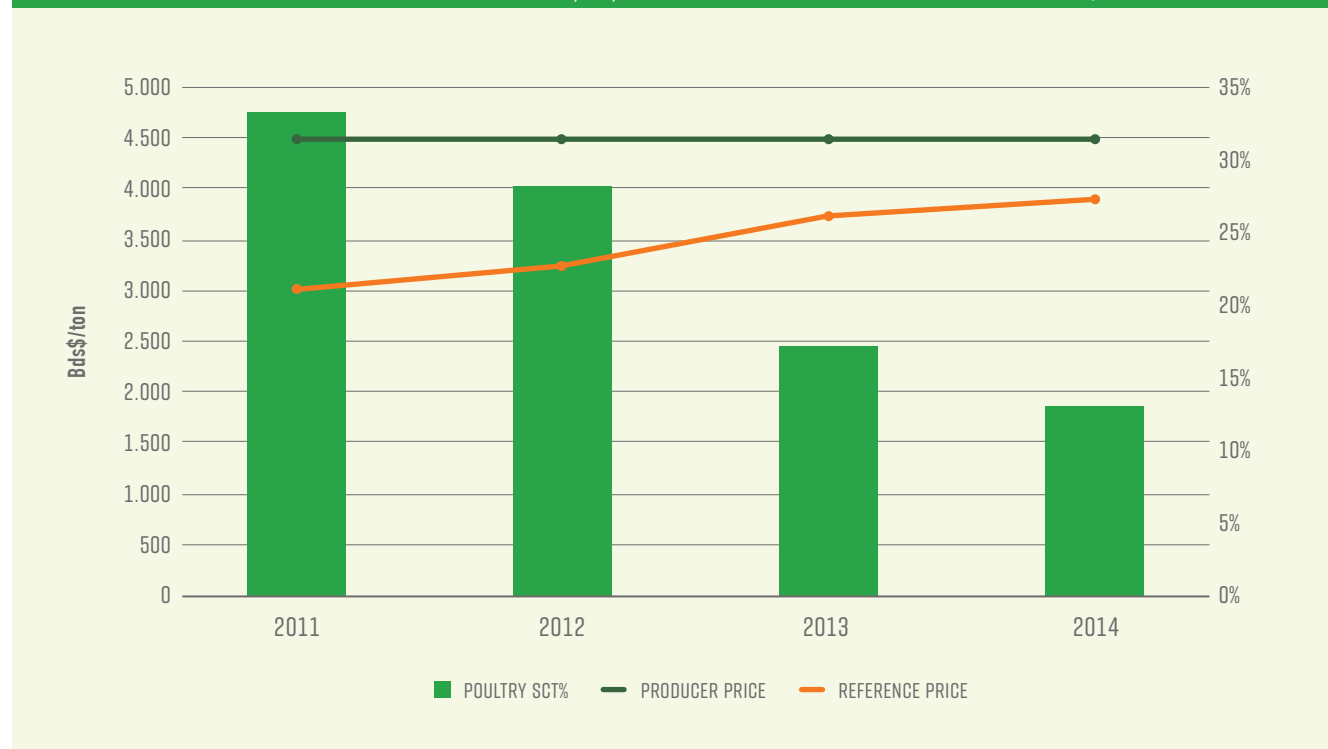
POULTRY RECEIVES HIGH PRICE SUPPORT

While the price support for poultry is high, it is lower than the import tariff for poultry in 2014. The marketing margin (transportation and processing) between the farm gate and wholesale price remains a major uncertainty in the results. Since information regarding the poultry value chain is limited, the poultry MPS estimation may be revised if more value chain information becomes available.

State agencies play a significant role in the poultry sub-sector in Barbados. The outcome of the poultry PSCT calculation does not take into account the effect of BADMC's activity on the distribution of the costs and benefits of the policy along the value chain. Moreover, the lack of available information about the poultry sub-sector, including value chain as well as price data, creates

disadvantages for farmers, as they have to act in the absence of market information and cooperate with a monopsonistic buyer. Therefore, an advantage is created for the market players who do have access to this information, and not necessarily for the most competitive ones.

FIGURE 30: POULTRY PRODUCER SCT% (RIGHT AXIS, %), PRODUCERS AND REFERENCE PRICES (BD\$/T) IN BARBADOS



Source: Author's estimates.

3.3.1.5. OTHER SUB-SECTORS POLICY ANALYSIS

ROOT CROPS RECEIVE HIGH SUPPORT AT THE EXPENSE OF CONSUMERS

Root crops are included in policy documents as value crops with high potential to occupy niche markets and play an important role in import substitution. Interestingly, the effect of price support on cassava farmers (see section 3.3.1) had the opposite sign of the price support for yams and sweet potatoes. While cassava farmers were implicitly taxed, yam and sweet potato farmers received positive transfers as a result of agricultural policy.

Sweet potato producers received public support that amounted to up to 50 percent of their farm receipts. Production of sweet potatoes increased recently, but both the volume and value of

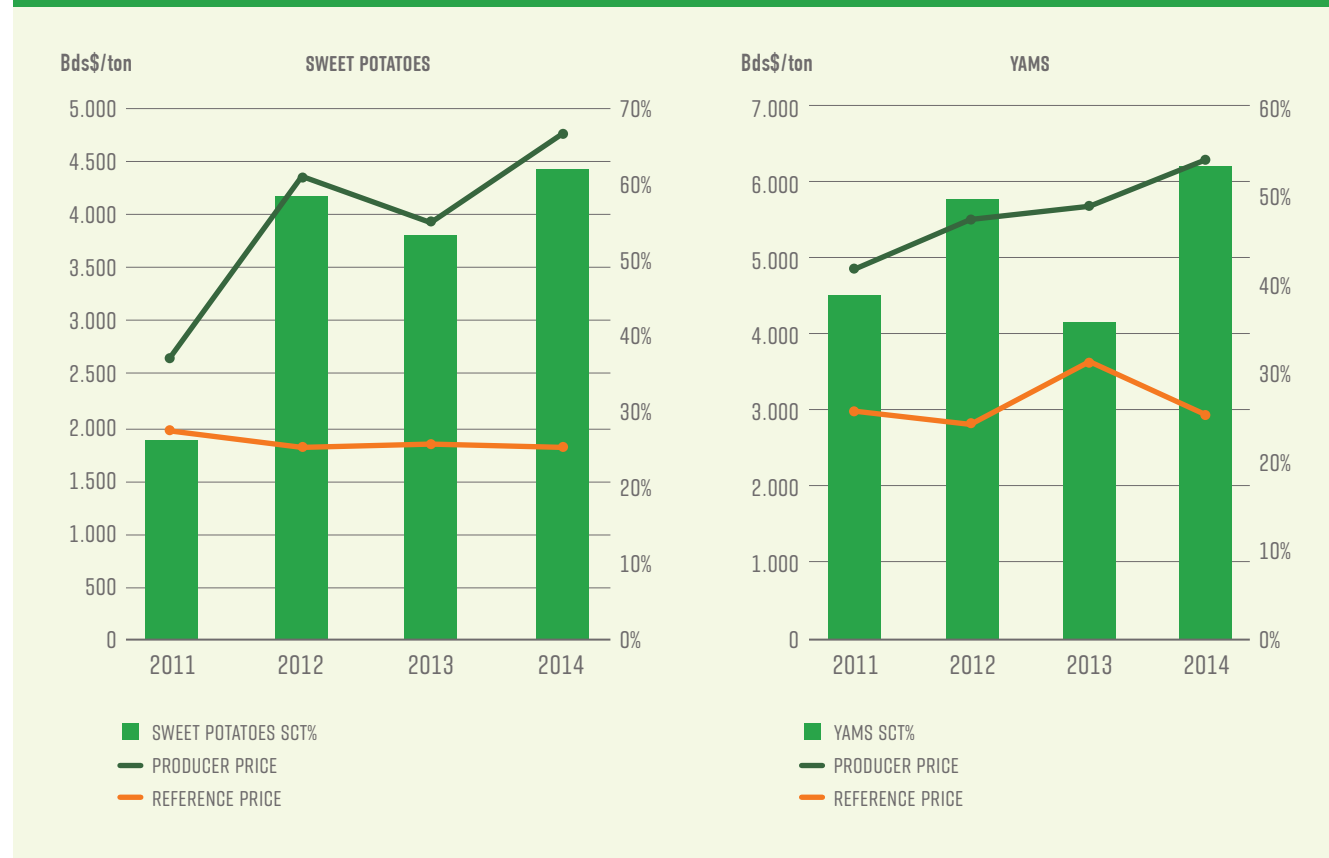
WHILE CASSAVA FARMERS WERE IMPLICITLY TAXED, YAM AND SWEET POTATO FARMERS RECEIVED POSITIVE TRANSFERS AS A RESULT OF AGRICULTURAL POLICY

output have been volatile. Value-added commodities produced from sweet potatoes include sweet potato flour. There is a potential for ethanol and starch production. The production of the value-added commodities may be hampered if the prices of the primary commodity continue to be supported at such a high level at the expense of consumers.

The level of support to yam producers reached 53 percent in 2014 and was also financed by transfers from consumers.

Post-harvest losses remain among the main sources of difficulty in root crop production and marketing. Compensation of investment in post-harvest infrastructure can be an effective mechanism for controlling this issue.

FIGURE 31: SWEET POTATOES AND YAMS SCT% (RIGHT AXIS, %), PRODUCERS AND REFERENCE PRICES (BDS\$/T) IN BARBADOS



Source: Author's estimates.

SUPPORT TO TOMATOES AND STRING BEANS DECREASED

The level of support provided to vegetable farming decreased during the period of study from 56 percent of farm receipts in 2011 to 13 percent in 2014 for tomatoes, and from 46 percent to 14 percent in the same years for string beans. This reflects in part the shift of price support in favor of yams and sweet potatoes; however, other crops still are supported.

FIGURE 32: TOMATOES AND BEANS SCT% (RIGHT AXIS, %), PRODUCERS AND REFERENCE PRICES (BDS\$/T) IN BARBADOS



Source: Author's estimates.

3.3.1.6. EFFECTIVE RATE OF PROTECTION ESTIMATION FOR SELECTED COMMODITIES

The effective rate of protection (ERP) provides additional information regarding the level of support by commodity by incorporating the effects of support to farm inputs. A positive ERP means that the returns on inputs are potentially higher than in the hypothetical absence of the subsidy. If the ERP is negative, that means that the policy has a negative effect —the potential returns on inputs would be higher without the policy. The ERP methodology is limited because it does not take into account possible input substitution, but it is useful as an indication of the effect of policy on input markets and agricultural producers.

There was very limited information available in Barbados for the ERP estimates. The MAFFW does not collect information regarding the costs of inputs and production costs in general, and the response from the private sector was very limited. Due to the limited availability of data for domestic and reference prices of purchased inputs, explicit tariff information was used to estimate the price distortions for inputs.¹⁰ There was no information available regarding budget transfers for input support.

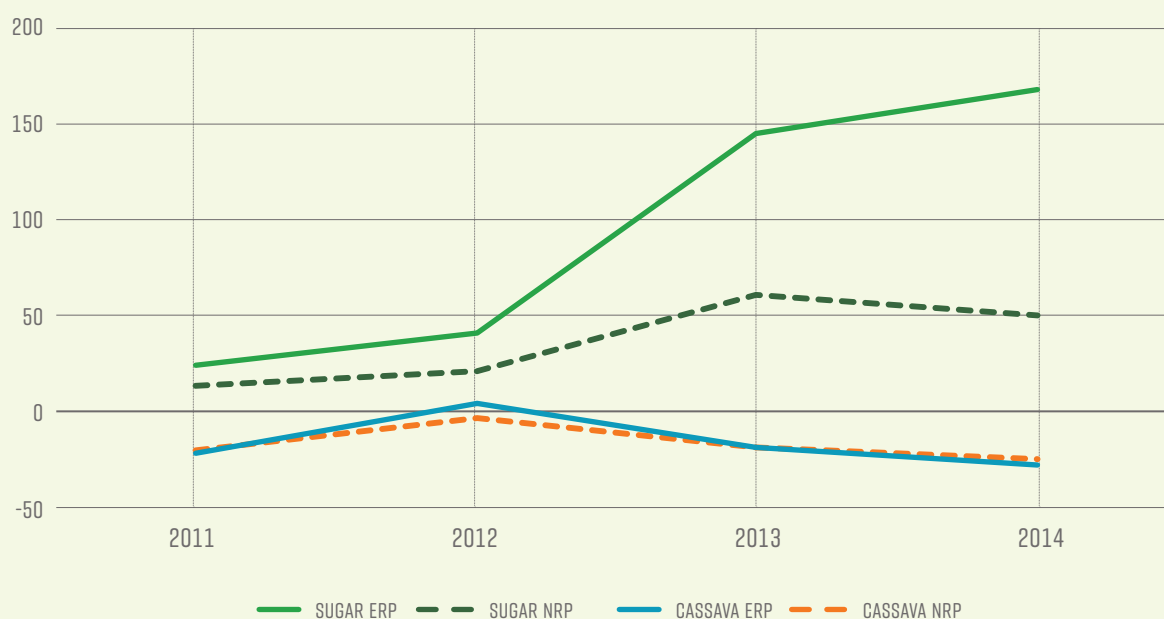
The analysis below considered the VAT exemption (17.5 percent) as a subsidy on inputs, since without it, the costs of production would be higher and the returns on inputs lower. The zero import duty rates on purchased inputs also benefit agricultural producers; however, it was not included in the ERP estimation, as this policy is not sector-specific.

The results of the ERP estimates for sugar and cassava are provided in Figure 33. The nominal rates of protection (NRP) for the same commodities are included for comparison as dashed lines.

The level of support for sugar, measured by the ERP, is positive, higher, and more volatile than the NRP, which does not take input market policy into account. Therefore, in the case of Barbados, the ERP does not reveal any new trends, implicit support, or taxation other than those captured by the NRP and other indicators of support by commodity. This is because there is no border protection in place for the majority of inputs, and the cost compensation support is concentrated on fixed inputs, such as investments in on-farm infrastructure, and not on purchased inputs, and such policy is not included in the ERP. For cassava, the ERP also follows the same trajectory as the NRP, but in 2012, it becomes positive, indicating that the support from VAT exemption on inputs was higher in absolute value than the negative transfer from lower than reference prices on output.

THE LEVEL OF SUPPORT FOR SUGAR, MEASURED BY THE ERP, IS POSITIVE, HIGHER, AND MORE VOLATILE THAN THE NRP. FOR CASSAVA, THE ERP ALSO FOLLOWS THE SAME TRAJECTORY AS THE NRP, BUT IN 2012, IT BECOMES POSITIVE

10. As described, for example, in Valdes (2013).

FIGURE 33: EFFECTIVE RATE OF PROTECTION AND NOMINAL RATE OF PROTECTION, BARBADOS, 2011-2014 (%)

Source: Author's estimates.

3.3.2. BUDGET SUPPORT EVALUATION

Budgetary spending to support agriculture in Barbados is strongly interconnected with support to other sectors. Thus, investment promotion, export development, and infrastructure development programs include agriculture along with other sectors. Development of standards, research, and education are not sector-specific, either. Therefore, in some areas of support, it is not possible to separate transfers to agriculture from other activities. This leads to some underestimation of the budget transfers in Barbados, especially with regard to the general services, and the share of support to general services is therefore underestimated.

On one hand, the close interconnection of agricultural development with other sectors is beneficial both for agriculture and for the whole economy. On the other hand, agriculture has its specific requirements in terms of economic and social policy, and without separating those transfers in the budgetary classification, it is impossible to perform an evaluation of budget support efficiency and consider adjustments as needed.

Off-budget support from the Agricultural Development Fund and the Export Promotion Fund also obstructs the transparency of budget transfers to agriculture in Barbados. The grants and loans from those entities were included in the PSE and GSSE estimates as much as possible, however, the information available was limited.

Budget transfers to individual producers are included in the PSE. Administrative costs, spending on performing regulatory functions, and MAFFW staff salaries are not included in the PSE or GSSE (in line with the methodology requirements.) However, salaries of the inspectors, extension officers, veterinary service staff, etc., are included in the respective expenditure category.

The financial year in Barbados ends on March 31. Equal quarterly transfers were assumed in order to estimate calendar year transfers for the PSE and GSSE.

According to the legal requirement that 60 percent of the school meals program must be supplied from local sources, 60 percent of the expenditures under subcategory *210 Supplies & Materials of the 0294 School Meals Department* program was included in the CSE, assuming that this an estimate of a transfer to consumers of locally produced commodities.

A summary of budget transfers that benefit producers individually, and therefore are included in the PSE indicator, is presented in Table 9.

IN THE PERIOD OF THE STUDY, BUDGET TRANSFERS TO SUGAR PRODUCERS WERE REDUCED SIGNIFICANTLY; THE FINANCING OF INCENTIVES TO PRODUCERS, THE LAND FOR THE LANDLESS PROGRAMME AND SCOTLAND DISTRICT DEVELOPMENT REMAINED STABLE; THE FINANCING OF THE EXTENSION SERVICES WAS REDUCED, AND GRANTS FROM THE ADF WERE VERY VOLATILE

TABLE 9: BUDGET TRANSFERS IN PSE, BARBADOS 2011-2014 (BD\$ THOUSANDS)

DESCRIPTION	2011	2012	2013	2014
GRANTS TO SUGAR PRODUCERS	2576.0	3498.0	9718.1	60.9
(FROM ADF TO BAMC AND BARBADOS CANE INDUSTRY CORPORATION)				
0167 SCOTLAND DISTRICT DEVELOPMENT	7961.5	7903.3	7517.7	6712.2
0178 INCENTIVES & OTHER SUBSIDIES: INCENTIVE REBATES AND GRANTS	843.9	652.5	733.7	752.2
0184 LAND FOR THE LANDLESS	500.0	218.8	361.3	275.0
TRANSFER TO PRODUCERS FROM LOAN INTEREST RATE SUBSIDY	239.0	361.1	308.1	251.4
0178 INCENTIVES & OTHER SUBSIDIES: GRANTS TO FARMERS' ASSOCIATIONS, AGRICULTURAL SOCIETIES, AND CO-OPERATIVES; ASSISTANCE TO NON-SUGAR AGRICULTURAL EXPORTERS	225.9	175.1	191.9	229.3
0188 AGRICULTURAL EXTENSION SERVICES	590.4	449.2	396.0	387.1
0186 SUGARCANE DEVELOPMENT	81.6	29.6	3.0	3.8
MISCELLANEOUS PAYMENTS: GRANTS TO MAFFW AND BADMC (ADF)	0.0	1000.0	3893.8	726.7

Source: Calculated from the Barbados Annual Report and Financial Statement of the Accountant General, for the financial years 2000-2015.

The majority of individual budget transfers went to sugar producers in the form of grants from the ADF to state-owned sugar companies. This form of support was discontinued in 2014, resulting in a sharp decrease in budget transfers. Since 2015, those grants have been provided inside the MAFFW budget.

In the period of the study, budget transfers to sugar producers were reduced significantly; the financing of incentives to producers, the Land for the Landless Programme and Scotland District development remained stable; the financing of the extension services was reduced, and grants from the ADF were very volatile.

3.3.3. SUPPORT TO GENERAL SERVICES

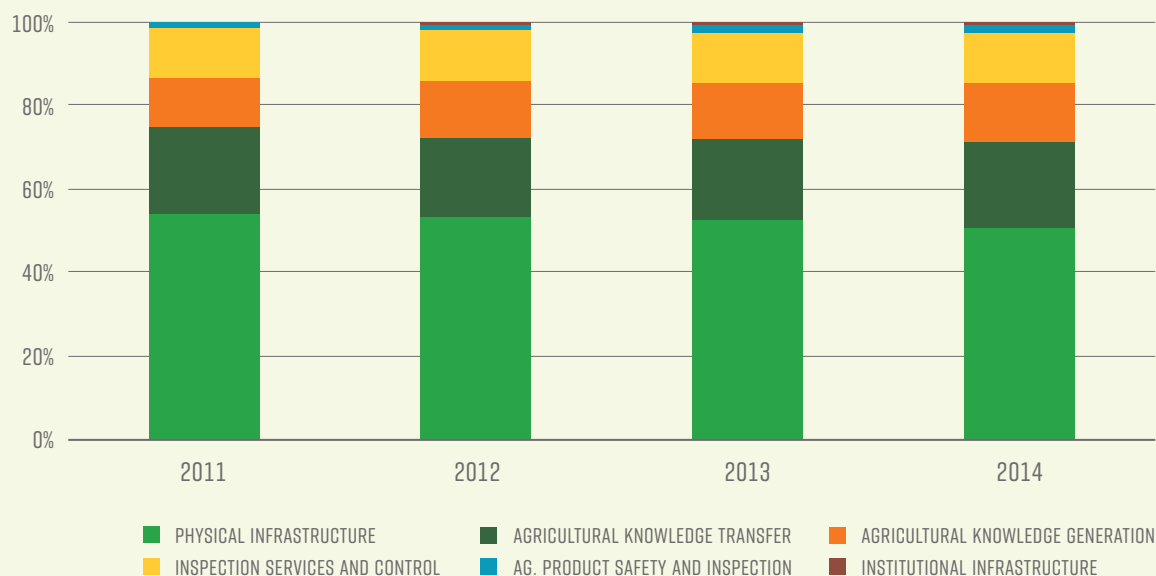
INFRASTRUCTURE IS THE MAIN FOCUS OF GENERAL SERVICES SUPPORT; THE LEVEL OF GSSE IS DECREASING

The General Services Support Estimate (GSSE) measures budget transfers to finance the services provided to agricultural producers collectively (Figure 30). GSSE decreased during the period of study, from US\$20.3 million in 2011 to US\$16.5 million in 2014.

Due to the limitations of the budget classification, some GSSE subsidies were not allocated to the appropriate categories, i.e., irrigation systems construction and maintenance, which is part of the BADMC budget, or marketing and promotion, which is also organized by BADMC but without a separate budget program for those needs.

In accordance with the government's policy priorities, the majority of transfers in the GSSE category are transfers to physical infrastructure development (over 50 percent of support to general services on average in the period of study), however, the amount of investments in infrastructure decreased slightly after 2011. Infrastructure support is followed by agricultural knowledge transfer support (see also Figure 31) and agricultural knowledge generation. Inspection services and food safety transfers amounted on average to 14 percent of the general services support.

IN ACCORDANCE WITH THE GOVERNMENT'S POLICY PRIORITIES, THE MAJORITY OF TRANSFERS IN THE GSSE CATEGORY ARE TRANSFERS TO PHYSICAL INFRASTRUCTURE DEVELOPMENT. HOWEVER, THE AMOUNT OF INVESTMENTS IN INFRASTRUCTURE DECREASED SLIGHTLY AFTER 2011

FIGURE 34: GSSE COMPOSITION IN BARBADOS (BDS\$ MLN)

Source: Author's estimates.

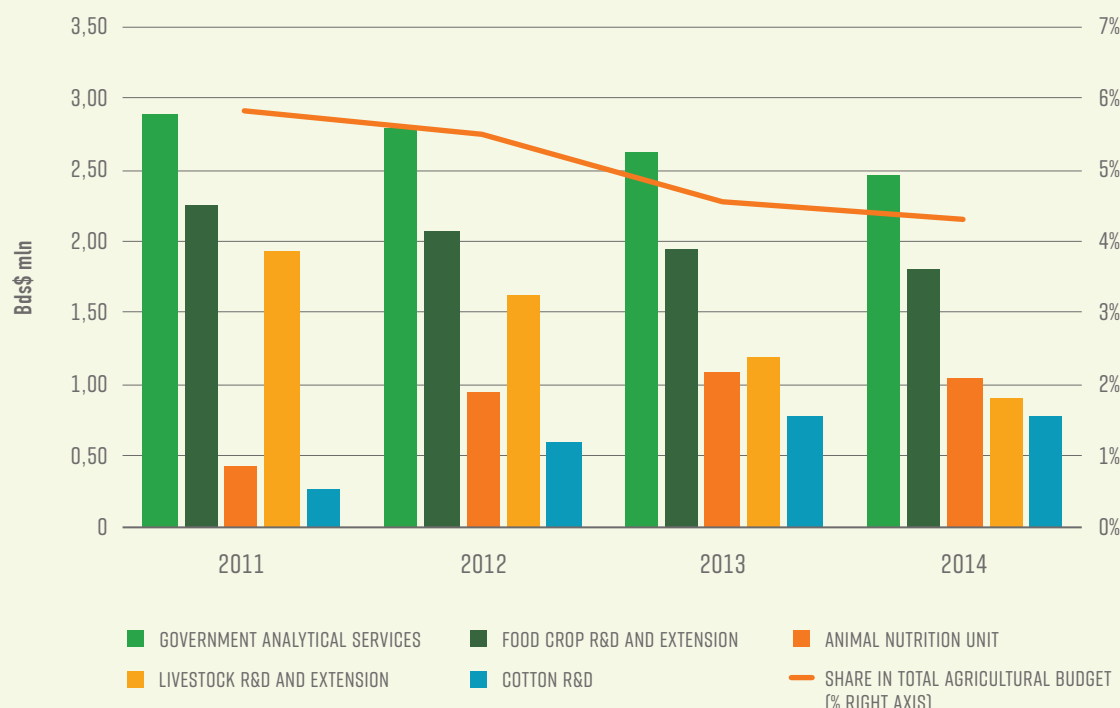
RESEARCH AND DEVELOPMENT SUPPORT DECREASED, AND THE LACK OF R&D REMAINS AN ISSUE FOR FARMERS

Research and development services are mostly provided by the MAFFW, which has separate programs for research, development, and extension for crops and for livestock. The MAFFW has a low capacity for research and development due to a lack of personnel (FAO & Government of Barbados, 2012). However, farmers in Barbados may benefit from the findings of regional agricultural research institutions such as the Caribbean Agricultural Research and Development Institute (CARDI) and the University of the West Indies (UWI). Regional CARDI programs include breeding and hybridizing efforts and disease-fighting in the hot pepper and small ruminants sub-sectors (CARDI, 2017).

Cotton producers benefit from the Cotton Research and Development Fund, created in 2001 and funded through a 1.0 percent cess on cotton producers' income and government grants (FAO & Government of Barbados, 2012).

Transfers to research and development in the cotton sub-sector reached Bds\$772,000, or about 13 percent of total agricultural knowledge development government expenses, in 2014-15 (Figure 35).

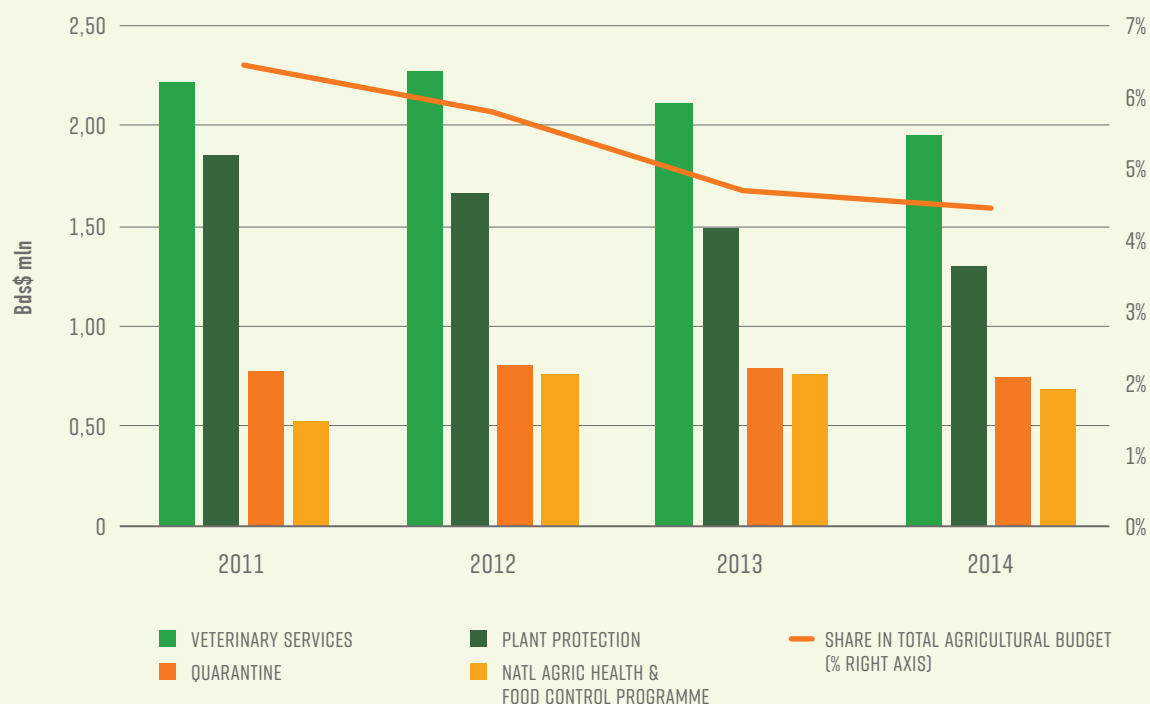
FIGURE 35: RESEARCH AND DEVELOPMENT TRANSFERS IN BARBADOS, BDS\$ MLN, AND SHARE IN AGRICULTURAL BUDGET, % (RIGHT AXIS)



Source: Author's estimates.

INSPECTION SERVICES FINANCING IS DECREASING CONSTANTLY

Transfers to inspections and control in agriculture were significantly reduced, and their share in the total agricultural budget decreased from more than 7 percent in 2011 to 3.7 percent in 2014 (Figure 36). Export expansion requires compliance with international veterinary, phytosanitary, and food safety standards. Moreover, the rules for providing and financing such services should be formalized and clear for users and providers in order to reduce administrative costs and increase effectiveness.

FIGURE 36: MAFFW FOOD SAFETY AND INSPECTIONS EXPENDITURES, BDS\$ MLN, AND SHARE IN AGRICULTURAL BUDGET, % (RIGHT AXIS)

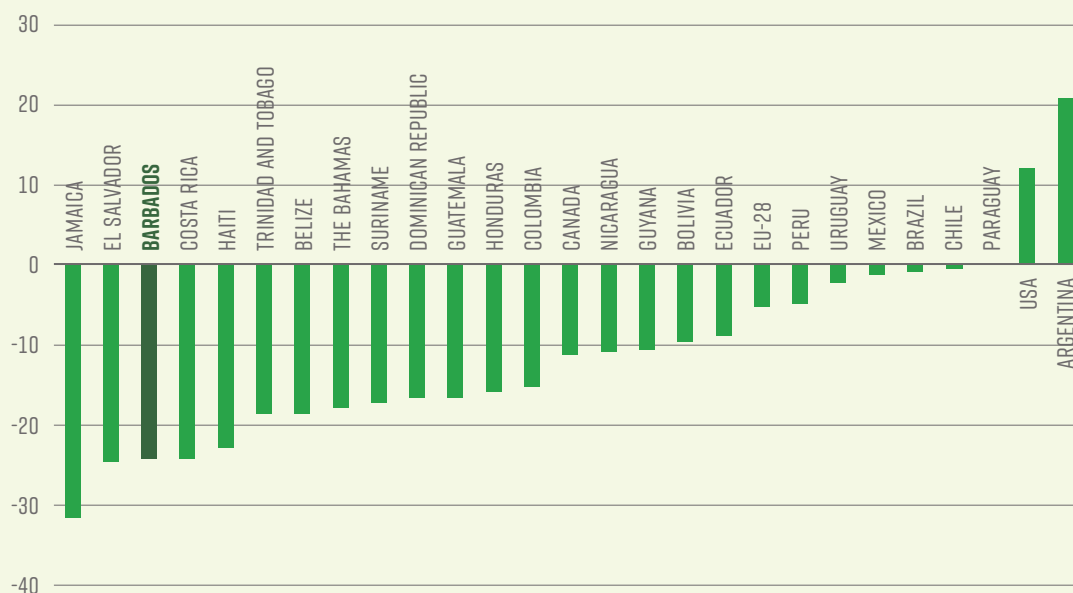
Source: Author's estimates.

3.3.4. CONSUMER SUPPORT ESTIMATE

The negative national Consumer Support Estimate (CSE) in Barbados means that support to agricultural producers is mainly financed by transfers from consumers to producers of agricultural commodities. Budget transfers to consumers are provided in the form of the school meals program, which requires at least 60 percent of the food to be sourced locally. The CSE was negative US\$15.8 million in 2014, a substantial improvement compared to negative US\$23.5 million in 2014.

Consumers pay higher prices for local output as a result of government policy, which is damaging for low-income populations, limits demand, and reduces international competitiveness. The negative national CSE in Barbados (negative 18.6 percent in 2014) was among the highest in the region (Figure 37).

CONSUMERS PAY HIGHER PRICES FOR LOCAL OUTPUT AS A RESULT OF GOVERNMENT POLICY, WHICH IS DAMAGING FOR LOW-INCOME POPULATIONS, LIMITS DEMAND, AND REDUCES INTERNATIONAL COMPETITIVENESS

FIGURE 37: CONSUMER SUPPORT ESTIMATE IN BARBADOS AND OTHER COUNTRIES, AVERAGE VALUE FOR 2012-2014*

(*) Dominican Republic, Trinidad and Tobago, and OECD countries 2013-2015; Uruguay 2011-2013; Costa Rica, Ecuador, and Honduras 2010-2012; El Salvador 2011-2012; Guatemala 2009-2011; Nicaragua 2009-2010; Bolivia 2008-2009. Source: Author's estimates.

3.3.5. TOTAL SUPPORT ESTIMATE

GSSE, PSE, and transfers to consumers from taxpayers together are called the Total Support Estimate (TSE), which represents all transfers in the economy that arise from national agricultural policy. The TSE in Barbados is estimated at US\$41.8 million in 2014. This demonstrates a considerable decrease compared to previous years, as market price support, budget transfers, and support to general services decreased. While producers' support components of the TSE decreased in 2014, transfers to consumers from taxpayers increased slightly, but this increase was not sufficient to arrest the falling trend of the TSE. The TSE amounted to 1.1 percent of the national GDP in Barbados in 2012-2014 (Figure 38).

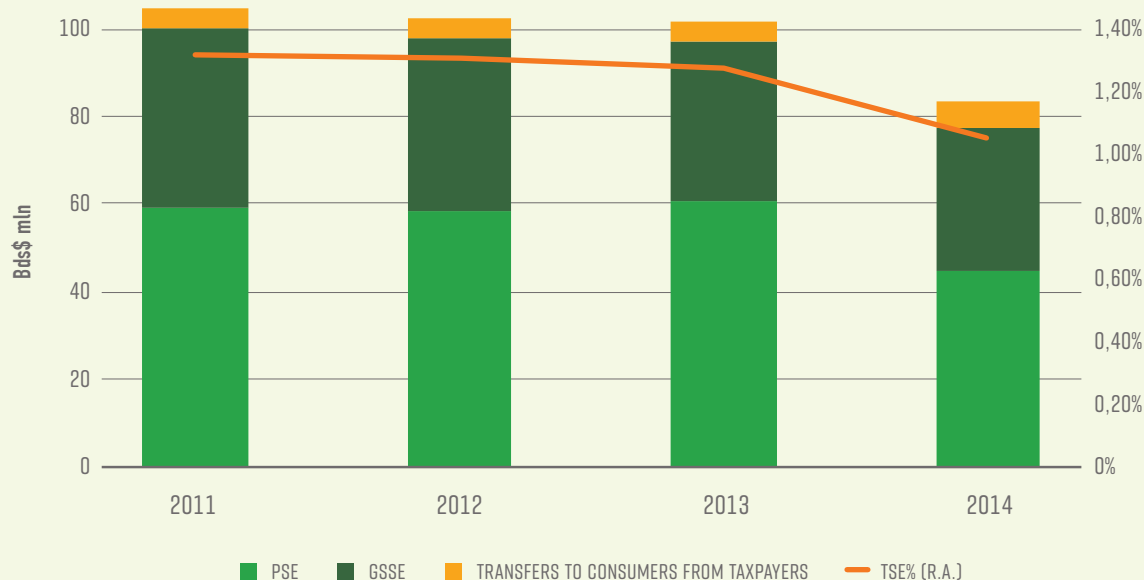
In OECD countries, budget transfers, especially those less distorting to trade, have been playing a more important role over time. Thus, while during the 1980s, MPS was the main component of support for countries in the OECD area, the importance of decoupled payments, or payments not related to current production, input use, or commodity prices, is now growing. The majority of developing countries are following the same trend;

THE TSE IN BARBADOS IS ESTIMATED AT US\$41.8 MILLION IN 2014. THIS DEMONSTRATES A CONSIDERABLE DECREASE COMPARED TO PREVIOUS YEARS, AS MARKET PRICE SUPPORT, BUDGET TRANSFERS, AND SUPPORT TO GENERAL SERVICES DECREASED

however, it was reversed in 2014 in Barbados, when the role of MPS, representing the most distorting payments in the TSE, increased to 78 percent of the PSE.

The share of support to general services (GSSE) in total transfers (TSE), an estimate of the less distortive support, was in Barbados at an average level of 38.02 percent over the past last three years during the study period. It is higher than the region average, as only few countries in Latin America and the Caribbean have a share of GSSE in TSE that reaches more than 40 percent (Chile, Suriname, and Uruguay; see Figure 39). As a recent regional study has demonstrated, GSSE measures are less distorting and contribute most to long-term agricultural competitiveness and growth (Anriquez et al., 2016). The results show that a shift of 10 percentage points of the agricultural budget from private goods to general services, maintaining constant total spending, leads to an approximately 5 percent increase in value added per capita. To achieve the same increase would require an increase of approximately 25 percent or more in total spending while holding the mix constant.

FIGURE 38: TOTAL SUPPORT ESTIMATE COMPOSITION IN BARBADOS, BDS\$ MLN, AND TSE% OF GDP (RIGHT AXIS)



Source: Author's estimates.

FIGURE 39: GSSE AS A PERCENT SHARE OF TSE IN BARBADOS AND OTHER COUNTRIES, AVERAGE FOR 2012-2014*


(*) Dominican Republic, Trinidad and Tobago, and OECD countries 2013-2015; Uruguay 2011-2013; Costa Rica, Ecuador, and Honduras 2010-2012; El Salvador 2011-2012; Guatemala 2009-2011; Nicaragua 2009-2010; Bolivia 2008-2009. Source: Author's estimates.

4. CONCLUSIONS AND RECOMMENDATIONS

While agriculture is not a major contributor to the Barbadian economy, it is crucial for the overall economic and social development of the country and has always been a focus of public policy. The sector is undergoing major structural changes, as the previously dominant sugar sub-sector's role is shrinking.

The Government of Barbados, in cooperation with international organizations, developed a comprehensive system of incentives and concessions to the sector, which is contributing to technological advancement and productivity growth in targeted sub-sectors, i.e., cassava. The government also provides incentives for improving the environmental performance of agriculture. However, as in many other countries in the Caribbean region and the world, this support is provided at the expense of consumers and taxpayers.

Nonetheless, the lack of performance monitoring is a threat to policy efficiency. Support programs, financing mechanisms, and disbursements are carried forward from year to year, and while new programs are added and others are discontinued, this is mostly explained by budget restrictions rather than by the results of public expenditure reviews or impact evaluations.

A complicated and non-transparent system of financing agricultural support creates difficulties in estimating the total value of transfers to agriculture and makes it hard to assess the efficiency of funds' distribution. There is no long- or even medium-term planning for capital injections in the parastatals, and the financing is very volatile.

The results of the **PSE estimates** indicate the following:

- **The level of support to agriculture measured by the PSE is among the highest in the region.** The Government of Barbados considers agriculture to be important for national social and economic development. However, since production costs in most sub-sectors are high, maintaining agricultural production requires a high level of support to inputs and output.

A COMPLICATED AND NON-TRANSPARENT SYSTEM OF FINANCING AGRICULTURAL SUPPORT CREATES DIFFICULTIES IN ESTIMATING THE TOTAL VALUE OF TRANSFERS TO AGRICULTURE AND MAKES IT HARD TO ASSESS THE EFFICIENCY OF FUNDS' DISTRIBUTION

- **The high level of support demonstrated by the PSE indicates poor integration in international markets.** It is explained by higher than regional average border protection, high border transaction costs (the highest costs of import procedures in the region), trade restrictions, and market distortions created by the active participation of BADMC in trade.
- **All components of the support estimates decreased over time.** The share of price support in total support increased in 2014 at the expense of less distorting measures, such as general services.
- **The poultry and milk sub-sectors receive the largest absolute value of support,** while yams and sweet potatoes receive the highest percent share of farm receipts from policy-related measures. High price support reduces incentives to improve competitiveness and harms consumers.
- **At the same time, producers of commodities with high export potential, cotton and cassava, received prices that were lower than the international average prices.**
- **Support to the sugar sub-sector, provided mostly by loss-covering grants from the budget, is not sustainable in the long run.** High price and budget support, providing incentives for production expansion, can further reduce incomes. Streamlining and increasing the transparency of support to the sugar sub-sector is recommended. Government attempts to restructure the industry should incorporate measures for support to non-agricultural employment for former sugar farmers.
- **The role of support to general services is high, but all categories of GSSE decreased during the period of study.**
- **The government has an understanding of the importance of infrastructure development, technological development, and innovation for sustainable growth in agriculture.** Support in this regard is structured in a way that encourages private sector participation, and it contributed to the growth of value-added crop production and exports. Liberalized input markets help control producers' prices.
- **Veterinary and phytosanitary inspections do not get necessary support from the government and the transfers are decreasing.** Financing for those services decreased in the period of study, with no evidence of improved effectiveness. Food safety is also an important issue due to the high requirements of the hospitality industry and international markets.

- **Research and development support remains among the priorities of public policy** and receives large amounts of funding, albeit to an insufficient level. The lack of research and development support remains as a major challenge. The information system is limited in its scope due to budget constraints, and its financing further decreased during the period of study.
- **Support to producers is provided at the expense of consumers.** While a considerable share of consumers are tourists, high price support still creates a burden for domestic consumers who require protection to compensate for its adverse effects.

The results of the policy analysis and estimates suggest the **FOLLOWING RECOMMENDATIONS:**

- Reconsider the rigid classification structure of budget expenditures, which is one of the reasons for the lack of performance evaluation in agricultural policy. Recommended changes to the budgetary classification system include: 1) program-base budgeting; 2) separate accounting for agriculture-related costs in general programs, such as investment promotion, export promotion, infrastructure development, research, and education.
- Continue the ongoing process of eliminating off-budget spending, grants, and subsidies through the Agricultural Development Fund and other revolving funds, which creates obstacles to analyzing the efficiency of public and private transfers to agriculture.
- More detailed reporting of BADMC's and other parastatals' budgets, transfers, and activities, as well as regular performance evaluations, is recommended.
- High levels of protection reduce imports. However, there are no incentives for producers to reduce costs and increase competitiveness; therefore, producers are vulnerable in the case that the protection level is reduced in the future. The poultry and vegetables sub-sectors would face difficulty competing on international markets without public support, and the sugar sub-sector wholly depends on subsidies and grants for its survival. Decreasing price support to those sub-sectors is recommended.
- The reallocation of cost compensation and per-hectare payments, highly distorting and not very efficient types of support, towards support to general services would be beneficial for agricultural competitiveness and build a foundation for the sustainable growth of the sector.

**THE REALLOCATION OF
HIGHLY DISTORTING AND
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ANNEX: PSE METHODOLOGY DEFINITIONS

PSE INDICATORS

Producer Support Estimate (PSE)

The annual monetary value of gross transfers from consumers and taxpayers to agricultural producers, measured at the farm gate level, arising from policy measures that support agriculture, regardless of their nature, objectives, or impacts on farm production or income.

Percentage PSE (PSE%)

PSE as a share of gross farm receipts.

General Services Support Estimate (GSSE)

The annual monetary value of gross transfers to general services provided to agricultural producers collectively (such as research, development, training, inspection, marketing, and promotion), arising from policy measures that create enabling conditions for the primary agricultural sector through the development of private or public services, institutions, and infrastructure, regardless of their objectives and impacts on farm production and income or consumption of farm products. The GSSE does not include any transfers to individual producers.

Consumer Support Estimate (CSE)

The annual monetary value of gross transfers from (to) consumers of agricultural commodities, measured at the farm gate level, arising from policy measures that support agriculture, regardless of their nature, objectives, or impacts on the consumption of farm products.

Percentage CSE (CSE%)

CSE as a share of consumption expenditures (measured at the farm gate) less taxpayer transfers to consumers.

Total Support Estimate (TSE)

The annual monetary value of all gross transfers from taxpayers and consumers arising from policy measures that support agriculture, net of associated budgetary receipts, regardless of their objectives and impacts on farm production and income or the consumption of farm products.

Percentage TSE (TSE%)

TSE as a share of GDP.

Single Commodity Transfers (SCT)

The annual monetary value of gross transfers from consumers and taxpayers to agricultural producers, measured at the farm gate level, arising from policies linked to the production of a single commodity such that the producer must produce the designated commodity in order to receive the transfer.

Percentage Single Commodity Transfers (SCT%)

The commodity SCT as a share of gross farm receipts for the specific commodity (OECD, 2010).

MPS CALCULATION

The reference price is the price that domestic producers could have received for their products in the absence of any domestic or trade policy affecting this commodity's market. Border prices of imports or exports are often used as reference prices. Another option is to use specific border prices in close neighbor countries or in countries playing major roles in the international trade of the commodity, or to use stock exchange prices.

The reference price and producer's price for MPS calculations must be measured at the same level of processing and in the same market. Therefore, reference (border prices) must be adjusted for marketing margins in order to become comparable with farm gate producer prices. The adjustment is made for the costs of processing, handling, and transportation to the market where the domestically-produced commodity meets the commodity from the foreign market.

Price adjustment for imported commodity:**CIF price**

+ costs of transporting the product from the border to the internal wholesale market **(T1)**

– cost of transporting the product from the wholesale market to the farm gate **(T2)**

– costs of processing farm product into imported product **(S)**

= **price of imports in farm gate equivalent**

Price adjustment for exported product:

FOB price

- handling and transportation costs between border and domestic wholesale market **(T1)**
 - handling and transportation costs between wholesale market and the farm gate **(T2)**
 - costs of processing farm product into exported product **(S)**
- = price of exports adjusted to the farm gate level**

Nominal Protection Rate is the simplest indicator of support, which was not among the outputs of this report but was calculated as an intermediate step for the ERP estimation of agricultural commodities and inputs.

The following formula was used for the **Effective Rate of Protection (ERP) calculation**:

$$ERP = \frac{VA_d - VA_r}{VA_r} * 100$$

Where:

VA_d = value added in domestic prices

VA_r = value added in reference prices.

Value added is estimated as the difference between the value of the output and the costs of tradable inputs. If both VA_r and VA_d are positive, the interpretation of the ERP is similar to that of the NRP. If VA_r or VA_d is negative, the ERP may also become negative (depending on the relative values of the VA_d and VA_r).

A negative value added in domestic prices means that the agricultural production brings negative returns on inputs. If the value added in reference prices is negative, the purchased inputs without policy intervention cost more than the value of the output of the domestically-produced agricultural commodity in a non-policy situation. Only if the VA_r is positive will the negative ERP indicate implicit taxation of the agri-food sector resulting from the policy along the value chain. It should be noted that if both the VA_r and VA_d are negative, the ERP may still be positive.

This methodology assumes perfect substitution of inputs and unchanged production function between the observed and reference situation.

Budget Transfers (BTs) for calculating coefficients of support estimation can exist in the form of transfers to producers, financing of general services, or transfers to consumers. Thus, all budget transfers need to be distinguished between PSE, CSE, and GSSE.

PSE categories indicate how the policy program is implemented by showing the basis on which the transfer or subsidy is calculated, such as value of production, number of animals, input use, services provided, income, or non-commodity criteria (Table 8).

TABLE 10: CLASSIFICATION OF BUDGET TRANSFERS IN PSE (OECD METHODOLOGY)

PSE CATEGORIES

A. SUPPORT BASED ON COMMODITY OUTPUT
<i>A.1. MARKET PRICE SUPPORT</i>
<i>A.2. PAYMENTS BASED ON OUTPUT</i>
B. PAYMENTS BASED ON INPUT USE
<i>B.1. VARIABLE INPUT USE</i>
<i>B.2. FIXED CAPITAL FORMATION</i>
<i>B.3. ON-FARM SERVICES</i>
C. PAYMENTS BASED ON CURRENT A (AREA) / AN (ANIMAL NUMBER) / R (RECEIPTS) / I (INCOME), PRODUCTION REQUIRED
<i>C.1. BASED ON CURRENT RECEIPTS/INCOME</i>
<i>C.2. BASED ON CURRENT AREA/ANIMAL NUMBER</i>
D. PAYMENTS BASED ON NON-CURRENT (HISTORICAL OR FIXED) A (AREA) / AN (ANIMAL NUMBER) / R (RECEIPTS) / I (INCOME), PRODUCTION REQUIRED
E. PAYMENTS BASED ON NON-CURRENT A (AREA) / AN (ANIMAL NUMBER) / R (RECEIPTS) / I (INCOME), PRODUCTION NOT REQUIRED
<i>E.1. VARIABLE RATES (VARY WITH RESPECT TO LEVELS OF CURRENT OUTPUT OR INPUT PRICES, OR PRODUCTION/YIELDS AND/OR AREA)</i>
<i>E.2. FIXED RATES</i>
F. PAYMENTS BASED ON NON-COMMODITY CRITERIA
<i>F.1. LONG-TERM RESOURCE RETIREMENT</i>
<i>F.2. SPECIFIC NON-COMMODITY OUTPUT</i>
<i>F.3. OTHER NON-COMMODITY CRITERIA</i>
G. MISCELLANEOUS PAYMENTS

Source: OECD, 2010.

Budget transfers on financing general services have been separated from the PSE and have instead been calculated as a separate indicator: the **General Services Support Estimate (GSSE)** since 1998 (Table 9). In 2014, the OECD changed the methodology of GSSE estimation.

TABLE 11: CLASSIFICATION OF BUDGET TRANSFERS IN GSSE (OECD METHODOLOGY)

GENERAL SERVICES SUPPORT ESTIMATE (GSSE)

H. AGRICULTURAL KNOWLEDGE AND INNOVATION SYSTEM
<i>H.1. AGRICULTURAL KNOWLEDGE GENERATION</i>
<i>H.2. AGRICULTURAL KNOWLEDGE TRANSFER</i>
I. INSPECTION AND CONTROL
<i>I.1. AGRICULTURAL PRODUCT SAFETY AND INSPECTION</i>
<i>I.2. PEST AND DISEASE INSPECTION AND CONTROL</i>
<i>I.3. INPUT CONTROL</i>
J. DEVELOPMENT AND MAINTENANCE OF INFRASTRUCTURE
<i>J.1. HYDROLOGICAL INFRASTRUCTURE</i>
<i>J.2. STORAGE, MARKETING, AND OTHER PHYSICAL INFRASTRUCTURE</i>
<i>J.3. INSTITUTIONAL INFRASTRUCTURE</i>
<i>J.4. FARM RESTRUCTURING</i>
K. MARKETING AND PROMOTION
<i>K.1. COLLECTIVE SCHEMES FOR PROCESSING AND MARKETING</i>
<i>K.2. PROMOTION OF AGRICULTURAL PRODUCTS</i>
L. COST OF PUBLIC STOCKHOLDING
M. MISCELLANEOUS

Source: OECD, 2015b.



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