Food and Agriculture Organization of the United Nations

A review of school feeding programmes in the Caribbean Community

A driver for food and nutrition security

THE UNIVERSITY OF THE WEST INDIES

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Published by
Food and Agriculture Organization of the United Nations
and
The University of the West Indies

Required citation:

FAO and The University of the West Indies. 2021. *A review of school feeding programmes in the Caribbean Community*. Saint Augustine. https://doi.org/10.4060/cb4650en

ISBN 978-92-5-134397-5 [FAO]

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Cover design: Kavita Butkoon

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Abbreviations and acronyms

ABC	Brazilian Cooperation Agency
ACT	Australian Capital Territory
AMEXCID	Mexican International Development Cooperation Agency
ASCC	After-School Child Care
B&J	biscuit and juice
BDU	Book Distribution Unit
BMI	Body Mass Index
BND	Bureau of Nutrition and Development
CARE	Cooperation for American Relief Everywhere
CARICOM	Caribbean Community
CB	Caterer based
CBSFP	Community based school feeding programme
CCT	Conditional cash transfer
CDB	Caribbean Development Bank
CEO	Chief Education Officer
CIA	Central Intelligence Agency
CIDA	Canadian International Developmental Agency
CLP	Cooked lunch programme
CRC	Convention on the Rights of the Child
CSEC	Caribbean Secondary Education Certificate
CSF	Centralized School feeding
CWA	Caribbean Week of Agriculture
CXC	Caribbean Examination Council
DALYs	Disability Adjusted Life Years
DOE	Division of Education
DSK	Decentralized School Kitchens
ECC	Early Childhood Commission
ECCE	early childhood care and education
ECI	Early Childhood Institutions
EEC	European Economic Community
EPT	Education Pour Tous (Education for All)
ESD	Education Services Division
FAO	Food and Agriculture Organization of the United Nations
FAOSTAT	Food and Agriculture Organization Corporate Statistical Database
FFA	Faculty of Food and Agriculture
GATE	Garden-based Agriculture for Toledo's Environment
GDP	Gross Domestic Product
GOJ	Government of Jamaica
HACCP	Hazard analysis critical control points
HFLE	Health and Family Life Education
HGSF	Home Grown School Feeding
HYPE	Healthy youth for positive energy
ICESCR	International Covenant on Economic, Social and Cultural Rights
IDB	Inter-American Development Bank
IFAD	International Fund for Agricultural Development
IICA	Inter-American Institute for Cooperation on Agriculture
IMF	International Monetary Fund
LESC	Lloyd Erskine Sandiford Centre
M&E	Monitoring and evaluation
MALF	Ministry of Agriculture Land and Fisheries
MAST	Ministry of Social Affairs and Labor
MECD	Ministry of Education and Community Development
MENFP	Ministére de L'education Nationale de La Formation Professionnelle (Ministry of National Education and Vocational Training
MLSS	Ministry of Labor and Social Services
MMIS	Management and monitoring information system
MOA	Ministry of Agriculture
MOE	Ministry of Education
MoEYI	Ministry of Education Youth and Information (Jamaica)
MOH	Ministry of Health
MOU	Memorandum of understanding
MPC	Meal Production Centre
NAMDEVCO	National Agricultural Marketing and Development Corporation

NGO	Non-Governmental Organization
NPL	Nutrition Products Limited
NPTA	National Parent Teachers Association
NSDSL	National Schools Dietary Services Ltd.
NSFC	National school feeding committee
NSLP	National school lunch programme
NSMP	National school meals programme
OECS	Organization of Eastern Caribbean States
PA	Physical activity
PAA	Food Purchase Programme
PAD	Public Assistance Division
PAHO	Pan American Health Organization
PATH	Programme of Advancement Through Health and Education
PB&CB	Peanut butter and cassava bread snack programme
PCD	Partnership for Child Development
PIOJ	Planning Institute of Jamaica
PNCS	Programme National de Cantine Scolaire
PROMODEV	Promotion for Development
PSNAS	National school feeding policy and strategy
PTA	Parent teacher association
QAOs	Quality assurance officers
RADA	Regional Agricultural Development Authority
RDA	Recommended Daily Allowance
REAP	Relevant Education on Agriculture and Production Programme
REDO	Regional education division officers
RFNSP	Regional food and nutrition security policy
ROPANIP	Reseau des Producteurs Agricoles de Nippes
SEA	Secondary Entrance Assessment
SFC	School Feeding Programme Coordinator
SFMC	School feeding management committee
SFP	School feeding programme
SFS	School feeding system
SFU	School Feeding Unit
SHAPES	School Health and Physical Education Services
SIDS	Small Island Developing States
SMA	School meal assistant
SMD	School Meals Department
SMP	School meals programme
SNP	School Nutrition Programme
SNU	School Nutrition Unit
SSBs	Sugar sweetened beverages
SSFP	Sustainable School Feeding Programme
SSMC	School snack management committee
SVP	School vendor programme
SWC	School welfare coordinator
SWD	School Welfare Division
SWU	School Welfare Unit
THA	Tobago House of Assembly
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
UWI	The University of the West Indies
WFP	World Food Programme
WHO	World Health Organization

Currency codes

ISO 4217 Alphabetic Currency Codes	Currency name	Country
XCD	East Caribbean dollar	Antigua and Barbuda
BSD	Bahamian dollar	Bahamas
BBD	Barbados dollar	Barbados
BZD	Belize dollar	Belize
XCD	East Caribbean dollar	Dominica
XCD	East Caribbean dollar	Grenada
GYD	Guyana dollar	Guyana
HTG	Gourde	Haiti
USD	US Dollar	Haiti
JMD	Jamaican dollar	Jamaica
XCD	East Caribbean dollar	Saint Kitts and Nevis
XCD	East Caribbean dollar	Saint Lucia
XCD	East Caribbean dollar	Saint Vincent and the Grenadines
SRD	Surinam dollar	Suriname
TTD	Trinidad and Tobago dollar	Trinidad and Tobago
USD	US dollar	United States of America

Source: (ISO, 2018)

Acknowledgements

This book on the state of school feeding programmes (SFPs) in 14 Caribbean Community (CARICOM) member states is based on research carried out by the Department of Agricultural Economics and Extension (DAEE) of The University of the West Indies (UWI) in collaboration with the Food and Agriculture Organization of the United Nations (FAO) and governments and agencies of the member states. The main sources of information for this publication were from field trips and interviews held on the missions to the member states, technical working papers and official documents (mainly on-line) and analyses performed on data collected in the study. The design of this research was largely based on the global vision and conceptual framework for school feeding, developed mainly by FAO, World Food Programme (WFP) and the World Bank.

This book would not have been possible, without the invaluable support provided by the FAO sub-regional office in Bridgetown, Barbados and the Campus Principal, the Dean of the Faculty of Food and Agriculture and the Head, DAEE of the Saint Augustine Campus of UWI.

The responsible officers for the project were Dr Terri Raney on behalf of FAO and Dr Hazel Patterson-Andrews of DAEE on behalf of UWI. Invaluable direction and assistance were provided to the project in its entire duration by Mr Fransen Jean of the sub-regional office of FAO in Barbados.

The Caribbean Agro-Economic Society based in DAEE provided the services of revision and final preparation of the publication.

The General Editor of this book was Professor Carlisle Pemberton.

We would like to thank the following authors and in-country collaborators for the following chapters of this book:

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Barbados	Dianne Buckmire	Asha Pemberton-Gaskin, Dawn Brown
Belize	Carlisle Pemberton	Phillip Tate, Carol Babb, Yvonne Codd, Emilio Montero
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Jamaica	Hazel Patterson-Andrews, Isabella Granderson	Sophia Gray, Dillette Hope-Webb, Traceloy Solomon, Gillian Smith
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FAO in collaboration with the Faculty of Food and Agriculture of UWI sponsored a Multi-Stakeholder Seminar in the Caribbean Week of Agriculture in Bridgetown, Barbados, from 8 to 9 October 2018. This Seminar served as the validation workshop for the results of the research.

On the initiative of the Organization of Eastern Caribbean States (OECS) Health Unit, two on-line validation sessions were held for the member states of the OECS on the 12 and 15 November 2018.

On the initiative of the OECS Health Unit, a further validation workshop was held in Castries, Saint Lucia supported by UNICEF on 19 November 2018, attended by Chief Education Officers, Chief Medical Officers and Directors of Social Development from member states of the OECS. We acknowledge the support of the OECS Health Unit and its head, Dr Carlene Radix.

We would like to thank the following experts who reviewed the publication: Mr Fransen Jean, Food Security Officer, FAO Sub-regional Office for the Caribbean, Barbados; Dr Andrea Polo Galante, Senior Nutrition Consultant, FAO, Rome; Dr Israel Rios, Senior Nutritionist from the FAO regional office for Latin America and the Caribbean, based in Panama; Dr Ruth Charrondiere, Senior Nutritionist from the FAO regional office for Latin America and the Caribbean, based in Santiago; Mr. Sandiford Edwards, CARICOM Secretariat; Dr Sharon Hutchinson, Head, DAEE; Professor Mattias Boman, Professor, DAEE; Dr Sa'eed Bawa, Senior Lecturer, DAEE. Their valuable comments helped to ensure the quality of this publication.

Finally, we would like to thank our publishing/communications team. Versions of this publication were reviewed and proof-read by Savita Maharajh, Antoinette Brown, Kavita Butkoon and Ronald Noel. The graphics were provided by Kavita Butkoon and Afiya De Sormeaux. The bibliography was produced by Kishalla Floyd. Martha Jiminez-Spence provided the layout and formatting of the document in Adobe Indesign. Kavita Butkoon provided support throughout the publication process with respect to communications.

Executive summary

1. Models of school feeding programmes in CARICOM member states

This book presents the results of a study on the status of school feeding programmes (SFPs) in 14 CARICOM member states initiated in 2017. The main finding of this study was the identification of three models of SFPs in CARICOM member states based on the classification of the main groups of home grown school feeding (HGSF) operating models (FAO and WFP, 2018). Table 1 provides an overview of the key characteristics of each of these three models.

The main feature of the decentralized school kitchen (DSK) Model is that the actual meal preparation is carried out in kitchens on the school premises. Then the meals are consumed in the same school or in neighboring schools. The in-school preparation allows the incorporation into the meals of substantial inputs from parents and the local communities. These inputs generally include labor (as cooks and their assistants) and a limited range of food items (especially vegetables, seasoning herbs and root crops) from small scale farmers.

Table 1. Summary of the key details and characteristics of models of CARICOM school feeding programmes

SFP Model	Decentralized school kitchen (DSK) model	Caterer based (CB) model	Centralized school feeding (CSF) model
Countries	Dominica, Grenada, Guyana (hinterland), Haiti, Jamaica, Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname (proposed pilot programme), Belize (Toledo district).	Bahamas, Belize, Trinidad and Tobago, Suriname (now ended).	Antigua and Barbuda, Barbados, Guyana (coastal), Saint Kitts, Jamaica (NPL).
Managed by	Ministry of Education, NGOs and international agencies (especially Haiti).	Ministry of Education.	Ministry of Education.
Food Preparation	In kitchens on the school premises.	By caterers on their own premises. Prepared meals (or snacks) are transported to schools.	In large centralized industrial factories or meal production centers. Prepared meals (or snacks) are transported to schools.
Inputs	Higher level of incorporation into the SFPs from parents and local communities of: • a limited range of food items (especially vegetables, seasoning herbs and root crops); and • voluntary or paid labor for meal preparation and the procurement of food items. These inputs may lower the costs of the SFPs.	Low level of incorporation into the meals of inputs of food and labor from the local communities.	Very low level of incorporation into the meals of inputs of food and labor from the local communities.
Portion sizes	Not fixed. Food is served by the cooks or their assistants. This allows for control of meal portions and students can be served the quantities that they would normally like to eat. This reduces the problems of food rejection and food waste.	Fixed.	Fixed.
Meal containers and cutlery	Meal containers (usually plates) and cutlery are usually washable and reusable, which avoids the use of styrofoam, plastic and other one-use types of material which may be detrimental to the physical environment.	Meal containers (usually boxes) and cutlery not usually re-usable.	Meal containers and cutlery not re-usable.
Monitoring of operations and food quality standards	Less monitoring.	Variably intensive monitoring.	Rigorous monitoring.

The main feature of the third party, caterer-based (CB) model is that the actual meal preparation takes place on the premises of caterers, who then package and transport the meals to the schools. Caterers operate within parameters defined and established by the Ministries of Education or their agents. The larger scale operations of caterers usually require a greater level of pre-prepared or processed food items, which are often imported into the CARICOM states. Hence, in the CB model, the meals generally have little food ingredients and labor input from local communities.

The main feature of the centralized school feeding (CSF) model is that the actual meal preparation is carried out in large centralized industrial factories or meal production centers (MPCs) and the prepared meals (or snacks) are then transported to the schools. In the cases of Antigua and Barbuda and Barbados, the MPCs are operated by divisions of the Ministry of Education. In the case of Jamaica, the MPC is a state-owned company, Nutrition Products Limited (NPL), while in coastal Guyana, the MPCs are private firms contracted to produce the meals.

The larger scale operations of the MPCs in the CSF model require an even greater level of pre-prepared or processed food items, than is the case with the CB model. The centralized operations of the MPCs also mean that there is almost no opportunity to incorporate into the meal preparation, the inputs of food ingredients or labor from the local communities. The CSF model allows for the tightest administration by the Ministries of Education and the MPCs are usually subjected to the most rigorous and continuous monitoring.

In all three models of the SFPs, parents and vendors also provide meals and snacks to the students in the schools. Some of these vendors may be located on the school premises, but they are mainly outside the school gates. Most schools also have tuck-shops, canteens or cafeterias, which also provide meals and snacks to the students and serve as sources of revenue to the schools.

2. Expansion of school feeding programmes in CARICOM

A major recommendation of the study is the expansion of the SFPs to benefit, not only students, but local food producers and the greater regional economy. SFPs can create their greatest benefits if they cover all of the school population. Such coverage will also help to reduce any snobbery or embarrassment of low-income beneficiaries of the SFPs. However, SFPs are expensive for states to finance, therefore, higher income parents may be called upon to pay, at least partially, for the meals in the SFPs.

Expansion of SFPs should be accompanied by improvements in their operations and a strengthening of their financial sustainability. In particular, focus should be placed on:

- the improvement of the nutritional quality of the meal offerings;
- development of food and nutrition education programmes;
- expansion and promotion of school gardens;
- increased utilization of the food products and labor from local communities;
- enhanced efficiency of operations; and
- a reduction of risks by enhanced food safety and quality.

3. Summary of the cost assessment of school feeding programmes in CARICOM member states

Table 2 provides another major finding of the study which is a summary of the cost assessment of the SFPs in the 14 CARICOM Member states. First it can be seen that the SFPs vary considerably in size. The largest programmes are in Haiti, Jamaica and Trinidad and Tobago, the countries with the largest populations. It should be noted that the SFP of the Programme National de Cantine Scolaire (PNCS) assessed for Haiti is not the largest programme in that state. Indeed, the SFP of the World Food Programme (WFP) in Haiti, in 2017 is reported to have served 363 000 students. The programmes in Belize, Bahamas and Dominica are fairly small for the size of their populations. It should be noted also that currently Suriname does not have a SFP and the number of students in the table are simulated figures for a proposed SFP for one part of that country.

It must be noted that this study did not determine the nutritional quality of any of the meals offered in the SFPs, so therefore the meals offered in the SFPs for the countries may vary in their nutritional adequacy. Within this context therefore, in Table 2, the programme annual total cost per student for Bahamas, Saint Kitts and Nevis and Barbados are relatively high (greater than USD 400 per student per year). On the other hand, the programmes in Haiti, Guyana and the Windward Islands (Grenada, Dominica, Saint Lucia and Saint

Vincent and the Grenadines) based on the DSK model have relatively lower costs per student (less than USD 250 per student per annum). The results of the annual net benefit analyses carried out in this study, shown in Table 2, demonstrate that the SFPs in the CARICOM member states are generally performing useful functions, since the annual total economic benefits of the SFPs exceed their annual total economic costs. The only possible exception is Saint Lucia, with a benefit–cost ratio of 0.92, largely because of its low national basic or minimum wage rate. Indeed, for seven of the SFPs in the 14 countries, the benefit–cost ratios exceeded 1.5, showing that the annual net economic benefits of these programmes were quite substantial. These seven SFPs included all three models of the SFPs. These results also confirm the importance of the SFPs as social protection mechanisms for the CARICOM member states and justify their continued existence and indeed their expansion.

Table 2. Overall cost assessment of school feeding programmes in 14 CARICOM member states

Country	Programme annual total costs (Currency)	Programme annual total costs (USD)	Number of students in programme	Programme annual total cost per student (USD)	Benefit – Cost ratio
Antigua & Barbuda⁺	4 661 000 XCD	1 724 718	4 500	383.27	1.55
Bahamas°	3 193 000 BSD	3 193 000	2 887	1 105.99	1.52
Barbados⁺	19 765 789 BBD	9 882 894	20 418	484.03	1.37
Belize°	866 800 BZD	431 225	1 147	375.96	1.13
Dominica*	1 316 776 XCD	487 337	2 169	224.68	1.64
Grenada*	5 463 797 XCD	2 021 778	10 000	202.18	1.59
Guyana (All Programmes)*⁺	2 518 101 102 GYD	12 102 692	81 522	148.46	1.40
Guyana (Community Based)*	1 124 836 090 GYD	5 406 274	26 694	202.53	1.55
Haiti (PNCS)*	4 755 962 USD	4 755 962	107 000	44.45	1.23
Jamaica*⁺	5 061 170 000 JMD	38 209 122	248 000	154.07	1.67
Saint Kitts⁺	5 469 553 XCD	2 023 908	4 860	416.44	1.76
Nevis*	1 011 658 XCD	374 346	701	534.02	1.39
Saint Lucia*	3 059 002 XCD	1 131 976	5 100	221.96	0.92
Saint Vincent and the Grenadines*	4 365 035 XCD	1 615 202	7 493	215.56	1.60
Suriname (Proposed)*	13 342 106 SRD	1 789 544	2 471	724.22	1.47
Trinidad°	234 410 494 TTD	31 440 908	86 714	362.58	1.41
Tobago°	40 225 505 TTD	6 008 850	18 145	331.16	1.33

Note: * = Decentralized school kitchen (DSK); ° = Caterer based (CB); ⁺ = Centralized school feeding (CSF)

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Antigua and Barbuda

Bahamas

Barbados

Belize

Dominica

Grenada

Guyana

Haiti

Jamaica

Saint Kitts and Nevis

Saint Lucia

Saint Vincent and the Grenadines

Suriname

Trinidad and Tobago

Introduction

A

1. The study

1.1. School feeding

School feeding has emerged globally, as a major food security strategy and safety net for children (FAO, 2019a). One approach to the provision of school meals is HGSF, which links school feeding to local small-holder farmers to provide children with safe, diverse, nutritious and culturally appropriate meals (FAO and WFP, 2018). This approach has benefits to both local farmers in terms of increased demand for their products, as well as to the children, who can enjoy healthy meals that promote, among other things, higher educational performance and subsequently higher wages and salaries. In Latin America and the Caribbean, this approach has been incorporated into a sustainable schools initiative, which has promoted sustainable school feeding programmes (SSFPs), with six main components for the implementation of these programmes as follows:

- intersectoral coordination and social participation;
- food and nutrition education ; with emphasis on
- educational school gardens;
- improved school infrastructure;
- adoption of healthy, adequate and culturally appropriate school meals; and
- direct purchases of food from local family farmers (FAO, 2016a; FAO and WFP, 2019).

1.2. Objectives of the study

This book is a product of a study on school feeding in 14 member states of CARICOM. Within the general framework of SSFPs, this book outlines the status of school feeding in these states, with specific reference to the following indicators:

- the scale and mechanisms of operation of the SFPs;
- menus and food quality and safety issues with respect to meal offerings;
- the overall governance arrangements (including national laws, policies and strategies and inter-sectoral coordination);
- local governance arrangements at the school and community level, including the extent of community participation;
- arrangements for procurement, storage and the management of food items used in the preparation of meals (including the level of local procurement);
- school gardens, nutrition education and other measures to promote healthy eating among students, school administrators, cooks and parents;
- quality assurance and monitoring and evaluation methods being utilized; and
- the analysis of economic benefits and costs.

General recommendations on school feeding are also presented in this publication for all 14 CARICOM member states and also specific recommendations for the individual states.

Another product of the study is a separate document which presents general guidelines on:

- the improvement of the nutritional quality of food served in schools, especially to enable these offerings to meet the requirements of the students;
- more efficient and effective procurement of food items from small scale and family farms;
- improvement in the infrastructure related to the SFPs, including meal preparation and student eating areas; and
- strengthening monitoring and evaluation systems.

Chapter 2 of this book completes Section A and presents the methodological framework of the study. Section B begins with Chapter 3, which presents the general findings of the study in terms of the models of the SFPs in the CARICOM member states that have emerged from this study. General recommendations are then presented for the improvement of:

- the nutritional quality of food served in schools in Chapter 4; and
- the procurement of food items used in meal preparation and the monitoring and evaluation of the SFPs in Chapter 5.

Section C consists of case studies which present the specific findings on the status of school feeding in the 14 CARICOM member states, in terms of the indicators stated above. The specific recommendations for individual states are also provided in these country case studies. These case studies summarize detailed individual country reports on the SFP for each member state which were also produced as part of this study.

1.3. Background

CARICOM is a grouping of 20 countries: 15 member states and five associate members. It is home to approximately 16 million citizens, 60 percent of whom

are under the age of 30. The Community is multi-ethnic and multi-lingual; with English and Haitian Creole as the languages spoken by the largest numbers of persons. Other languages spoken include French and Dutch and variations of these, as well as African and Asian expressions. While CARICOM states are relatively small, both in terms of population and size, there is also great diversity with regards to geography, population, as well as levels of economic and social development (CARICOM, 2016a).

CARICOM states are mainly islands bounded by the Atlantic Ocean to the east and the Caribbean Sea to the west and south in some cases. There are a few continental states: Belize in Central America and Guyana and Suriname in South America. These countries are also among the largest (in terms of land area), among the CARICOM countries. Variations among the countries pose a challenge in the design and application of any model geared toward alleviating hunger or over nutrition in the region (CARICOM, 2021).

Table 1.1 shows the latest data (2018) on the population, surface area, gross domestic product (GDP), exports and imports of goods and services for the 14 CARICOM countries in this study (World Bank, 2020a).

The population in the CARICOM countries ranges from approximately 0.06 to 11.12 million people, with the average being 1.32 million. Countries with the largest populations include Haiti, Jamaica and Trinidad and Tobago, while the remaining eleven countries all have small populations, below 1 million people .

All of the CARICOM countries have a tropical climate and have access to salt water bodies. The surface area (land) varies widely across the CARICOM countries, from 0.3 to 215 thousand sq km. The smallest countries are Grenada

Table 1.1: Population, surface area, population density, GDP, GDP growth, exports and imports of goods and services for 14 CARICOM states.

Country	Population (millions)	Surface area (km^2) (thousands)	Population density (people/km^2 of land area)	GDP (Current USD) (billions)	GDP growth (annual %)	Exports of goods and services as a % of GDP	Imports of goods and services as a % of GDP
Antigua and Barbuda	0.1	0.4	218.8	1.61	7.4	42	48
Bahamas	0.39	13.9	38.5	12.42	1.6	36	41
Barbados	0.29	0.4	666.6	5.09	-0.6	41	40
Belize	0.38	23	16.8	1.87	2.1	58	58
Dominica	0.07	0.8	95.5	0.55	2.3	30	80
Grenada	0.11	0.3	327.8	1.17	4.1	55	56
Guyana	0.78	215	4	3.88	4.1	47	37
Haiti	11.12	27.8	403.6	9.66	1.5	17	58
Jamaica	2.93	11	271	15.71	1.9	38	51
Saint Kitts and Nevis	0.05	0.3	201.7	1.01	2.9	59	57
Saint Lucia	0.18	0.6	298.2	2.07	2.6	N/A	N/A
Saint Vincent and the Grenadines	0.11	0.4	282.6	0.81	2.2	27	57
Suriname	0.58	163.8	3.7	3.46	2.6	53	38
Trinidad and Tobago	1.39	5.1	270.9	23.81	-0.2	N/A	N/A
Average	1.32	33.06	221.41	5.94	2.46	41.92	51.75
Maximum	11.12	215	666.6	23.81	7.4	59	80
Minimum	0.05	0.3	3.7	0.55	-0.6	17	37

N/A – Not Available
Source: (World Bank, 2020a)

and Saint Kitts and Nevis, while the largest countries are Guyana, Suriname and Haiti.

There is also substantial variation in the GDP across the 14 CARICOM states, which reflects to some extent the main sectors of their economies - for example high GDP is associated with oil and natural gas, in the case of Trinidad and Tobago, and tourism, in the case of Bahamas, Jamaica and Barbados. The recent, general economic performance of the states has been weak, with an average annual growth of GDP of 2.46 percent. Trinidad and Tobago and Barbados recorded negative growth, while Antigua and Barbuda, Guyana and Grenada recorded the highest annual growth of GDP.

Table 1.1 shows that exports of goods and services as a percentage of GDP ranged from 17 percent to 59 percent (average 41.92 percent), which indicates the high dependence of the economies of CARICOM on exports. Imports as a percentage of GDP ranged from 37 percent to 80 percent (average 51.75 percent) which indicates an even higher dependence of CARICOM economies on imports, particularly the importation of food.

From Table 1.2 below, it can be seen that the life expectancy at birth for all CARICOM countries was very similar, with the average for all countries being 73.21 years, with only Haiti having a value below 70 years. A life

Table 1.2: Life expectancy at birth, fertility rate, school enrollment primary and secondary for CARICOM countries, 2018.

CARICOM state	Life expectancy at birth, total (years)	Fertility rate, total (births per woman)	Overweight (BMI-for-age >+1 SD) in school-age children and adolescents 5-19 years (%)	Prevalence of underweight, weight for age (% of children under 5)	*School enrollment, primary (% Gross)	*School enrollment, secondary (% Gross)
Antigua and Barbuda	77	2	26.7	N/A	105	111.2
Bahamas	74	1.8	35.8	N/A	81.4	69
Barbados	79	1.6	27.6	3.5	99.4	104
Belize	74	2.3	28.5	4.6	111.7	85
Dominica	77	1.9	32.6	N/A	114.7	94
Grenada	72	2.1	26.4	N/A	106.9	120
Guyana	70	2.5	24.9	11	96.5	90
Haiti	64	2.9	27.6	9.5	113.6	N/A
Jamaica	74	2	29.8	3.4	91	82
Saint Kitts and Nevis	71	2.1	27.9	N/A	108.7	107
Saint Lucia	76	1.4	23.4	2.8	102.6	89
Saint Vincent and the Grenadines	72	1.9	28.9	N/A	113.4	107
Suriname	72	2.4	31.1	5.8	108.8	82
Trinidad and Tobago	73	1.7	24.9	4.9	106.2	83
Average	73.21	2.04	28.29	5.69	104.28	94.09
Maximum	79	2.9	35.8	11	114.7	120
Minimum	64	1.4	23.4	2.8	81.4	69

* "The gross enrollment ratio is the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the level of education shown."

Source: (World Bank, Group 2019)

expectancy above 70 suggests a fairly acceptable state of well-being of individuals in the CARICOM countries.

The fertility rates for the CARICOM countries showed very little variation. The average births/woman for the countries was 2.04, whilst the minimum and maximum values for the countries were 1.4 and 2.9 for Saint Lucia and Haiti. These low fertility rates are indicative of slow population growth among the countries, which would imply that the percentage of the population that is elderly could be growing faster than the percentage of young people.

"Overweight and obesity are defined as follows for children aged between 5 to 19 years:

- Overweight is BMI-for-age greater than 1 standard deviation (SD) above the WHO Growth Reference median
- Obesity is greater than 2 SDs above the WHO Growth Reference median." (WHO, 2020a)

Body mass index (BMI) is a simple index of weight-for-height that is commonly used to classify overweight and obesity. It is defined as a person's weight in kilograms divided by the square of his/her height in meters (kg/m^2) (WHO, 2020a).

Table 1.2 indicates that approximately 28 percent of the children and adolescents between 5 to 19 years old in the CARICOM states are overweight, with the highest values found in Bahamas (35.8 percent) and Suriname (31.1 percent) and the lowest value in Saint Lucia (23.4 percent).

As seen in Table 1.2, for all of the CARICOM countries, the percentages of children under the age of five, who are underweight were relatively lower than the percentages for overweight with an average of 5.9 percent. The country with the highest underweight percentage was Haiti (11.0 percent) and the country with the lowest percentage was Saint Lucia (2.8 percent). It should be noted that figures were not available for this indicator for six countries.

The school enrollment at a level of education or "the gross enrollment ratio is the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the level of education shown" (World Bank, 2019).

In Table 1.2, Dominica, Haiti and Saint Vincent and the Grenadines have the highest primary school enrollment percentage, while Grenada, Saint Kitts and Nevis and Saint Vincent and the Grenadines have the highest secondary school enrollment percentage.

As seen in Table 1.3, CARICOM states are parties to several international conventions that support the right to food for children. Guyana, Haiti and Suriname also have constitutional provisions that explicitly guarantee the right to adequate food for their citizens.

Table 1.3: The right to food for CARICOM countries

Country	I.	II.	III.	IV.	V.
Antigua and Barbuda	✓		1989 Accession	1993 Ratification	2007 Signature
Bahamas	✓	2008 Ratification	1993 Accession	1991 Ratification	2015 Ratification
Barbados	✓	1973 Accession	1980 Ratification	1990 Ratification	2013 Ratification
Belize	✓	2015 Ratification	1990 Ratification	1990 Ratification	2011 Ratification
Dominica	✓	1993 Accession	1980 Ratification	1991 Ratification	2012 Ratification
Grenada	✓	1991 Accession	1990 Ratification	1990 Ratification	2014 Ratification
Guyana	✓	1977 Ratification	1980 Ratification	1991 Ratification	2014 Ratification
Haiti	✓	2013 Accession	1981 Ratification	1995 Ratification	2009 Ratification
Jamaica	✓	1975 Ratification	1984 Ratification	1991 Ratification	2007 Ratification
Saint Kitts and Nevis	✓		1985 Accession	1990 Ratification	
Saint Lucia	✓		1982 Accession	1993 Ratification	2011 Signature
Saint Vincent and the Grenadines	✓	1981 Accession	1981 Accession	1993 Ratification	2010 Accession
Suriname	✓	1976 Accession	1993 Accession	1993 Ratification	2007 Signature
Trinidad and Tobago	✓	1978 Accession	1990 Ratification	1991 Ratification	2015 Ratification

Source: (FAO, 2015a)

KEY:

I. Universal Declaration of Human Rights (UDHR) – 1948 (Article 25 Recognized by all CARICOM countries)
II. International Covenant on Economic, Social and Cultural Rights (ICESCR) – 1966
III. Convention on the Elimination of all forms of Discrimination Against Women (CEDAW) – 1979
IV. Convention on the Rights of the Child (CRC) – 1989
V. Convention on the Rights of Persons with Disabilities (CRPD) – 2006

2. Methodology

2.1. Transfer payments and the right to food

The general theoretical framework for this assessment is based on the concept of ***"transfer payments"*** or ***"transfers",*** which are payments from the government to individuals, without anything, in return, being received or required from those individuals. Examples of transfer payments include student scholarship grants, welfare checks and free school meals provided by a state-run SFP. Such transfers represent direct ways in which governments pursue policies of income redistribution (Johnson, 2019).

In the case of free school meals, the children, may be considered vulnerable because they are unable to afford the meals. Two conditions are therefore normally required for receipt of these benefits:

- a financial assessment (or means test); and
- permission of parents or guardians (US Department of Veterans Affairs, undated).

A major justification for transfers in the form of a SFP is the right to food by citizens. According to FAO (2009), the human right to food is firmly established in international law, including the International Covenant on Economic, Social and Cultural Rights (ICESCR) and the Convention on the Rights of the Child (CRC) (Table 1.3) (FAO, 2009). States that ratify these legal instruments recognize the right to food and other rights contained in them. This right to food can be achieved by people feeding themselves, either by producing food or by earning a living, or by direct, state-supply of food, for people who are unable to care for themselves (e.g. because of age, sickness or times of crisis) (FAO, 2009). However, FAO recognizes that translating these rights into practice has remained largely elusive (FAO, 2009).

The "right to food", where ratified adds a legal dimension to conventional economic strategies aimed at achieving food security (FAO, 2009). Also, in addition to the moral and the legal imperatives, there are a number of convincing arguments to tackle the "hunger problem" by a "right to food" approach:

- From an economic viewpoint, it is a good investment, since food secure individuals are more productive and are less frequently sick. On the other hand, if the physical development and the mental development of a child are affected by hunger and malnutrition, that child stands to lose 5 to 10 percent of lifetime earnings (FAO, 2009).
- From a community perspective, it empowers local communities to participate in decision-making and reduces their dependence on state assistance (FAO, 2009).

Recently there has been an increasing focus on unhealthy eating and a growing interest in providing healthy foods in school (Mikkelsen, 2013). This has prompted consideration of whether children should enjoy the right to a nutritious meal and a balanced diet and whether they should be protected from harmful foods (Mikkelsen, 2013).

2.2. Kaldor–Hicks compensation principle and benefit–cost analysis

If a "right to food" policy results in additional state expenditure, is this additional expenditure socially justified? According to the Kaldor–Hicks compensation principle, transfers to achieve such a policy should get unanimous support, if the persons who benefit from the transfers (the winners) can compensate those who pay for them (the losers), so that after the transfer payments, all in society are as well off, as before the transfers, and some are better off. The rationale for this principle is that such transfers will be potential Pareto improvements and a Pareto optimal state has generally gained acceptance as the preferred social welfare status (Newman, 1998).

Benefit–cost (or cost–benefit) analysis is the standard method for the application of the compensation principle to determine, if a policy of direct and indirect transfers to vulnerable groups is likely to increase the welfare of society. In general, if the benefits of a policy exceed the costs, then theoretically the beneficiaries of the policy could compensate those in the society that meet the costs and there would be net benefits still available to the beneficiaries.

In the case of a subsidized SFP, though the meals may be provided free or at subsidized costs to beneficiaries, there would be costs to the state to provide the meals, (for example, the cost of the food, payments to cooks, who prepare the meals etc.) which would have to be provided through taxes on other members of society. The beneficiaries will derive the benefits as outlined above.

This study utilized an adaptation of the benefit–cost analysis of the WFP, termed annual net benefit analysis as its basic assessment framework (WFP, 2016, 2018). This involved the identification and measurement of the benefits and costs of the SFP for a specific year and a

determination of its net benefits and benefit–cost ratio for that year.

2.3. Empirical procedures of the study

The study was initiated by a review of all available information on school feeding in the 14 CARICOM states. This was followed by missions by teams to each state, over the period mainly from November 2017 to May 2018, with a further mission to Guyana in August 2019. The main focus of these missions was to obtain first hand, information on school feeding, with an emphasis on the state funded SFP. A questionnaire was devised to assist in this exercise, which was sent to the 14 countries prior to the visits and utilized in the interviews.

Interviews were conducted with ministries of Education, Health, Agriculture and Social Services (where relevant), as well as to school feeding (or nutrition) units of ministries of Education, where these existed. Visits were also undertaken to schools to observe:

- the nature of the meals supplied;
- whether there were any contributions or payments by students;
- the areas where meals were prepared and where children ate their meals;
- school gardens;
- the offerings of tuck shops, canteens, school cafeterias etc., and
- the extent to which "healthy eating" policies were being implemented in the schools.

Visits were also undertaken to the premises of suppliers of meals for the SFPs, such as caterers and vendors to observe and discuss procurement mechanisms for food ingredients and the nature of the meals being provided. This activity was especially extensive in the missions of Trinidad and Tobago and Bahamas which had the caterer based (CB) model. School kitchens were visited in cases where meals are actually prepared on the school premises, in countries with the decentralized school kitchen (DSK) model. Particularly in Trinidad, visits were also made to food processing businesses and to farms, which were supplying ingredients to the caterers of the SFP.

Country case studies were then prepared for each of the 14 states, which included detailed annual net benefit analyses. These case studies were then validated by a series of exercises.

FAO in collaboration with the FFA of UWI, sponsored a multi-stakeholder seminar titled: "School Feeding Programmes as a Policy Instrument for Food and Nutrition Security in the Caribbean", in the Caribbean Week of Agriculture (CWA) at the Lloyd Erskine Sandiford Centre (LESC), Bridgetown, Barbados, from 8 to 9 October 2018. This seminar served as the first validation workshop.

Participants in the seminar came from:

- ministries of Education, Agriculture and Health from the 14 CARICOM Member States;
- regional agencies (UWI, OECS Secretariat, IICA etc.);
- agencies of the United Nations (FAO, WFP and UNICEF);
- donor agencies;
- civil society; and
- private sector organizations, including farmers' associations;

At the seminar, group reports provided critical evaluations of the country case studies and suggested modifications and corrections to more accurately represent school feeding in the CARICOM states.

On the initiative of the OECS Health Unit, all of the OECS member states except Saint Kitts and Nevis took part in two on-line validation sessions on the 12 and 15 November 2018. Finally, again, on the initiative of the Health Unit of the OECS, a further Validation Workshop was held at the Marigot Bay Resort & Marina, Castries, Saint Lucia supported by UNICEF on 19 November 2018. At this workshop, the case studies for the OECS were considered by Chief Education Officers, Chief Medical Officers and Directors of Social Development (or Social Services) from all OECS member states. Participants also came from Martinique and the Associated States of the OECS. The output of these three sessions provided further comments and information, which were used to more accurately represent school feeding in the OECS.

2.4. Annual net benefit analysis

Annual net benefit analysis was conducted using a modified template of Engineering Solutions On-Line (Cesarone, 2009). The modified template did not utilize discounted cash flow techniques, but measured the annual total benefits and annual total costs of the SFP to derive a benefit–cost ratio as the ratio of the two

measures and an annual (as opposed to a discounted) net benefit as the difference between the two measures.

The basic framework for the measurement of the total benefits and total costs of a SFP is given in Figure 2.1. (WFP, 2016, 2018). The total costs is the sum of *inter alia*:

- The cost of the meals distributed to the students, which may consist of the payments to caterers or the cost of food commodities supplied to central kitchens or to schools.
- Costs of transportation of food commodities for meal preparation at schools or the cost of transportation of meals from central kitchens;
- Other operational costs, including the cost of cooking fuel (in the case of school kitchens), food boxes or plates, cutlery etc. and the wages paid to cooks; and
- The administrative (or overhead) costs of operating the SFP.

Figure 2.1 also provides an overview of the total benefits of a SFP. In the analyses carried out only the direct benefits were summed, because of the difficulties of measurement of "externalities". These direct benefits, also called "drivers" consist of:

1. Value transfer, which comprises two elements: the value of the food transferred to the students (1A) and the value of health care cost reduction attributed to the better nutrition under the SFP (1B). The health care reduction for each state is measured in terms of the reduction of the Disability Adjusted Life Years (DALYs) for the students on an annual basis, which is valued by the cost/year of healthcare (WHO, 2020b) (1. as in Figure 2.1).
2. Return on investment. This is the rate of return on both the wages received by cooks and other workers, and the "savings" to beneficiary households of the SFP, in terms of their reduction in health care costs. The rate of return on this investment is assumed to be five percent (2.).
3. Increased productivity. This consists of the benefits that accrue in terms of higher wages because of better educational levels attained through increased enrollment and attendance at school, a reduction of the drop-out rate and higher test scores. (3.)
4. Healthier and longer life. These benefits are derived from three sources:
   a. Increased wages due to increased life expectancy of the student beneficiaries, because of better income and longer schooling, owing to the SFP. (4A)
   b. Increased income due to a reduction in DALYs due to food supplied by the SFP. (4B)
   c. Increased income due to a reduction in DALYs due to health interventions derived from the SFP such as micronutrient supplementation. (4C)

The measurement of the benefits of the SFPs is a case of the not-straight-forward art of non-market valuation (Pemberton, Harris-Charles and Patterson-Andrews, 2010 and Hanley and Spash, 1998). This study followed the basic approach of the WFP (WFP 2016 and WFP, 2018) An example of the calculation of the benefits is given in the Appendix, for the SFP of Dominica. Similar calculations of the benefits of the SFPs for all member states are provided in the detailed individual country reports, produced as part of this study. In the absence of empirical estimates for CARICOM states, relevant estimates from WFP were adjusted and utilized for factors such as the impact of the SFP on increasing school attendance and reducing school drop-out and so on. (WFP, 2016, 2019a). Where data on some factors like DALYs were not available for a country, figures were used for another similar country.

Simulation analyses were carried out, where appropriate, to determine the sensitivity of the benefit–cost ratio to different variables, for example the number of students in the SFP. A simulation analysis involved keeping all other data for the analysis the same and changing only the value of the variable (for example the number of students in the SFP) (*ceteris paribus*) and calculating the benefit–cost ratio for each value of the variable.

Benefits	Costs
1. Value transfer Value of food received by beneficiaries plus reduction in individual healthcare cost	**Commodities** Cost to provide food to beneficiaries
2. Return on investment Return on wages to employees of the SFP who would otherwise be unemployed plus return to reduced healthcare cost	**Wages** Wages paid to employees of SFP, e.g. cooks
3. Increased productivity Increased wages due to better education	**Transport** Cost incurred to transport food and food ingredients
4. Healthier and longer life • Increased wages from: • longer productive life (4A) • better health from food supplied through the SFP (4B) • better health from health interventions (4C)	**Other Operational costs** Other non-food and service costs
Externalities Additional benefits to non-programme beneficiaries (e.g. community benefits and lower costs to the government)	**Overhead** Administrative costs incurred in the SFP

Source: (Adapted from WFP, 2016)

Figure 2.1: Expected benefits and costs of a school feeding programme (SFP)

General findings and recommendations of the study

B

3. General findings

3.1. Introduction

The general findings of the study are presented in terms of the models of school feeding found in the SFPs in the 14 CARICOM member states in this chapter. The general recommendations from the study are then presented in the following two chapters (Chapters 4 and 5). Specific findings and recommendations for each member state are presented in the case studies in Section C.

3.2. Models of School Feeding

In this study, the "school feeding system" (SFS) for a CARICOM member state is defined as the general arrangement of entities in the state that provide meals that are consumed by students in schools. Further, the "school feeding programme" (SFP) of a state is defined as the state administered structure or organization of entities (usually administered by the Ministry of Education (MOE) directly or through an agent of the MOE that provides meals to schools.

In this study of 14 CARICOM member states, three common models of SFPs emerged, based on the classification of the main groups of HGSF models (FAO and WFP, 2018). These models and the countries having them are as follows:

(i) decentralized school kitchen (DSK) model: Dominica, Grenada, Guyana (hinterland), Haiti, Jamaica, Nevis, Saint Lucia, Saint Vincent and the Grenadines and Suriname;

(ii) third party caterer based (CB) model: Bahamas, Belize and Trinidad and Tobago; and the

(iii) centralized school feeding (CSF) model: Antigua and Barbuda, Barbados, Guyana (coastal), Saint Kitts and Jamaica - Nutrition Products Limited (NPL).

General descriptions of the models are now presented and diagrams illustrating the models for the countries are given in the respective country case studies in Section C.

3.3. Decentralized school kitchen (DSK) model

The main feature of the DSK model is that the actual meal preparation is carried out in kitchens on the school premises. Then the meals are consumed in the same school or in neighboring schools. The latter situation exists for some schools that lie in close proximity to each other. The in-school preparation of the meals allows the incorporation into the meals of substantial inputs from parents and the local communities in which the schools are located. These inputs generally include a limited range of food items (especially vegetables, seasoning herbs and root crops) from small scale farmers located in the communities. However, most of the food ingredients for the kitchens are procured by the state through purchasing arrangements by sections of ministries of Education or in a few cases ministries of Health. In some other cases the state provides funds for the schools to make the purchases of food ingredients for the school kitchens.

Parents and other persons from the communities may also provide labor inputs for the procurement of food items and for meal preparation. This mainly voluntary labor lowers the costs of the SFPs using the DSK model, as compared to SFPs utilizing the other models. In several instances, however, where parents provide their labor or contribute food items to the SFP, their children may receive the school meals at no cost or at a reduced cost.

In the DSK model, the food is generally served by the cooks or their assistants, in utensils provided by the school. This allows for greater control of portion sizes for students, so that students can be served the quantities that they would normally like to eat. This reduces the problem of fixed portion sizes and food rejection and food waste in SFPs. The meal containers and cutlery used in the DSK model are usually washable and reusable, which avoids the use of styrofoam, plastic and other one-use types of material, which may be detrimental to the physical environment (Environment America, 2018).

The DSK model exists in combination with parents and outside vendors who also provide meals and snacks to the students in the schools. Also, the schools may endorse the operations of private vendors on the school premises, who may offer snacks and meals for sale to students. Schools may themselves also operate cafeterias or tuck-shops, which may offer snacks, drinks and meals for sale to students, generally as fund-raising enterprises for the schools.

3.4. Third party caterer based (CB) model

The main feature of the CB model is that the actual procurement of food ingredients and the meal preparation are undertaken by caterers, who are contracted by the MOE or an agency of the Ministry. These caterers then package and transport the meals

to the schools, where the meals are consumed by the students. Students are not generally permitted to take the meals off the school compound, because of the risk of the spoilage and contamination of the food by the time the meal reaches the students' homes.

In the CB model, there is fairly strict administration of the SFP by the MOE or its agent. Thus, the caterers usually operate within parameters defined and established by the MOE or its agent, which may include:

(i) the amount of money paid by the state to the caterers for each meal;

(ii) the price paid by the students for each meal (where the students also pay for the meals);

(iii) the menus to be utilized by the caterers;

(iv) the limited use or non-use of SSBs as part of the meals;

(v) the nutritional standards of the meals especially in terms of the percentage of the estimated calories/day supplied by the meals (U.S. Department of Health and Human Services and U.S. Department of Agriculture, 2015, p. 77);

(vi) adherence to the national dietary guidelines of the state (FAO, 2019b);

(vii) the level of local or domestic content in terms of the food ingredients used to prepare the meals;

(viii) the boxes or other packaging materials used to contain the meals; and

(ix) the insulated or other containers utilized by the caterers for storage and the transportation of the meals to the schools.

The number of schools served by each caterer varies quite markedly across states and even within a state. Some caterers operate out of their homes, for example in the Bahamian islands, while in Trinidad and Tobago, some caterers operate industrial sized facilities. The CB model thus allows for economies of size in the preparation of the meals. Because of the more concentrated food preparation by caterers, there is usually a greater level of monitoring of their operations and food quality standards in the CB model, as opposed to the more decentralized DSK model. One important consideration in the CB model, however, is the distances between the caterer and the schools served by the caterer and hence the elapsed time that may be necessary to transport the meals from the point of preparation at the caterers' facilities to the schools.

The larger scale operations of caterers usually require a greater level of pre-prepared or processed food items (for example, frozen peas and beans and pre-cut vegetables etc.), which are often imported into CARICOM states. Hence, in the CB model, the meals prepared generally have a low level of incorporation of inputs of food and labor from the local communities, in which the schools are located. This generally represents a marked difference between the DSK model and the CB model.

Similar to the DSK model, the CB model, generally co-exists with parents, school cafeterias and outside vendors, who also provide meals and snacks to students.

3.5. Centralized school feeding (CSF) model

The main feature of the CSF model is that the actual meal preparation is carried out in large centralized, industrial factories or meal production centers (MPCs) and the prepared meals (or snacks) are then transported to schools for consumption by students. In the cases of Antigua and Barbuda, Saint Kitts and Barbados, the food preparation centers are operated by divisions of the ministries of Education. In the case of Jamaica, the MPC is a state-owned company, the Nutrition Products Limited (NPL), while in coastal Guyana, the MPCs are private firms contracted to produce the meals. The state provides the funds for the operation of these MPCs, including the procurement of food ingredients.

The CSF model allows for the strictest administration and monitoring of the SFPs by ministries of Education, including the continuous monitoring of:

- the cost of production of each meal;
- the menus to be utilized;
- meal preparation;
- packaging materials used;
- the extent of use of SSBs;
- nutritional standards to be observed;
- the level of local content, with respect to the food ingredients used to prepare the meals; and
- food quality standards.

An important consideration in the CSF model, as in the CB model, is the distance between the MPC and the schools served by the MPC and hence, the time it takes to transport the meals to the schools. This is especially crucial, where hot-meals are transported to the schools for same-day consumption by the students. Special care,

therefore, has to be taken in maintaining the quality and safety of meals. In the case of larger states, the meals prepared by the MPCs, usually have shelf lives of several days. These meal items include cakes, buns and packaged fruit juices.

The larger scale operations of the MPCs in the CSF model require an even greater level of pre-prepared or processed food items, than is the case with the CB model. These food items, as noted earlier, are largely imported into the CARICOM states. The centralized operations of the MPCs also mean that there is almost no opportunity to incorporate into the meal preparation, the inputs of food or labor from local communities. Chapter 4, however, presents recommendations on:

- increasing the procurement of local foods from small farmers; and
- stimulating downstream private sector enterprises which can also increase production and income of small farmers.

Similar to the other models, the CSF model, generally exists alongside parents and outside vendors, who also provide meals and snacks to the students in the schools. Also, similar to the other two models, schools operating as part of the CSF model may themselves operate cafeterias or tuck-shops, which may offer snacks, drinks and other meals for sale to students, generally as fund raising enterprises for the schools. There was a tendency not to allow private vendors onto the premises of schools operating under the CSF model.

4. Food and nutrition recommendations

4.1. Recommendations promoting healthy eating

Background

Especially in the Latin America and the Caribbean region, among developing countries, school feeding has focused on "healthy eating" with the objective of the elimination of both malnutrition or undernutrition as well as over-nutrition, in terms of over-weight and obesity. This focus is supported by scientific evidence which has established the effectiveness of school-based interventions to change eating patterns, which can prevent overweight and obesity (PAHO and WHO, 2014). Specific recommendations for SFPs in CARICOM states, arising from this study, in the area of healthy eating are as follows:

Use of healthy meal menus

Meals in the SFPs should be nutritionally balanced and nutrient–dense, with adequate amounts of protein, carbohydrates, fats, vitamins, minerals and water; and not energy dense (high in sugar, saturated fat and ultra-processed protein). There should be a preference for more plant-based protein diets, to include at least one offering of plant protein with high biological value or complementary proteins per week. This practice will encourage the consumption of more vegetables, whole grains and legumes and by extension increased dietary fiber intake. The emphasis should also be on the utilization of wholesome fresh or unprocessed produce.

Greater use of traditional meals

Traditional meals should be utilized in the menus of the SFP, as far as possible, which should be prepared using indigenous foods, especially staples, fruits and vegetables. Some of these meals have a high level of acceptance by students, which reduces the level of rejection of meals and food waste. These meals also influence tastes and preferences in young students towards more desirable local foods. Generally the utilization of local agriculture products can be increased in the SFPs through measures such as recipe development and testing using these local products.

Care should be taken to adjust traditional recipes with high salt, sugar and saturated fat content. A number of Caribbean fruits and vegetables are seasonal, so the use of these items should be integrated into the menu, when they are in season. The increased consumption of fresh fruits and vegetables may have long term health benefits for the students.

Reduction in the use of sugar sweetened beverages (SSBs)

Some CARICOM countries have already introduced policies to prevent or limit the sale of SSBs at schools (Trinidad and Tobago in 2017 and Jamaica in 2019) (Healthy Caribbean Coalition, 2017, section 3.3). It is recommended that these policies should be implemented in all CARICOM member states. The recommended amount of added sugar for adult women is no more than 100 calories per day or 6 teaspoons (25 g) and 150 calories per day, or about 9 teaspoons (36 g) for men (American Heart Association, 2018). If a child consumes 355 ml (12 ounces) of a sweetened beverage, he or she obtains about 8 teaspoons (32 g) of additional sugar (Harvard T. H. Chan School of Public Health, 2019). Such a child is in danger of over-nutrition. Children who over-consume these beverages and are physically inactive may eventually increase their risk for developing a number of negative health consequences (Gortmaker, Long and Wang, 2009).

Promotion of the consumption of water as a substitute to SSBs

Hector *et al.* (2009) discuss the replacement of soft drinks with water. They argue that this option "… overcomes the health issues associated with consumption of artificially-sweetened beverages" because of the lower total energy intake. Water consumption also contributes to better re-hydration, particularly after exercise or physical activity and may contribute to better oral care among children.

Increase in physical activity in schools

SFPs should support policies for increased physical activity (PA) for schools in the CARICOM member states. International experience suggests that such policies should be essential complements to healthy nutrition initiatives in schools (Healthy Schools, 2007). The potential benefits of regular participation in moderate intensity PA include:

- improved overall health, growth and development;
- improved muscular strength, endurance and flexibility;
- maintenance of energy balance (in order to encourage a healthy weight);

- reduced risk of developing adult diseases and conditions such as heart disease, diabetes and high blood pressure;
- development of a sense of well-being, enhanced self-esteem and a reduction in anxiety and stress;
- increased opportunities for social interaction and improved social and moral development; and
- improved cognitive functioning and academic achievement in school (Healthy Schools, undated).

Many jurisdictions therefore have developed policies on PA and a useful example of such a policy is from the Australian Capital Territory (ACT) (ACT Government, 2017). In CARICOM, the regional food and nutrition security action plan 2012-2026 (RFNSAP) calls for immediate action to encourage physical activity in schools, in line with WHO recommendations, including promotional campaigns to emphasize the benefits of PA and the design of suitable educational materials (CARICOM, 2011, p. 33).

Comprehensive assessment of the health status and food intake of students

The health status and food intake of the student population should be periodically assessed, to track their nutritional status through their school life. This will allow the relevant health care professionals to address at-risk conditions (over-nutrition and under-nutrition). Such assessment of the food intake of students must consider their total food intake, including the meals eaten at home. Such long-term, nutritional, monitoring of students would facilitate studies on the effects on nutritional status of factors such as:

- School feeding
- Physical exercise
- Food and nutrition education.

Expansion of the coverage of school feeding programmes

SFPs can contribute their greatest benefits in terms of the promotion of healthy eating, if they are comprehensive, to cover 100 percent of the school population. It is recommended therefore that CARICOM states consider a policy of expansion of their SFPs to cater for at least the majority of the primary school populations. Such comprehensive coverage will also help to reduce any snobbery or embarrassment on the part of low-income beneficiaries of the SFPs. However, payment arrangements can be considered for higher income parents, who are able to pay for the meals in the SFPs, as a mechanism to reduce the financial burden on the state for comprehensive SFPs.

4.2. Recommendations on food quality and safety

The following are the specific recommendations for the improvement of food quality and safety in the SFPs of CARICOM states arising from this study:

Compliance with internationally recognized standards

School meals should provide an adequate proportion of the nutrition requirements of children according to the averages for their age group including micronutrient requirements (FAO and WFP, 2018).

SFPs in CARICOM states should also comply with internationally recognized standards and codes of practice relating to foods, food production and food safety. These standards and codes of practice should be based on and harmonized with Codex Alimentarius and especially the "General Principles of Food Hygiene", and they are summarized in FAO and WFP (2018).

Improve certification of staff and premises

All staff involved in food preparation, delivery, service or sale, as well as all premises where these activities take place should be certified. This certification should include, but not be limited to, certification by the public health authorities. Such certification should facilitate high food safety standards, leading to less risk and liability in the SFPs. In this regard, vendors, cooks, kitchen staff and caterers should be required to attend training courses annually, not only on public health, but also on healthy food preparation, with emphasis on taste, presentation, choice of ingredients and the use of standardized recipes.

Establishment of a core team of dietitians and nutritionists to support the SFP

In each state, a core team of dietitians and nutritionists should be established to provide expertise on the nutritional needs of children and the healthy meals (menus) that can meet these needs. The core team of dietitians and nutritionists can also be involved in the following activities:

- hosting training workshops to upgrade menu planning and recipe development, with respect to healthy meals in the SFP;
- research on approaches to healthy eating within the social, agricultural, environmental and economic context of the state;
- the utilization of new technologies in menu planning; and
- the analysis of the nutritive content of the meals as a quality assurance measure.

Use of standardized menus and recipes in the SFPs

Standardized menus and recipes are being recommended for the SFPs since they can yield the following benefits (Montana Department of Public Health and Human Services, undated):

- consistent food quality;
- predictable yield: Standardized recipes produce known quantities of food, which helps to prevent excess production and food waste or meal shortages.
- accurate nutrient content: Standardized meals deliver pre-determined nutrient content, which assists in quality assurance of a SFP.
- food cost and inventory control: The utilization of fixed ingredients and quantities allows more efficient procurement of food ingredients, enhanced inventory control and easier determination of the costs of meals.
- labor efficiency: Written food preparation procedures as part of standardized recipes allow staff to perform more efficiently.
- employee confidence: Standardized recipes eliminate guesswork, decrease the likelihood of mistakes and poor food quality and thus increase employee confidence.

Formulation of policies on food sold in and around schools

Policies should be implemented or reinforced with regard to the quality of food sold in school cafeterias, canteens and tuckshops and in and around schools by vendors, in line with healthy eating objectives. Indeed the RFNSAP recommends the development of "regional standards and guidelines on meals served in school cafeterias and sold on school compounds" (CARICOM, 2011). These standards should require mandatory, as opposed to voluntary, compliance and should focus on the nature of the meals and snacks offered for sale, especially:

- placing restrictions on the sale of unhealthy foods; and
- mandating the sale of fruits, vegetables and healthier snack items, low in sugar, sodium and fat and high in dietary fiber.

4.3. Recommendations on food and nutrition education

The following are the specific recommendations with respect to food and nutrition education as an essential part of SFPs in CARICOM states:

Development of healthy food and nutrition education programmes

Nutrition education programmes to promote healthy eating lifestyles should be implemented at all levels and for all stakeholders within the education system in CARICOM member states. These stakeholders include students, teachers and other staff in schools, parents and the wider community. Such education programmes should emphasize the importance of right-sized portions.

Promotion of school gardens

School gardens have proven to be very useful in the provision of healthy food and nutrition education in schools. In addition, school gardens should be used to demonstrate the utilization of local foods (especially vegetables and legumes) in the SFP, as well as in the meals of the homes of students. This demonstration can be achieved through arrangements, whereby food from school gardens is used in school kitchens and sold to parents.

Other advantages of school gardens include:

- They can provide limited supplies of healthy produce for SFPs, free from harmful chemical residues, especially in the DSK model.
- They can be used as a vehicle for the teaching of Agricultural Science.
- The gardens create an environmental education component for the primary schools.
- They provide the incentive for students to start backyard gardens of their own, by teaching them gardening skills and an appreciation for fresh and healthy produce.
- Students learn to rely more on locally produced foods, which will further encourage the general

theme of the sustainability of livelihoods especially in rural areas.

- The food from school gardens can be used to teach students basic and fundamental cooking skills, by designating the school kitchen or cafeteria as a classroom in and of itself (Tauranac, 2017).
- Gardens and kitchens can be used as interactive classrooms for teaching of all academic subjects, as students need to better understand the connection between agriculture, cooking, culture and the community at large (Tauranac, 2018)

4.4. Recommendations on a national school feeding or school nutrition policy

The ratification by the state of key international instruments with respect to the right to adequate healthy and nutritious food on behalf of children should form a strong basis for the enactment of a national school feeding or school nutrition policy (SNP). Of most relevance is the United Nations Convention on the Rights of the Child (CRC) – General Assembly Resolution 44/25 of 20 November 1989 (United Nations Human Rights Office of the High Commissioner, 2019).

The CARICOM regional food and nutrition security policy (RFNSP) recognizes that early childhood learning centers, primary and secondary schools provide suitable points for interventions to prevent and control nutritional deficiencies and influence food tastes and preferences in children (CARICOM, 2010, p. 17). Therefore, the RFNSP recommends the preparation, implementation and promotion of SNPs in member states with the following features:

- the development of curricula at teacher training colleges, preschool, primary and secondary school levels that include nutrition and family education for good health and lifestyle choices;
- regional guidelines on school health and nutrition including school meal preparation, the foods allowed to be sold in schools and manuals on recipes, food safety and food service etc.;
- a policy that the meals provided under national school feeding programmes should have at least a 50 percent regional food content;
- strategic areas for intervention, including the provision of technical support and promotional materials, to strengthen school gardening programmes (CARICOM, 2010, p. 17).

The RFNSP also proposes that CARICOM should support member states in the implementation of campaigns in schools that will influence students to make nutritious food choices, through the promotion of competitions about food and nutrition in the region (CARICOM, 2010, p. 18).

The scope of the SNP in the Seychelles is also recommended, especially the following features:

- It incorporates measures for the evaluation and monitoring by the state of nutrition in schools.
- It is used as the framework for the coordination of school feeding, including:
  - the provision of school meals by the SFP;
  - the food offerings by the school tuck shops and cafeterias;
  - the training of school nutrition personnel, including cooks etc.; and
  - the establishment of linkages among families and school nutrition personnel (Ministry of Health and Social Development and Ministry of Education, 2008).

A SNP should also provide:

- a clear legal framework for the operation of the SFP for the state. This legal framework should define the roles of the Ministry of Education and other cross-sectoral stakeholders, in improving nutrition for students in all schools ; and
- a manageable, and comprehensive structure for the operations of the SFP in the state.

5. Other general recommendations

5.1. Procurement recommendations

Increase in procurement from small farmers

In line with the focus on HGSF, it is recommended that SFPs in CARICOM increase the amount of local food items procured from small scale and family farms. One of the most compelling justifications for a state-funded SFP in the Caribbean, is its expected impact in increasing domestic agricultural production leading to a reduction in the food import bill and increased job creation and economic activity, especially in rural areas.

However, in most of the Caribbean countries, this impact has not taken place and in many countries, instead, the SFPs have been using increasing amounts of imported, as opposed to local foods. It is therefore recommended that policies and the necessary regulatory frameworks, be developed and implemented to facilitate the integration of small farmers into supply chains of the SFPs.

Brazil provides a good example of a regulatory framework for local food procurement. According to Swensson (2015), in 2003, the Government of Brazil created the Food Purchase Programme (PAA), to procure food from small farmers. The PAA prioritized the most vulnerable producers and farmer organizations, such as women, land reform settlements, indigenous peoples and Quilombolas (communities of descendants of Afro Brazilian slaved people) (Swensson, 2015). Then in 2009, the Government instituted the national school feeding legislation (Law no. 11947/2009), which states that 30 percent of food purchases for school feeding must be procured from family farmers. Swensson (2015) reports that between 2003 and 2013, the "programmes" purchased 3 million tons of food from over 200 000 smallholder farmers, making it one of the largest public food procurement initiatives, from smallholders, in the world.

For CARICOM member states, adopting the policy that the local and regional content of the meals provided under the SFPs should be at a targeted figure of 50 percent, will further link the SFPs to local markets and producers, especially small farmers and promote the SFPs, as a market for high quality, domestic food products (CARICOM, 2010, p. 17). Success of such a policy will require an improvement in the capacity of farmers to supply adequate quantities of high quality food items, to the SFPs. Local food procurement by SFPs could also emphasize culturally appropriate foods such as, fresh fruit and vegetables and root crops, which also enhance the nutritional quality of the meals and provide healthier options.

Tauranac (2018) however notes some of the constraints to the utilization of local food in SFPs. These include:

- the transportation and scheduling logistics of obtaining food items from a large number of small farmers; and
- the need to process raw food ingredients obtained from small farms, before they can be easily utilized in school kitchens or by caterers.

Non-governmental organizations (NGOs) and farmers' organizations like cooperatives can provide a regular and acceptable supply of local food items, by aggregating and streamlining of the production and supply of groups of farmers. For example, in Haiti, several international funding agencies contract NGOs to carry out the procurement and distribution of food items from local small farmers to schools.

Stimulate the development of private sector, downstream enterprises

FAO and WFP (2018) suggest that while increasing the production and income of small farmers may be a primary focus of HGSF, SFPs can also play an important role in stimulating private sector entrepreneurship among other actors along the value chain. It is recommended therefore, that the SFPs in CARICOM through increased and targeted procurement, foster the development of the following enterprises:

- primary food processors, who can stabilize food after harvest to extend shelf life and to convert food into more convenient forms for purchase and storage by the SFPs;
- secondary processors who can turn the foods from primary processors into products that are attractive to students or may offer nutritional benefits, such as fortication of vitamins or minerals; and
- distributors/wholesalers, who may be able to aggregate the production of primary and secondary processors and increase the availability and affordability of local foods to SFPs, by their emphasis on large scale operations and low per unit cost.

5.2. Governance recommendations

Establishment of national school feeding committees (NSFC)

It is recommended, where they do not exist, that a national school feeding committee (NSFC) be established in member states to provide leadership in the implementation of the SFP. The NSFC, which should meet at least once per term, should be multi-sectoral in nature and should have among others, representatives from the ministries of Education, Health, Agriculture and Social Protection or Social Welfare, civil society and the private sector. These NSFCs should be responsible for:

- fostering the implementation of the national SNP and other policies relevant to school feeding in the state;
- developing policy indicators to monitor and evaluate adherence to and effectiveness of these policies;
- periodically reviewing the policies based on their evaluation and recommending modifications, alternatives etc.;
- ensuring specifically, that cafeterias and vendors abide by the guidelines provided in the policies; and
- submitting reports to the relevant authorities and Ministries.

Establishment of national school feeding units (NSFUs)

It is recommended that, where they do not already exist, that NSFUs be established in the ministries of Education (MOE) to administer the SFPs in the CARICOM states. These NSFUs must have fully dedicated and trained staff, which should include nutritionists, quality assurance officers, statistical assistants, food service systems specialists and administrative staff. Care must be taken however not to allow these NSFUs to inflate unnecessarily, the costs of administering the SFPs.

These NSFUs should:

- ensure that the entire school feeding system is performing effectively;
- ensure that SFPs are in compliance with all standards and procedures, especially with respect to nutrition (especially the provision of healthy wholesome and nutritious meals), food quality and safety;
- be responsible for the planning and development of standardized menus providing healthy balanced meals in appropriate portion sizes;
- ensure that a stated and agreed minimum dietary intake of essential nutrients is achieved in each meal.

In addition, the NSFUs should:

- have the capacity to facilitate nutrition education at schools;
- train the staff and other stakeholders of the SFPs, in areas such as food preparation, portion control, recipe development etc.;
- become active members of the NSFCs, especially to foster linkages between small farmers and the SFPs, for a sustainable supply of small farm produce for the SFPs; and
- be responsible for monitoring and evaluating the levels of performance of the SFPs and making relevant recommendations to the ministries of Education and the NSFCs for improvements.

5.3. Recommendations for monitoring and evaluation (M&E) systems

All aspects and activities of SFPs need effective M&E for their sustainable operations. This includes the M&E of all aspects of food quality and safety. Also, for the policy framework just outlined above, (especially with respect to increased procurement of local foods in the SFP) to have any long-term sustainable impact in the CARICOM member states, there must be adequate M&E of both the implementation of these policies and the performance of the SFP itself.

The Partnership for Child Development (PCD) in the context of HGSF has developed a "School Feeding Monitoring and Evaluation Toolkit" which is "… intended for use by programme managers within national government, administrators, schools and other stakeholders" (PCD, 2011). The Toolkit was developed for use in "low and middle income settings". The Toolkit describes the different components of the M&E system to monitor and evaluate the performance of SFPs and is highly recommended for the CARICOM member states.

According to PCD (2011), the key components of the overall M&E plan include:

- Results, indicators, baselines and targets, including an M&E logical framework;

- Data sources, including routine programme monitoring and surveys;
- Quality assurance mechanisms, including data quality and quality of services;
- M&E coordination plan;
- Evaluation, reviews and special studies; and
- M&E capacity building and system strengthening methods and procedures.

These components are then incorporated into a M&E work-plan and budget for a SFP, " … which is a costed time-bound, activity-based tool which describes and budgets for all M&E activities and clarifies agreed roles and responsibilities of everyone involved in the programme" (PCD, 2011). The time-period covered by the work-plan will be country specific, but the work-plan is typically revisited on an annual basis and may range for several years.

PCD (2011), states that the M&E work-plan generally includes the following:

1. A list of M&E activities planned for the year, including:
   - routine programme monitoring, including data collection, analysis and reporting;
   - surveys;
   - quality assurance mechanisms;
   - M&E coordination;
   - evaluation, reviews and other studies;
   - M&E capacity building and systems strengthening measures;
2. timeline for each of the activities;
3. responsible unit or implementing agency for each activity;
4. identification of the collaborating agencies who will help implement the activity;
5. budget requirement for each activity; and
6. sources of funding.

With respect to the coordination of the M&E activities, PCD (2011), states that this requires personnel at all levels of the implementation of the SFP. Thus, the specific institutional set-up for the M&E will vary from country to country. They suggest however that generally, "…at the national level, the staffing for M&E of the SFP would include a national M&E manager, a data officer, a research officer and routine monitoring system officer(s)" (PCD, 2011). The national level staff will be complemented by staff at the regional/district (or local) government level, "who will coordinate activities and link with the service delivery/school level, where there would be a focal person/committee responsible for daily record keeping" (PCD, 2011).

PCD (2011), also suggests that, in general, SFPs require inputs from different line ministries, including Education, Health and Agriculture, and therefore for an M&E system to function effectively "it is essential that there is coordination at all levels within and between ministries, local councils and schools".

As noted above, the proposed NSFCs and the NSFUs should be charged with the responsibility for the M&E of the SFPs in the CARICOM member states. The NSFCs could serve as the coordinating and reporting agency and the NSFUs should function as the executing agency, directly responsible for the execution of the M&E work-plan. In order to support the M&E of the SFPs, there must be:

- additions of the relevant staff as indicated by PCD (2011) to the NSFUs; and
- continued encouragement for increased community involvement in the SFPs.

Moreover, in keeping with global trends in effective communications, feedback on the performance of the SFPs should be encouraged. Such feedback, especially via social media, would assist greatly in the M&E and the improvement of the overall functioning of the SFPs.

Country case studies

C

6. Antigua and Barbuda

6.1. Introduction

Antigua and Barbuda is a twin-island state located in the East Caribbean. Antigua is the larger of the two islands, 280 sq km with Barbuda, 161 sq km (The Commonwealth, 2021). On the morning of Wednesday 6 September 2017, Barbuda was adversely affected by Hurricane Irma which caused severe devastation of homes, buildings, infrastructure and trees. This disaster resulted in the relocation of citizens to Antigua and school age children were distributed within primary and secondary schools on that island. Residents have started to return to Barbuda, but after a year electricity had not been restored on the island and its developmental path is very uncertain (Boger & Perdikaris, 2019). The description of school feeding is therefore restricted to the island of Antigua.

6.2. School feeding in Antigua and Barbuda

Figure 6.1 illustrates the structure of school feeding in Antigua. The Ministry of Education, Science and Technology (MOE) is responsible for the national school meals programme (NSMP). Parents prepare meals for most of the children, who do not receive lunches from the NSMP. Outside vendors offer snacks such as carbonated beverages, fried chicken, pies, patties, sweets (including chocolate) and salty snacks (commercial or home-made). Most of the vendors are located behind school fences, but in some cases, provisions are made for vendors to be located on the school compound. The food items supplied by the vendors compete with the NSMP lunch meals.

6.3. The national school meals programme

Overview

School feeding was implemented in Antigua and Barbuda in 2005. In 2018, the NSMP was being conducted in 24 public primary schools and three pre-schools and plans were in place to extend the programme to all public primary and pre-schools. Meals are provided Monday through Friday, from September to July, The NSMP has adopted the CSF model and meals are prepared in a central kitchen or MPC located at the NSMP site. Meals are stored in bulk containers then distributed to the schools by zones in six delivery trucks. Approximately 4 500 meals were prepared daily in 2018, therefore more than 48 percent of the children in public primary schools were receiving lunches daily.

Selection of students for the NSMP

Any student who is enrolled in a public primary school is provided with the opportunity to register for the NSMP. The student is then provided with a daily hot meal at no cost. A new system has been implemented referred to as a "Registry". Notably, parents are required to complete and sign a registration form, as an indication of their consent for their children to receive school meals. Parents will be accountable, thereafter, for the children who do not take the meal as requested on the Registry. The Registry has been put in place to reduce food wastage. The NSMP does not provide meals for private schools.

Community participation

In line with the CSF model, there is very limited direct community involvement in the operations of the NSMP in terms of in-kind contributions of food or the voluntary provision of services for the preparation and distribution of meals and so on. However, the NSMP created a Facebook page in September 2016 and through this medium, it has been able to maintain substantial outreach to the community (NSMP, 2016). On this website, the lunches offered to students are displayed daily and parents and students are able to comment on these meals on the site. The site is also used to post up-coming cooking and other social events by the NSMP, on behalf of community initiatives, as well as educational material on food and nutrition.

Operations at the school level

Meals provided by the NSMP are delivered to feeding units in the schools, which are separate buildings on the school compound. Cold foods are stored in a chiller and hot foods in a warmer until they are served. Meal service utilizes re-usable serving trays. Younger children and pre-schoolers receive their meals on pre-portioned trays. Older children are served on plates placed on serving trays.

One senior school meal assistant (SMA) is in charge of meal service at each school. The number of SMAs in each school varies from four to six, depending upon the size of the school. Each student completes a meal satisfaction form designed by the NSMP. The SMAs use these forms to record daily, the number of meals served at each school, including those served to teachers. Children are required to provide their own water or beverages to have with their lunch.

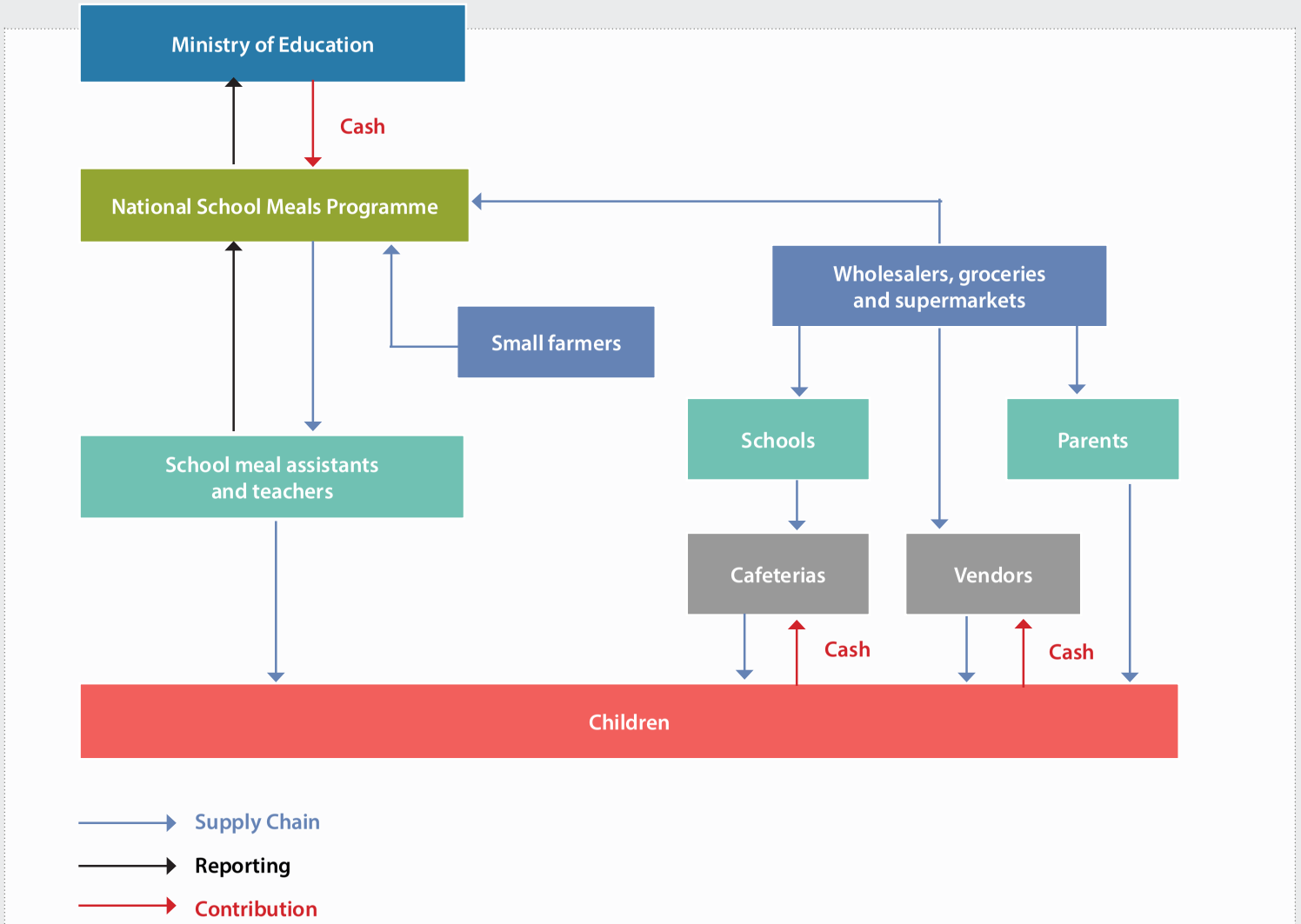

Figure 6.1: Operating model of school feeding in Antigua and Barbuda

In schools with pre-schools, the SMA collects the trays and delivers the meals to pre-schoolers in their classrooms. The older children collect their meals at the feeding unit. When the children have finished eating, they empty the waste in a special bucket placed outside the feeding unit. The trays and plates are washed, sanitized, dried and stored. The storage containers are collected and returned to the NSMP's kitchen by the drivers or loaders, who delivered the meals.

Operations at the national level

The operations manual (4th Edition) of the NSMP provides guidelines related to the NSMP in terms of:

- operation, design and layout of the facilities;
- meal preparation and meal service;
- kitchen safety and sanitation;
- purchasing, receiving and storage;
- relationship with the Board of Health;
- national standards for food handlers; and
- procedures to follow if unforeseen operational events occur.

The central kitchen of the NSMP prepares and distributes nutritionally balanced meals to the registered students and also to teachers who request meals. The staff is mandated to adhere to the menu cycle and to uphold quality and quantity standards set by the NSMP.

Menus and nutrition

A three-week menu cycle is utilized. The operations manual provides the serving sizes for a meal from the food groups: food from animals, legumes, vegetables and staples. No serving sizes are provided for fruits, but the students receive fruits twice a week based on seasonality and availability. An example of a lunch on the menu is: baked chicken, rice and peas, coleslaw and fruit when served. Most lunches provide one-third of the recommended daily nutrient requirements. Sample meals are analyzed for nutritional content.

Being sensitive to its clients' religious and meal preferences, the NSMP also provides a vegetarian option daily for the approximately 100 vegetarians registered in the programme. Examples of vegetarian protein options are as follows: stewed red beans, veggie lasagna and chunks of vegetarian meat in creole sauce (creole carves).

Like other SFPs in CARICOM, the NSMP of Antigua faces challenges of the limited acceptance of vegetables and the greater preference for foreign foods over locally grown foods. The chefs have tried to introduce vegetables such as spinach in unique ways, but the children's acceptance levels remain low. They mainly accept vegetables in the form of coleslaw and in a traditional dish called chop-up (steamed mixed vegetables such as pumpkin, spinach, and ochroes). The children also do not like ground provisions as a staple, but will consume it in soup.

The meals "baked chicken or stewed pork with rice and peas", "pasta with meat sauce" and "lasagna with green salad" enjoy high acceptance. With respect to fruits, students have a preference for bananas. However, there is generally positive acceptance of Caribbean fruit. Decor is utilized to positively influence acceptance of Caribbean fruits and vegetables, with attractive pictures and drapery. SMAs are also trained to encourage the children to try vegetables to improve their health. The food-based dietary guidelines for Antigua and Barbuda also provide useful information, which is used by the SMAs to encourage better eating habits in the children.

6.4. Governance of the national school meals programme

The general governance arrangements of the NSMP are illustrated in Figure 6.1. The NSMP is a large organization in the context of Antigua and Barbuda, with a staff complement of approximately 170. The NSMP is a department in the MOE. The NSMP is headed by a director of operations (manager) and the key personnel in the organization include the executive chef, chief stores manager, procurement manager, senior field officer and an accounts manager.

The NSMP is located in the National School Meals Complex, where also is located the central kitchen. The central kitchen prepares lunches, which are then distributed to schools by the drivers and stewards of the NSMP.

At the start of the NSMP in September 2005, "contributions" were requested from students and teachers, for the heavily subsidized meals at XCD 1.00 and XCD 2.00 per day respectively. From February 2016, however, the meals have been provided at no cost to the students, as the meals are now fully funded from the Consolidated Fund of the Government of Antigua and Barbuda.

Schools play an important role in the administration of the food service to the students, as has been detailed

above. The responsibility for this food service at the schools lies with the school principal, who is assisted by the teaching staff and school meal assistants.

6.5. Procurement arrangements

The general procurement arrangements for the NSMP are illustrated in Figure 6.1. The NSMP has had a positive impact on the local economy and agricultural sector, since food items are procured from local farmers and wholesalers in keeping with the MOE' s policy to purchase local as a first option (Government of Antigua and Barbuda, 2017, p. 298).

Bulk supplies of raw materials for the NSMP are obtained from local wholesalers. The policy of supporting local farmers has been maintained, in spite of the challenges local farmers face from time to time to meet the requirements of the NSMP. The NSMP considers itself as a strong supporter of local farmers (NSMP, 2020). It states that over 80 percent of the eggs and the vegetables and fresh produce used in school meals are produced locally, particularly: lettuce, tomatoes, cucumbers, sweet potatoes and pumpkins.

Approximately 120 farmers are linked through sales to the NSMP and there is also linkage to the Antigua and Barbuda Poultry Association for the supply of chicken. Six processors are also contracted to cut up this chicken for ease of use by the NSMP.

6.6. School gardens and aspects of food and nutrition education

The MOE has stated its intent to incorporate agricultural science into the science curriculum in primary schools with a practical, hands-on focus. It states that this initiative is intended to enhance from the early years of students, an appreciation of growing one's own food and providing the knowledge and skills set so to do (Government of Antigua and Barbuda, 2017, p. 285). The initiative also forms part of the vision of the country to achieve a higher level of food security. Towards this end, several primary schools had set up and were improving their school gardens (Government of Antigua and Barbuda, 2017, p. 285). As stated earlier, the Facebook page of the NSMP has been used to post educational material on food and nutrition.

6.7. Quality assurance and monitoring and evaluation (M&E)

An M&E plan exists for the NSMP, which requires data collection, data analysis and the systematic reporting of data analyses. Programme indicators have been developed and meal guidelines have been drawn up. Nutrient analyses are also conducted on the lunches served. This M&E system is integrated into a national monitoring or information management system. There are also plans to refine and update the NSMP.

Daily, drivers complete a meal service distribution form on which is recorded information on the schools served, meals delivered and the number of bulk serving utensils returned. SMAs also record their daily attendance. Other records include:

- a daily food satisfaction log, which the school principal or teachers complete and add comments as necessary; and
- a menu evaluation form, which may be completed by the students, teachers, principal etc.

Daily, food temperatures are taken, when the food is delivered, and the record is collected at the end of a week. Likewise, the inventory control sheet is collected at the end of the week, even though the log is done daily. This latter document helps to track cutlery and reusable serving ware. Some children bring their cutlery from home and the NSMP fills the void for those who do not bring theirs. There is also a monthly inventory sheet.

The Ministry of Health, Central Board of Health conducts training in food safety for persons vending food and their assistants, including those in school cafeterias and community groups.

6.8. Annual net benefit analysis of the national school meals programme

The annual net benefit analysis for the NSMP in Antigua and Barbuda was carried out for 2016/17. Expenditure data were available for 2017/18, but this data may have been influenced upward, by disaster relief on account of the Hurricane Irma disaster on Barbuda in September 2017.

The contributions of the four benefits of the NSMP are presented in percentage form in Table 6.2. The major contributions to total benefits were from increased productivity (46.2 percent) followed by healthier and longer lives of the beneficiary students (32.6 percent); then value transfer (19.0 percent). The contribution of return on investment to the total benefits was not significant (2.2 percent), when compared to the other benefits.

The estimated total operational cost for the NSMP in Table 6.1 is XCD 4.3 million. The major components of this operational cost are the wages of cooks comprising approximately 71 percent of the costs and the purchase of food ingredients at approximately 28 percent of the total operational cost.

As seen in Table 6.2, the estimated economic costs of the programme (programme total cost) based on the figures supplied to the Mission were estimated at XCD 4 661 000 with the major element of programme total costs being the total operational costs paid by the MOE, which comprise 92.7 percent of the programme total costs.

The programme total costs are XCD 4 661 000 XCD, but the programme total benefits of XCD 7 223 289 far outweigh these costs with an annual net benefit of XCD 2 562 289 and a benefit–cost ratio of 1.55.

6.9. Overall assessment of the national school meals programme

Given that the overall benefit–cost ratio of the NSMP in Antigua and Barbuda is 1.55, the NSMP is currently very beneficial to Antigua and Barbuda and it can be justified on purely economic grounds. Also, the NSMP has seen the nutritional benefits of its programme in the form of increased school attendance. This programme is therefore very socially desirable. Thus, the NSMP in Antigua and Barbuda may be a feasible model to adopt.

One factor influencing the high benefit–cost ratio for this country is the large number of children covered by the NSMP, resulting in the high percentage of the primary school population covered by the programme (48.3 percent). However, the high benefit–cost ratio was obtained *inter alia*, because of the high minimum wage in Antigua and Barbuda (USD 6 317 or XCD 17 055.90 per annum) which inflated the benefits from "increased productivity" and "healthier and longer life", in particular.

The NSMP has been able to produce safe and nutritious lunches for its target group. One of the major issues of the NSMP however, is its sustainability, in view of the high wage rates in the country and the current slow-down in the global economy affecting tourism the major sector of the country. This situation provides a rationale for a consideration of ways to reduce the costs of the NSMP, to increase the likelihood of its sustainability. Other issues facing the NSMP are:

- The low community involvement in the programme; and
- The limited utilization of local food from the domestic agricultural sector.

6.10. Specific recommendations

Improved physical plant at the central kitchen

The general recommendations on procurement and monitoring and evaluation provided in Chapter 5 are particularly relevant to Antigua and Barbuda. In addition, the physical plant at the central kitchen of the NSMP has had to meet increased demand for meals in a relatively short space of time and is subject to daily wear and tear. Therefore, there is the need for the immediate upgrade and expansion of the kitchen area. This could include an upgrade of the building structure to include a proper cooling system. Also, the drainage system in the kitchen needs to meet specifications for drain-off using either point drainage or linear drainage to facilitate easy cleaning and, by extension, kitchen hygiene. On a positive note, it was reported that plans are already in place for an upgrade of the physical plant.

Table 6.1 Operational costs of the NSMP 2016/17

Operational item	Cost XCD	%
Purchase of food ingredients	1 200000	27.77%
Wages	3 060 000	70.82%
Purchasing of utensils and equipment	40 000	0.93%
Repairs to kitchen and servicing of equipment	21 000	0.49%
Total operational cost	**4 321 000**	**100.00%**

Table 6.2 : Determination of the annual net benefit of the NSMP, Antigua and Barbuda 2016/17

Programme element	Element manager	XCD	%
Total operational cost	Min. of Education	4 321 000	92.71%
Administrative costs	Min. of Education	340 000	7.29%
Paid to state by parents	Min. of Education	0	0.00%
Paid to school by parents	Schools	0	0.00%
Programme total costs		**4 661 000**	**100.00%**
Benefit sources	**% of total benefits**	**Benefits**	
Value transfer	19.0%	1 372 674	
Return on investment	2.2%	158 584	
Increased productivity	46.2%	3 338 692	
Healthier and longer life	32.6%	2 353 339	
Programme total benefits	**100.0%**	**7 223 289**	
Annual net benefit		**2 562 289**	
Benefit–cost ratio	**1.55**		

7. Bahamas

7.1. Introduction

The Commonwealth of the Bahamas (Bahamas) is a nation comprised of 700 islands and over 2 000 rocks and cays (and) it straddles the Tropic of Cancer and it stretches 970 km (The Commonwealth, 2020a). Tourism contributes approximately 50 percent of GDP and employs directly or indirectly about half of the country's labor force. Nassau is the political capital of the Bahamas. It is located on the island of New Providence. New Providence is 207 sq km in area and is the main commercial hub of the country and its hotels and port account for more than two-thirds of the four million-plus tourists who visit the Bahamas annually (The Government of the Bahamas, 2011). Grand Bahama Island, the northernmost island of the Bahamas, and the closest major island to the United States, is a popular vacation destination (Grand Bahama Island, 2020).

The Bahamas Family of Islands comprise the other major populated islands of the archipelago. They comprise: The Abacos, Acklins, Andros, The Berry Islands, Bimini, Cat Island, Crooked Island and Long Cay, Eleuthera, The Exumas, Grand Bahama Island (east and west ends), Harbour Island and Spanish Wells, Inagua, Long Island, Mayaguana, Ragged Island, Rum Cay and San Salvador. They are the less populated of the Bahamian island chain.

7.2. School feeding in the Bahamas

As seen in Figure 7.1, school feeding in the Bahamas is a combination of:

- a state-sponsored programme officially called the "national lunch programme" but it is popularly known as the "national school lunch programme" (NSLP);
- private vendors who are allowed and approved or certified to sell lunches at the schools under a programme termed the school vendor programme (SVP);
- tuck shops operated by the schools; and
- parent supplied meals to students.

Most schools operate tuck-shops, generally as a revenue-generating activity for the schools. These tuck-shops generally sell snacks and juices and there is a general agreement that they do not sell hot meals, especially at lunchtime. Tuck-shops are a major revenue source for the public schools. They carry the most popular and the widest range of snacks and drinks and clearly provide a fairly competitive alternative to the vendors in some schools. Breakfast may be sold through the tuck-shops. Food vending takes place outside of the perimeter of the schools in some areas, especially in New Providence, but attempts are made to limit this vending because of the dubious nutritional value of the foods served.

7.3. The national school lunch programme

Selection of students

Families with insufficient income to provide their school-aged children with lunch can access the NSLP. To be eligible, an applicant must be:

- earning the minimum wage or lower;
- a Bahamian citizen or permanent resident;
- over 18 years of age; and
- head of their household.

The application is made to the School Welfare Division (SWD) of the Department of Social Services, by visiting the SWD or through guidance counselors or social workers attached to schools. A school social worker then conducts a home investigation and interviews the applicant to assess the applicant's eligibility and make a recommendation. If the application is successful, the SWD informs the guidance counselor of the names of the children of the applicant to be added to the NSLP. Each school semester, the families of children on the NSLP are re-assessed, to determine if they are still eligible for the NSLP. Students on the NSLP receive their lunches free of charge.

Community participation

A provision exists for members of the community to refer to the SWD, families they consider eligible for the NSLP. A few schools also provide breakfast for needy children through various types of initiatives of the community in which the school finds itself. There were many reports that children not on the NSLP, if they appear deserving may actually be provided with lunches free of cost, by the schools or the vendors themselves, or by various charities, especially in some of the Family Islands.

Particularly in the smaller family islands, the NSLP is considered a valuable source of employment and non-payment to caterers or vendors in the programme receives wide coverage in the popular media.

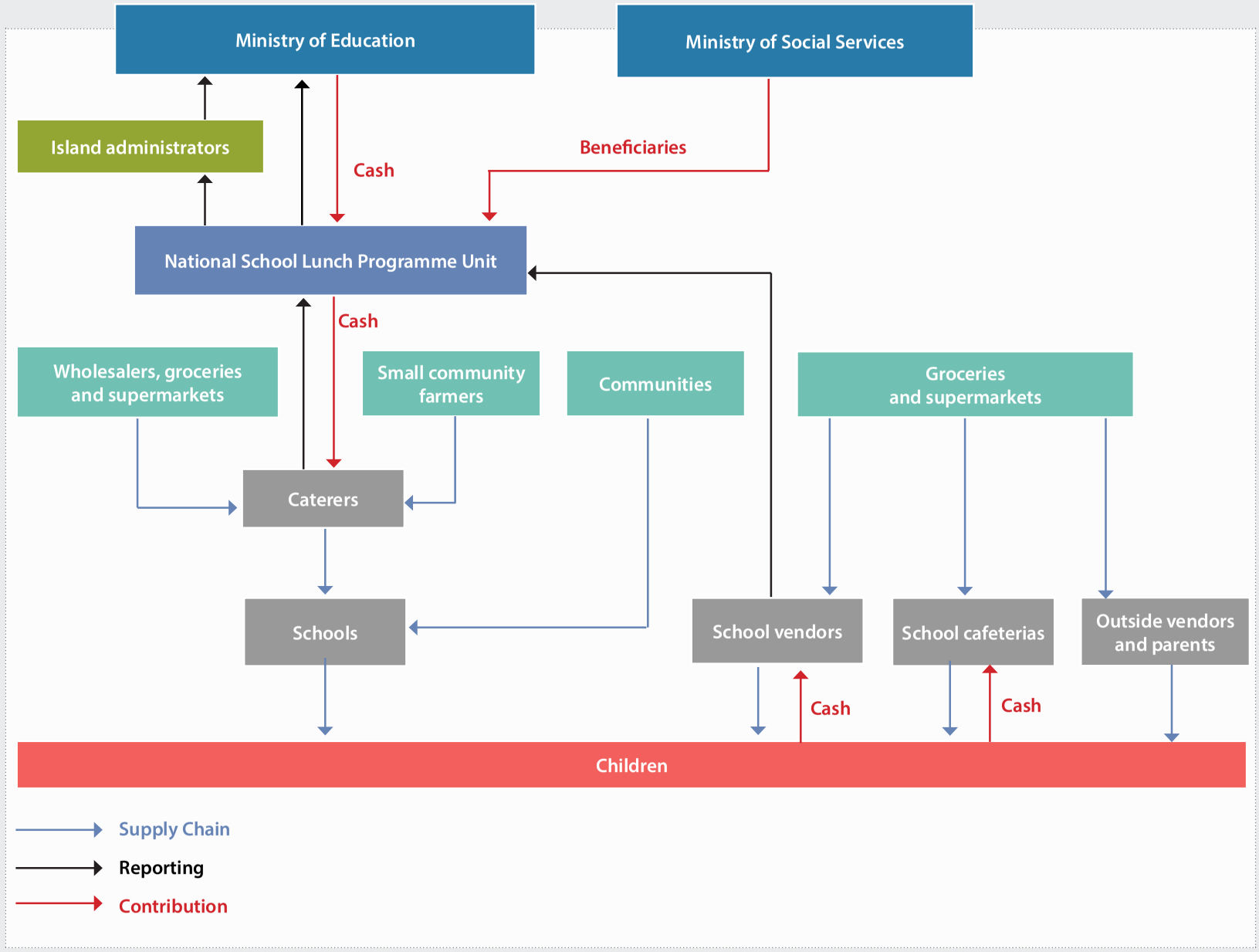

Figure 7.1: Operating model of school feeding in the Bahamas

Operations at the school level

The NSLP operates via designated caterers, specially certified by the state and paid by the MOE for the meals provided. These caterers mainly prepare the meals in specially designed kitchens in the homes of the caterers. The caterers then deliver the meals to the schools in separate boxes and assist in the distribution of the meals to the students in the NSLP as directed by the teaching staff of the school.

In addition to these caterers, there are a larger number of private vendors, who are also approved or certified to sell lunches at the schools under the SVP. These vendors serve hot meals such as fried or baked chicken, potato chips, pasta, hamburgers and hot dogs, with limited use of fresh fruit and vegetables. Students pay between BSD 3 and BSD 5 for these lunches. These vendors manage their operations in the schools, with guidance of the teaching staff of the schools. Many schools have constructed special booths for the use of these vendors.

Most of the caterers on the NSLP are also allowed by the schools to sell additional lunches to students, to supplement their income from the NSLP and so the term "vendors" is popularly applied to caterers of the NSLP, as well as to the private vendors in the schools.

Operations at the national level

As stated earlier, the Bahamas is made up of many islands and the NSLP caters for the islands and cays that have public schools on them. As seen in Table 7.1, approximately nine percent of the students in public schools are on the NSLP. However, the percentage of students on the NSLP in the islands with smaller populations is much higher than in New Providence and Grand Bahama, with larger populations. As seen in Table 7.1, approximately 69 percent of the students on the NSLP are in New Providence and Grand Bahama. Also, 60 percent of these students are in primary schools. Table 7.1 also indicates that the average cost of the NSLP per student was BSD 675.

Approximately 80 percent of the students in the public schools obtain their meals from the school vendors and school tuck shops. School vending is a major private food service enterprise on New Providence and on some of the Family Islands. Approximately 11 percent of the students bring their meals to schools from home or, in some islands, their parents make private arrangements to supply their meals to the schools.

Menus and nutrition

A publication of the Ministry of Health contains very detailed nutritional standards for meal planning that are said to be compulsory in all public pre-school, kindergarten, primary and secondary schools and that apply to all free and paid lunches (Ministry of Health The Bahamas, 2011). The document continues: "It is mandatory that all school lunch vendors and all other relevant parties adhere to the standards at all times" (Ministry of Health The Bahamas, 2011). However, it is not clear how adherence is being monitored or enforced and indeed, under what framework such enforcement can take place.

The MOE has also developed a "Healthy schools initiative programme for the Commonwealth of the Bahamas", which sets out a detailed programme for "Healthy Schools". The status and reach of this programme was not determined in the Mission.

The "compulsory standards for healthy lunch meals" have been adopted in the formulation of "sample menus for the NSLP", which are included in the document "National school lunch programme" produced by the National School Lunch Unit of the Ministry of Education (2016). The listing in this document provides detailed suggestions for menus for the 2017/18 school year on a 4-week cycle.

With respect to "healthy eating", only very minimal food supplies from local agriculture enter into the school meals in the Bahamas. Hence with the emphasis on imported foods, the "fresh" element is limited in the meals of vendors and caterers, especially with respect to fruit, vegetables and root crops. However, there is evidence that when certain fruits are in season, they may be served as part of fruit cocktails, but again this is to a very limited extent. Vendors and caterers did also indicate that the students did not like the local fruits because perhaps of their unfamiliarity with them (even though these students live on tropical islands). So, the main fruits that were served in school meals were apples and to a lesser extent grapes and pears, imported from the United States. There is thus considerable scope for school feeding in the Bahamas to be modified to attain healthy eating standards using healthy local foods, given the emerging problem of overweight and obesity in the Bahamas.

Table 7.1: Geographical distribution and cost of national school lunch programme, 2016

Location	High school	Primary school	Total	Cost BSD
New Providence	905	1 066	1 971	1 153 277
Abaco	50	71	121	126 540
Andros	246	290	536	399 525
Grand Bahamas	250	738	988	722 025
Cat Island	46	105	151	147 197
Long Island	23	53	76	60 336
MICAL*	54	64	118	87 637
Eleuthera	107	144	251	138 843
Exuma	43	51	94	70 380
Total	**1 724**	**2 582**	**4 306**	**2 905 760**
Total students in public schools			**47 575**	
% of students on the NSLP			9.05%	
	Cost / Student	BSD 674.87		
***Mayaguana, Inagua, Crooked Island, Acklins and Long Cay**				

Source: Derived from data provided by the Ministry of Education

7.4. Governance of the national school lunch programme

The general governance arrangements of the NSLP are illustrated in Figure 7.1. The human right to food is acknowledged by the Ministry of Education (MOE) however, there is no legislation governing school feeding in the Bahamas.

In principle, the school vending programme is under the general administration of the MOE, through school principals and other designated administrators, but currently, there is little governance of their operations.

The NSLP has been managed, funded and coordinated by the Ministry of Education, since around 2015. It was formerly funded and managed through the Ministry of Social Services. Caterers for the programme are contracted and paid by the MOE.

The MOE is in the process of establishing a functional NSLP unit as a separate and dedicated unit within the MOE, to administer the programme. At present, the administrative functions of the NSLP are being carried out through one designated officer in the MOE in Nassau, with support from other officers in the MOE in Nassau, as well as district education officers in some of the more populated Family Islands such as Grand Bahama and Exuma. Island administrators in some of the smaller Family Islands also assist in administering the programme. The Ministry of Social Services still handles the receipt and the approvals of applications to join the NSLP.

7.5. Procurement arrangements

The current arrangements for the procurement of food raw materials or supplies for the caterers of the NSLP and the private vendors appear to be similar as illustrated in Figure 7.1. Caterers and vendors obtain their supplies from supermarkets in all islands and wholesale food distributors in New Providence and Grand Bahama. In the case of the other Family Islands, these supplies generally have to be purchased in Nassau and brought to the islands on private "mail boats" that service these islands. However, the sailings of these mail boats do not follow a fixed schedule, so that there may be delays in sailings, leading to shortages of foodstuffs on the Family Islands and limiting the ability of the caterers and vendors to follow fixed menus.

There is only very limited food supply from local farmers to the caterers of the NSLP and the school lunch vendors. It appears local farmers supply no more than about two percent to three percent of the total supply of foodstuffs used by the vendors and caterers in the Bahamas. This situation has arisen because of the general low level of food production in the Bahamas, as well as the high prices of the limited domestic food products. The main items obtained from local farmers by the caterers and vendors appear to be seasoning herbs, fresh fruit (particularly cantaloupes, watermelon and bananas) and vegetables. There is also evidence of local fish and shell foods (e.g. conch) being sourced from local fishermen in the Family Islands. However, these fish and shell-foods are only served in high schools and to a very limited extent, because of their high prices.

There was no evidence of school gardens currently supplying any foodstuffs for meals served in public schools. Where such school gardens (or farms) exist, the produce is sold to staff and nearby residents, as a means of raising funds for continued operations of the school gardens.

7.6. School gardens and aspects of food and nutrition education

Few schools on the islands visited had operational school gardens, although most schools (especially high schools) have an area dedicated to such activity.

The major education and training programmes that have been conducted in the context of the NSLP has been for the lunch vendors in the application of the compulsory standards for healthy lunches. This training has included the following areas:

- basic nutrition concepts;
- the food based dietary guidelines;
- the role of lunch vendors in assuring food security in the school setting;
- the identification of flavours that influence food selection;
- understanding the ingredients and methods to develop flavor in nutritional cuisine; and
- planning and preparation of healthy menu options for school age children (Barnes, 2018).

7.7. Quality assurance and monitoring and evaluation

There are compulsory standards for healthy lunch meals in Bahamian schools (Ministry of Health The Bahamas, 2011). The adherence by private vendors to these sample menus appears to be purely voluntary. School vendors, as well as caterers, however, have to meet fairly stringent public health certification (Ministry of the Environment The Bahamas, undated). The kitchens that are used to prepare the meals by the caterers and vendors are also inspected by the Public Health Department.

At present the monitoring of the meals of caterers and vendors is done by the guidance officer in some schools, while in most schools it would appear that this role is assigned to a designated teacher. In other schools particularly in the Family Islands, this monitoring role is performed by the principal or vice principal. At present, the monitoring of the meals of caterers and vendors is done by the "guidance officer" in some schools, while in most schools it would appear that this role is assigned to a designated teacher, while in other schools particularly in the Family Islands, the role is performed by the principal or vice principal. In the Family Islands, this is because perhaps the majority of the children in the schools may be on the NSLP.

7.8. Annual net benefit analysis of the national school lunch programme

Annual net benefit analysis was conducted for fiscal year 2017/18. The contributions of the four individual benefits of the NSLP are presented in percentage form in Table 7.2. Here it is seen that the major contribution to total benefits was from value transfers (48.8 percent) and increased productivity (28.3 percent). The other major contributor to the total benefits was the benefit of healthier and longer lives of the beneficiary students (14.6 percent). Return on investment made an insignificant contribution to the total benefits (3.3 percent).

Table 7.2 also indicates that the major cost item in the NSLP is the cash paid to the caterers, which constitutes the total operational cost, which makes up 97.1 percent of the programme total cost. This figure is slightly more than the figure for 2016 in Table 7.1. The administrative costs of the NSLP to the Ministry of Education were

estimated at 2.91 percent of the programme total cost. Unaccounted for are the indirect cost to the NSLP of the administrative cost of the Ministry of Social Services. The annual net benefit of the NSLP was estimated at approximately BSD 1.65 million and the benefit–cost ratio was 1.52.

7.9. Overall assessment of the national school lunch programme

The annual net benefit analysis carried out has demonstrated that the NSLP can justify its existence from a social welfare perspective with an annual net benefit of approximately BSD 1.65 million and a benefit–cost ratio of 1.52.

The major issue facing the NSLP is its sustainability. Any reductions in the budgetary allocations to this programme would jeopardize the viability of those caterers who produce meals only for the programme, as the number of meals produced by individual caterers on some islands is already very small. Low meal production results in low total earnings of the caterers. There is also the need for the NSLP to increase its contribution to general economic and specifically agricultural development, which will increase the social desirability of the NSLP.

The general recommendations for the SFPs from this study in Chapters 4 and 5 are very much applicable to the Bahamas. In addition, however, there are specific recommendations for improved operations of school feeding in the Bahamas. These are presented next.

7.10. Specific recommendations

Better monitoring of the meals served by caterers and vendors

A programme should be implemented to test the nutritional content of meals and snacks served in schools in the Bahamas, to determine the extent to which these meals and snacks meet the nutritional requirements of the students and the extent to which these meals and snacks contribute to overweight and obesity in the students. Thereafter, a system of monitoring of the nutritional quality of meals and snacks served at Bahamian schools should be devised. Caterers and vendors must become aware, through clear directives, of their responsibility to adhere to "healthy eating" guidelines and approved sample meal menus and in particular that they must exclude specifically designated "forbidden foods" from their meals. Such "forbidden foods" should be designated by the National School

Table 7.2: Determination of the annual net benefit for the national school lunch programme

Programme element	Element manager	BSD	%
Total operational cost	Min. of Education	3 100 000	97.09%
Administrative costs	Min. of Education	93 000	2.91%
Paid to school by community	Schools	0	0.00%
Paid to school by parents	Schools	0	0.00%
Programme Total Cost		**3 193 000**	**100.00%**
Benefit sources	**% of total benefits**	**Benefits**	
Value transfer	48.8%	2 361 544	
Return on investment	3.2%	156 827	
Increased productivity	28.3%	1 371 383	
Healthier and longer life	19.6%	950 823	
Programme total benefit	**100.0%**	**4 840 577**	
Annual net benefit		**1 647 577**	
Benefit–cost ratio	**1.52**		

Feeding Unit of the MOE and must include foods high in sugar content, especially sugar sweetened beverages (SSBs) and ultra-processed foods.

Implementation of a simplified school feeding system

The SVP is the mainstay of school feeding in the Bahamas, especially in the more populated islands of New Providence and Grand Bahama. As such, this programme should receive the care and attention that it deserves from the Ministry of Education and improvements to its operations should be a key objective of the proposed National School Feeding Unit of the Ministry of Education.

The major advantage of the SVP is its sustainability. This programme consists of private sector business operators, who must conduct their business with a level of efficiency to achieve profitable operations, without any direct support from the state. The vendors have shown their business acumen by:

- the profitability of their operations;
- their ability to stay in business;
- providing meals (lunches mainly) at affordable prices to students (at or less than BSD 5 per meal); and
- sustaining a demand for their services.

However, the vendors must be closely monitored to ensure that they adhere to healthy eating guidelines. Also, the SVP must be more closely linked to agricultural development in the Bahamas. More local food products (especially fresh fruit and vegetables and root crops) in the SVP will not only ensure more healthy meals being prepared, but also create greater linkages with local farmers and food vendors and so stimulate agricultural development at the community and island levels.

Thus, the removal of the distinction between vendors and caterers is being recommended with the simplified school feeding system based on vendors because of their:

- private sector business orientation;
- more sustainable operations; and
- more efficient and cost-effective production systems.

The recommended school feeding system is an organizational framework that will:

- promote monitoring and evaluation and emphasize feedback mechanisms;
- prescribe clear, legal definitions of roles and responsibilities of its agencies; and
- provide legislative or legal status for its operations, standards and its goals through for example, a "school feeding act";
- allow the standards and procedures of the proposed National School Feeding Unit to be enforceable as "compulsory" standards; and
- that would allow:
  - o continuous flow of information and services;
  - o adequate M&E and feedback mechanisms.

Other features of this simplified system should include:

- All vendors must meet the strictest public health, food safety and nutrition standards.
- The NSLP should be based on the issuance of vouchers to students, who can use them to purchase meals from any vendor in a school.

Establishment of Agricultural Science and 4-H programmes at all relevant levels of the school system

Agricultural Science programmes, as well as the 4-H programme in schools in the Bahamas, could serve to promote agricultural production in the Bahamas by:

- being a vehicle for nutrition education, especially "a healthy eating initiative ";
- promoting early exposure of students to food production, especially small-scale farming; and
- fostering the greater use of healthy foods, especially fresh fruit and vegetables and root crops in diets.

8. Barbados

8.1. Introduction

Barbados is the most easterly of the Caribbean islands. Bridgetown is the capital and the only seaport. Other small towns include Speightstown (2 400), Bathsheba (1 600), Holetown (1 500) and Oistins (1 500). There is an extensive spread of hotels and apartments along the coast. The country has a good road network of 1 600 km (virtually all paved) over the entire island. As noted in Chapter 1, Barbados enjoys one of the highest per capita incomes in CARICOM. Historically, the Barbadian economy depended on the sugar industry, but the economy has been driven by the tourism sector in recent years.

8.2. School feeding in Barbados

Figure 8.1 shows the structure of school feeding in Barbados. The SFP in Barbados is called the School Meals Programme (SMP) and it is run by a department of the Ministry of Education, Technological and Vocation Training (MOE), the School Meals Department (SMD). Most schools also have cafeterias, where students can purchase snacks. In addition, there are road-side vendors, who are not under the control of the Ministry and who offer a wide range of snacks and other similar foods. Parents may provide home-cooked meals for those students, who do not consume the meals prepared by the SMD.

8.3. The school meals programme

Overview

According to Husbands (2013), in March 1963, a pilot school feeding scheme was put into operation, under the administration of the MOE. It started with three kitchens providing meals for six schools in three parishes and it prepared and delivered approximately 1 600 meals each day. This pilot programme gradually expanded into the current SMP (Husbands, 2013).

Selection of students for the school meals programme

According to the Ministry of Education, Technology and Vocational Training (2015), the schools participating in the SMP include government primary schools "… as well as the lone senior school and private institutions such as the Learning Centre, the Challenor School and the St. Patrick's Roman Catholic School". Lunches are also served to selected students at some secondary schools. The specific target school populations of the programme are the early childhood (nursery) centers and public primary schools. Students who attend private primary schools are not part of the programme, except where specific arrangements are made.

Community participation

Being based on the CSF model, there is limited scope for community participation in the SMP. Community members find employment in the SMP as cooks in the four central kitchens and also as food servers in the schools.

Operations at the school level

The meals are distributed in insulated bulk containers to the various schools by geographic districts. Food servers employed by the SMD, serve the meals; they are assigned in the ratio: one server per 100 students. The portions are served with standardized serving equipment (for example ladles and spoons). Children in the nursery and infant departments receive their meals on compartmentalized portioned serving trays. The meals for children seven years old and over are plated then placed on serving trays. This variation from food boxes has been adopted so that the children can develop food etiquette.

Upon completion of the meal service, drivers who would have distributed the lunches, return to collect the insulated containers, as well as the meal request quotations for the following day. The school principals calculate meal quotations based on historical data and the menu to be served on the following day. Secondary school children do not receive milk. The SMD does not deliver milk to schools. Suppliers deliver the powered milk directly to the nurseries and special schools and the pasteurized milk is delivered directly to the primary schools on Tuesdays.

Some schools are now engaged in fundraising activities to meet shortfalls in state funding, by selling food items. These sales may compete with the SMP offerings, as the two meal options are made available at lunch time. For example, pizza is not a menu item from the SMP, therefore, if pizza is sold as a fund-raising venture, the children who can afford it will buy this 'novel' food item and may not consume the lunch from the SMP, which may result in food wastage.

Each student voluntarily contributes BBD 1.00 per week towards the meal from the SMP and teachers can access these meals at a cost of BBD 8.00 per week. Food servers are also entitled to meals. A child is not denied a meal if

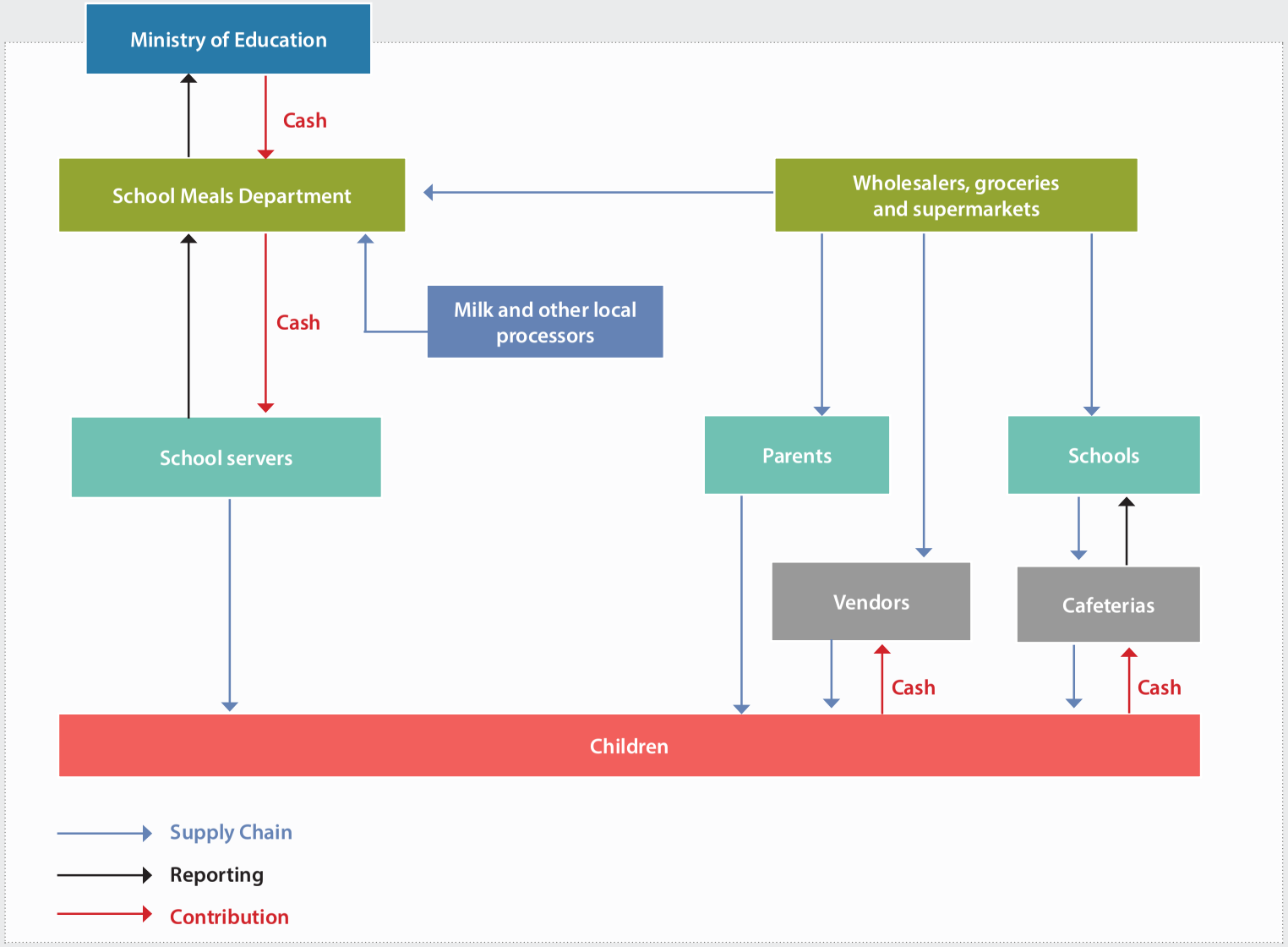

Figure 8.1: Operating model of school feeding in Barbados

he or she is unable to pay for it. Students have the option to pay for their meals monthly or weekly, but the majority of students pay weekly. The SMD gives each student a card on which payments are recorded. The food servers collect the money, record receipt on the students' cards, and deposit the sums of money with the principal of the school. Accounts officers from the SMD settle accounts with principals and the funds are then deposited to the Treasury and placed in a consolidated fund.

Operations at the national level

The SMP utilizes a centralized foodservice system. There are four MPCs or sites for food preparation and delivery based on geographic zones. Two kitchens are in St Michael parish (Harbour Road and Country Road), one in St James (Lancaster Road) and one in Christ Church (St Christopher's Road). The SMD provides a mid-morning item and a lunch meal. Daily, 26 300 lunches are prepared from Monday to Friday and delivered to students, and this is 85 percent of the total number of early childhood, primary and special education students. A small percentage of secondary school students also participate in the programme, but detailed numbers were not available.

The approximate production of meals at each MPC is given in Table 8.1.

Table 8.1: Approximate meal production per day of the school meals department, Barbados

Meal production centre	Quantity of meals produced per day
Harbour Road	7 400
Country Road	6 900
Lancaster Road	5 500
St. Christopher's Road	6 500
Total	**26 300**

Menus and nutrition

The school meals officers of the SMD engage in menu planning, quality and food inspection, provide on-the-job training and supervise school meals operations at schools. The broad- based principles that are used to develop menu options include:

- Menus should be balanced and include fruit and vegetable options for micronutrients.
- Nutritional content of the meals should be in line with the national nutritional guidelines, so that some nutritional targets are being met.

The SMP indicated that the following benefits have been observed from the programme:

- improvement in school enrollment, particularly in resource- limited families and communities; and
- social skills and interactions of students have improved, including etiquette.

The SMP provides milk as a mid-morning break item in two forms:

- pasteurized milk for older children 170 g (6 ounces); and
- powdered and pre-packaged dry milk (usually soy-based) for nurseries and early childhood education aged children 118 ml (4 ounces).

Sometimes children may ask for another serving.

The lunch meal follows a five-week menu cycle and consists of one serving from the food groups: food from animals; staples; vegetables (dark green leafy or Yellow, colorful) and fruits. The lunch menu was designed with input from nutritionists from the nutrition center, with serving sizes meeting the provision of one-third of the child's recommended daily allowances (RDA). The food groups are supplied as follows:

- staples 170 g (6 ounces);
- vegetables 170 g (6 ounces);
- one piece of fruit (double portion for secondary school children); and
- 12.4 g of protein obtained from food from animals or legumes. For example, 57 g to 85 g (2 ounces to 3 ounces) is the recommended serving size for poultry, meat or fish.

Notably, the children have specific lunch preferences. There is high acceptance for burgers and mixed one-pot lunches such as rice and peas or pelau. In contrast, vegetables served as single menu items, for example, carrots, salad greens or beets have low acceptance, but acceptance improves, when vegetables are incorporated into cooked meals e.g. chicken pelau.

8.4. Governance of the school meals programme

The governance arrangements for the SMD are also illustrated in Figure 8.1. All planning, funding and the budget for the programme comes from the Government, through the MOE to the SMD. No private-public partnerships or charitable donations contribute to the programme. Children pay BBD 1.00 per week and teachers pay BBD 8.00 per week for meals.

In Barbados, the current poverty reduction strategy in effect is the one funded by the World Bank which has been designed to ensure that children from resource-poor backgrounds are supplied with appropriate nutrition. However, there is no specific target or milestone with respect to the poverty reduction strategy. School feeding while not specifically part of that funded project, has been identified as an ongoing strategy to support the elimination of child hunger. Barbados has a food and nutrition security action plan to implement its food and nutrition security policy.

The main ministries directly involved in school feeding are the MOE and the Ministry of Health and Wellness (MOH). The MOH focuses on food safety practices and procedures. Although the SMD employs food safety officers, the MOH also assigns health inspectors to the SMP. These inspectors:

- check kitchens to ensure adherence to HACCP principles from receipt of goods to meal distribution and service;
- collect and conduct random sampling of meals to determine acceptable microbial counts;
- perform temperature testing; and
- monitor overall food safety throughout the foodservice system.

The SMD does all the coordination and implementation of the SMP. This department also manages staff training as well as recruitment. The department has 560 full-time employees, who are employed in the areas of management and administration, meal preparation and delivery, procurement of food ingredients and meal transportation. The SMD is headed by a manager whose duties and responsibilities were recently spelled out in an advertisement for the post (Ministry of Education, Science, Technology and Innovation, 2017).

8.5. Procurement arrangements

The food procurement arrangements for the SMP are also illustrated in Figure 8.1. Food commodities for the SMP for an academic year are procured by public tender through the MOE (Barbados Government Information Service, 2019). Tenderers have to meet several conditions which tend to favor commercial firms as opposed to community or small scale enterprises. These conditions include the following:

- The tenderer must include with the tenders the company's or institution's articles of incorporation indicated that it is an existing registered company or statutory body.
- Tenderers whose businesses or undertakings are required to be licensed under the health services (food hygiene) regulations must submit a copy of the relevant, valid license with their tenders.
- The successful tenderer(s) will be required to enter into a contract drawn up by or in a form approved by the Solicitor General.
- A surety for the due performance of the contract will be required (Barbados Government Information Service, 2019).

There is collaboration between the SMP and the Ministry of Agriculture (MOA) with regards to the challenge of local procurement of fruit and vegetable items for the SMP. This challenge exists for a number of reasons. Firstly, there is not a structured programme or arrangement in place to mandate direct linkages between the SMP and farmers. Similarly, there is no inter-sectoral committee to spearhead the required collaboration and hence the linkages between the SFP and local food and agriculture are weak.

Officials of the MOA pointed out factors that limit the participation of local agriculture in the SMP, including the following:

- Local farmers cannot compete with the lower cost of imported goods and the Barbadian tastes for these products.
- The students in the SMP have not been amenable to new local products such as cassava blended products (e.g. cassava bread) which have been positively taste tested.
- The SMP tends to request produce from farmers only when they are in crisis and unable to obtain their supply from imported sources.
- There seems to be an underlying cultural issue, almost a snob effect against the use of local products; a misconception that imported products are better and locally grown food are for "poor" people.

However, sales of milk to the SMP is a vital support to the dairy industry in Barbados (Carter, 2013).

8.6. School gardens and aspects of food and nutrition education

School meal officers of the SMP instruct children and parents through the PTA, about healthy eating and snack options. The SMP has also provided opportunities for etiquette training of children.

Areas of land dedicated to school gardens are a feature of most primary schools in Barbados, although the gardens are not being operated in most schools. Several projects have been initiated to promote the development of these school gardens. In 2013, "Slow Food" identified educational gardens and working with youth as a key to developing "good, clean and fair food systems" (Slow Food Barbados, 2020). The goal of the programme is to support schools and community volunteers to become more effective in creating and sustaining school gardens in their community (Slow Food Barbados, 2020).

This programme has grown to include 17 schools and institutions involving students ranging in age from three to 18 years (Slow Food Barbados, 2020). This programme has also served to integrate school garden activities into the overall school curriculum, as well as to encourage school canteens to create menu options, to utilize produce from the school gardens. Hotels and other institutions on the island have also initiated similar projects.

8.7. Quality assurance and monitoring and evaluation

The operations of the SMD are guided by a policies and procedures manual, which includes an in-house monitoring and evaluation system. This includes progress reports and monitoring forms: (lunch order, meal census data, food wastage, stock tracking systems and log of drivers).

The school meal officers monitor:

- the standards for meals;
- the level of consumption of local produce;
- preparation methods; and
- portion sizes.

The officers also monitor the operations and the quality of food offerings of school cafeterias and outside vendors. Some principals also monitor what is sold at the gates/fences by the outside vendors. Their reports are forwarded to the MOE for its response.

8.8. Annual net benefit analysis of the school meals programme

Data on the costs of operations of the SMD were made available to the study for 2017. In addition to the standard annual net benefit analysis, a simulation exercise was carried out to determine the effect of variations in the number of students receiving meals in the SMP. The initial position represented in Table 8.3 assumes the number of students is 20 148, and this number is varied in the simulation analysis.

The results of the initial annual net benefit analysis are presented in Table 8.2 and Table 8.3. The contributions of the four individual sources of benefits of the SMP are presented in percentage form in Table 8.3. Here it is seen that the major contribution to programme total benefits was from increased productivity (42.7 percent). The other major contributor to the programme total benefits was the benefit from healthier and longer lives of the beneficiary students (29.4 percent). Value transfer contributed 25.6 percent of the programme total benefits, while return on investment made an insignificant contribution of 2.4 percent.

Table 8.3 also contains the programme total costs of the SMP. The major cost item is the total operational cost, which accounts for approximately 98 percent of the costs of the SMP. Details of these operational costs are given in Table 8.2. Here it is seen that the wages including those for the cooks in the central kitchens account for about 64 percent of the total operational cost. The other major operational cost is the cost of food ingredients which accounts for 33 percent of the total operational cost. The administrative costs of the programme to the Ministry of Education amounted to less than 1 percent of the programme total costs.

In Table 8.3, the annual net benefit of the SMP was estimated at BBD 7 289 671 and the benefit–cost ratio at 1.37.

A simulation exercise was carried out to determine the effect of the number of students receiving meals under the SMP and the benefit–cost ratio of the programme. This exercise was carried out to determine how much the social desirability of the SMP is influenced by the size of the programme. This simulation exercise was carried out by keeping all aspects of the cost of the programme

Table 8.2: Operational costs of the school meals programme

Operational item	Cost BBD	%
Food ingredients	6 411 210	33.12%
Wages	12 374 658	63.93%
Food transportation	132 876	0.69%
Repairs to kitchen and servicing of equipment	408 746	2.11%
Eating and cooking utensils	30 000	0.15%
Total operational cost	**19 357 489**	**100.00%**

Table 8.3: Determination of the annual net benefit for the school meals programme

Programme element	Element manager	BBD	%
Total operational cost	Min. of Education	19 357 489	97.83%
Administrative costs	Min. of Education	88 300	0.45%
Paid to school by community	Schools	0	0.00%
Paid to school by parents	Schools	320 000	1.62%
Programme total cost		**19 765 789**	**100.00%**
Benefit sources	**% of total benefits**	**Benefits**	
Value transfer	25.6%	6 919 397	
Return on investment	2.4%	644 142	
Increased productivity	42.7%	11 546 379	
Healthier and longer Life	29.4%	7 945 542	
Programme total benefit	**100.0%**	**27 055 460**	
Annual net benefit		**7 289 671**	
Benefit–cost ratio	**1.37**		

constant, as in Table 8.2 and varying the number of students in the programme, as shown in Table 8.4. These variations alter the benefits of the SMP and the results of this simulation exercise in terms of the corresponding values of the benefit–cost ratio are also given in Table 8.4.

In Table 8.4, it is seen that as expected, *ceteris paribus*, the larger the number of students obtaining meals in the SMP, the greater will be social desirability of the programme, as given by the benefit–cost ratio. When the number of students is set at 20 418 as in Table 8.3, the benefit–cost ratio is 1.37, but when the number of students is set at 26 300 which is the reported number of meals prepared at the four production centers of the SMD, then the benefit–cost ratio rises to a very high figure of 1.66.

Table 8.4: Simulation of benefit–cost ratio of the school meals programme by number of students in the programme

Number of students in the SMP	Benefit–cost ratio
20 418	1.37
22 000	1.45
24 000	1.55
25 200	1.61
26 300	1.66

8.9. Overall assessment of the school meals programme of Barbados

The annual net benefit analysis carried out has demonstrated that the SMP can justify its existence from a social welfare perspective, with a benefit–cost ratio approaching 1.66 if all the meals produced at the production centers are actually eaten only by students. This means that the SMP of Barbados is one of the most socially desirable and successful SFPs in CARICOM. The annual net benefit analysis thus supports the continued operation of the SMP in Barbados. In addition, the lunch menu seems to meet the objectives of the nutrition guidelines for Barbados.

However clear challenges exist for the school feeding system in Barbados that were identified from this study. These are now detailed as follows:

- The first challenge is that the SMP could increase its contribution to the reduction of overweight and obesity by the greater promotion of healthy eating lifestyles in Barbados.
- The second challenge is the sustainability of the SMP in view of its high costs and the demands that are being placed on the public purse of Barbados.
- The third challenge is the limited linkages between the SMP with the islands food and food processing stakeholders and the lack of targets for local content of meals.
- Another issue is that there are no major community participation or outreach aspects of the SMP, apart from invitations to the SMP to discuss nutrition at schools or PTA meetings.
- Finally, there is no clearly defined role or policy with respect to in-school vendors or out of school vendors. Schools have cafeterias and many vendors set up stalls outside of school compounds. It would appear that principals and PTAs attempt to manage these vendors on an individual school basis.

8.10. Specific recommendation

More efficient meal production with enhanced local food input

In line with other SFPs in the CARICOM states, there is need for closer linkages between the SMP in Barbados and the local agricultural sector. A realistic target of the local content in the meals of the SMP needs to be established and pursued with urgency. Meals incorporating local produce should be developed and farmers should be provided with incentives and the institutional support to be able to tender and supply the SMP with produce of acceptable quality.

There is also the need to improve the meal production system for the SMP by taking the following measures:

- A needs assessment should be conducted to determine the capacity of the existing equipment of the SMD, so as to either refurbish existing equipment and or purchase new equipment to meet the production demands.
- Cooks, food preparation and other food production workers should receive additional training in the maintenance of the new equipment.
- There should be continuous training for food preparation workers in food quality and safety, particularly the potential risks in a SFP using the CSF model.

9. Belize

9.1. Introduction

Belize is a democratic, upper middle-income country located on the Caribbean coast of Central America, with close cultural and other ties to Central America (European Commission, 2020). After its original capital, Belize City was ravaged by a hurricane in 1961, a new capital, Belmopan, was built inland, about 80 km west of Belize City. Belize City, however, remains the country's commercial and cultural center, as well as its most populous town. The other main towns in the country are: San Ignacio (20 027), San Pedro (15 484), Orange Walk (13 692), Corozal (11 427), Dangriga (10 002), Benque Viejo (6 497) and Punta Gorda (5 795) (The Commonwealth, 2020).

9.2. School feeding in Belize

Overview

The non-governmental organization (NGO) CARE (Cooperation for American Relief Everywhere) attempted school feeding in Belize in the early 1970s (Paris-Lambert, 2003). CARE provided primary schools in Belize with powdered milk, enriched white flour, and cooking oil, to address the problems of poor nutrition and promote healthy standards of living. "However, the overall effectiveness of the programme as well as the ultimate intentions of CARE were ambiguous" (Paris-Lambert, 2003).

CARE later teamed up with the Ministry of Education to develop the Relevant Education on Agriculture and Production Programme (REAP). Established in several rural schools in Belize, REAP provided students with the opportunity to learn about "animals, plants, weather, village studies, soils, health, and nutrition" (Paris-Lambert, 2003). Schools often used the fruits and vegetables produced from REAP as a type of feeding programme. REAP was eventually phased out, however, due to the cost concerns surrounding the programme (Paris-Lambert, 2003).

School feeding on a sustained basis was started in Belize in the 1990s by Father (now Canon) Leroy Flowers at St. Mary's Anglican Primary School in Belize City, who recognized the need for a healthy midday meal to improve the energy levels of the young students (Paris-Lambert 2003). Eventually, the Ministry of Education (MOE) through SHAPES (School Health and Physical Education Services) helped set up the state-sponsored School Feeding Programme (SFP) (Paris-Lambert, 2003).

The Toledo District has been the most underdeveloped and rural of the districts in Belize, due partly to the "relative geographic isolation and inaccessibility of southern Belize to the rest of the country and its economic centers" (Paris-Lambert, 2003). This district's underdevelopment has meant that it has had the highest rate of poverty and nutritional deficiencies among all the districts of Belize (Paris-Lambert, 2003).

The Toledo district has therefore been the target for SFPs to solve the problems of malnutrition, by the provision of healthy meal alternatives to traditional diets. Initially, the SHAPES feeding programme began in nine schools (Paris- Lambert, 2003).

The Toledo SFP of Plenty Belize was launched in 1998. Then in October 2001, Hurricane Iris caused severe damage to homes, crops (especially perennial food crops) and forest trees in the Toledo district. According to Paris-Lambert (2003), "Plenty International seized the opportunity to replenish the local food source by initiating school-based gardens in order to offer longer-term relief after the foreign disaster aid ran out". Further collaboration between Plenty Belize and the PTAs of the participating schools led to the GATE Project. A key project strategy was to create organic school gardens that could be replicated by both village residents and other interested communities, demonstrating the methods and benefits of organic gardening and sustainable agriculture and their relationship to a healthy biosphere." (Plenty Belize, 2008)

The GATE Programme initially focused on communities where the school ran a voluntary lunch programme, in order to provide fresh produce to the schools. The vast majority of food from the school gardens of participating schools was used to help feed the school children (Plenty International, 2016). By the 2004/05 school year, 13 primary schools and the district's secondary school were participating in the GATE project (Toledo Ecotourism Association, 2008).

As seen in Figure 9.1, currently, school feeding in Belize is a combination of:

- a state-sponsored SFP;
- other state-supported programmes;
- several community-based programmes operated by churches, clubs, NGOs etc.;
- privately operated school meals programmes;

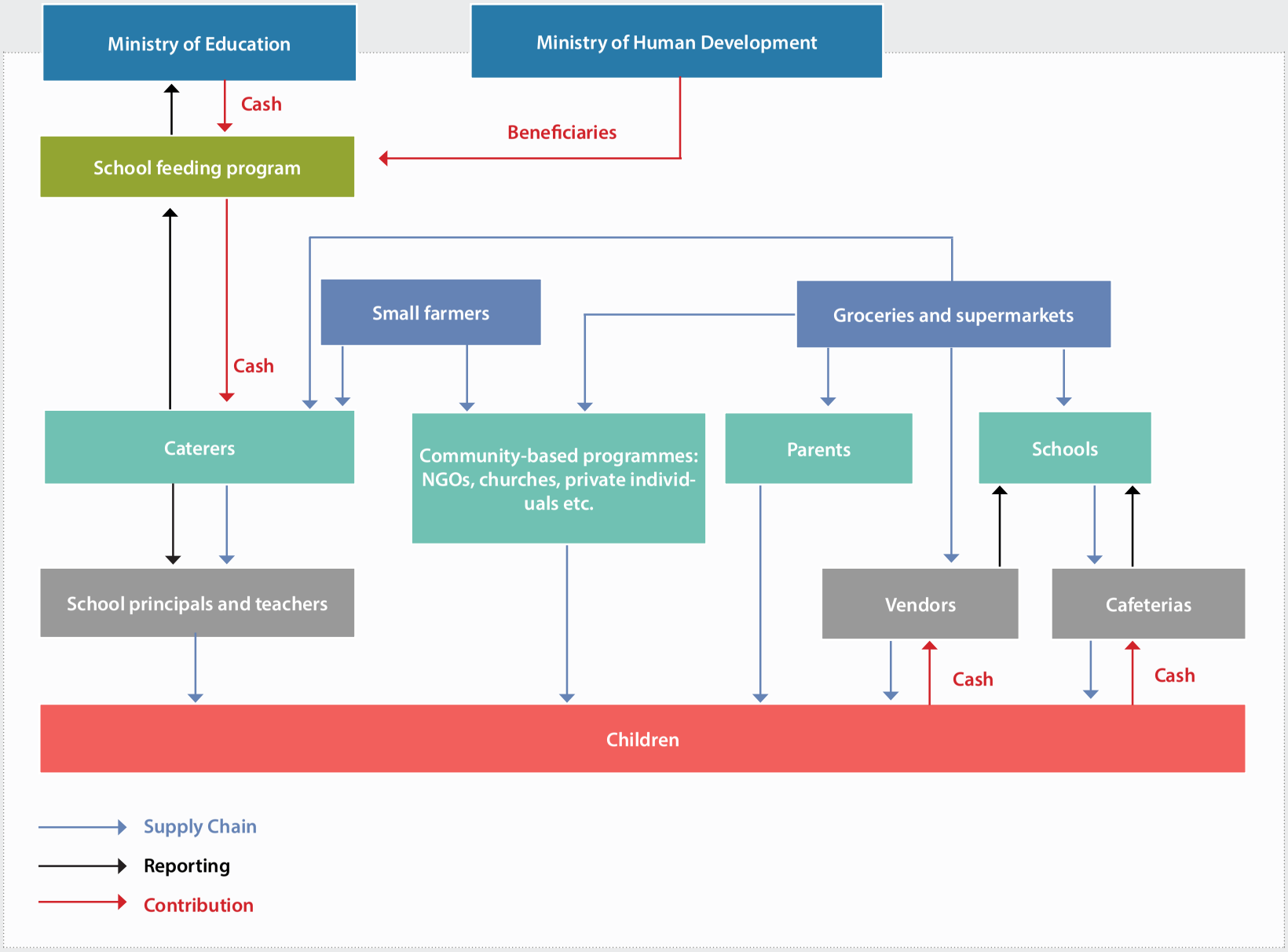

Figure 9.1: Operating model of school feeding in Belize

- tuck-shops or cafeterias operated by the schools; and
- parent supplied meals to students.

Several private individuals and organizations provide meals for school children in Belize. These operations vary in their structure and functioning. One such private programme is Dara's feeding programme. In this programme, about 170 lunches are prepared by this private meal provider and served to students at his premises in Belize City. The funds for this programme are obtained from concerts and other fund-raising efforts by the meal provider.

Edgell (2016) suggests that other private providers of meals may include:

- "Social security board ride across Belize" (financed by fundraising);
- "Together we can solve hunger";
- Cornerstone foundation feeding programme; and
- the Belmopan police feeding programme.

Some schools operate cafeterias, cantinas or tuck-shops, which generally sell snacks and juices etc. as revenue-generating activities for the schools. Because of this revenue generation, they carry the widest range of snacks and drinks, which may not always be the healthiest foods.

Where no organized school feeding is available, parents may provide meals for their children, who take these meals to the schools and consume them there. Meals provided by parents are an important component of the school feeding in Belize.

9.3. The School feeding programme

Overview

Currently, the state sponsored SFP is concentrated in four areas and in 25 schools as indicated in Table 9.1. Here it is seen that most of the students in the SFP are in Belize City and the Belize River Valley, with the remainder in the town of Dangriga in the Stann Creek District. The SFP operates for approximately 184 days per school year.

Selection of students for the school feeding programme

Children are selected for the SFP in two basic ways:

- The Ministry of Human Development, Social Transformation and Poverty Alleviation submits a list of families on the BOOST social assistance programme. The BOOST programme targets poor families with children and it is designed to break the cycle of poverty that these families are caught in. All children from families on the BOOST list qualify to receive meals under the SFP. It was reported in the Mission that the assessment of families for participation in BOOST has not been completed, so many other students may indeed be qualified for participation in the SFP.
- Students are identified by the school principals as being in need and on that basis, they are selected for the SFP.

Community participation

The limited coverage of the state-sponsored SFP has led to a number of community based "feeding programmes"

Table 9.1: Spatial distribution of the school feeding programme in Belize

Area	No. of schools	No. of students	% of students
Belize City	15	725	63.2%
Dangriga (Stann Creek District)	6	200	17.4%
Belize River Valley	4	222	19.4%
Total	**25**	**1 147**	**100.0%**

in Belize. Many of these are run by service groups such as the Rotary Club and the Red Cross. For example, according to the Rotary Club of Belize (2008), the Club funds the feeding of students at Ebenezer Methodist Primary School and the St. Joseph Primary School in Belize City. The funds for this feeding are raised locally and also assistance to help fund this project is obtained from the Rotary Club of Dunedin and the Interact club of Athabasca, Canada.

Many churches also participate in school feeding in Belize. The case of St. Mary's Primary School in Belize City has already been noted. A recent description of this school feeding states:

> St. Mary's feeding programme benefitted from a very generous donation from Belize Electricity Limited, part of its ongoing outreach and support initiative. The feeding programme is generally funded through monies generated from the Church and through generous members and friends at home and abroad… with more than one hundred children fed daily. (Channel5Belize.com, 2015).

The case of Ebenezer Methodist Primary School has also been reported upon as follows:

> "The Ebenezer Methodist Primary School's feeding programme has been running for the past 15 years. During that time, it has provided nutritious meals for its needy students and ensuring that no child fails to reach their maximum academic potential due to hunger." (Breaking Belize News, 2015).

The article continues:

> "The feeding programme was born from the concept that a hungry child cannot learn and has been receiving financial aid from the Rotary Club to keep it afloat but recently, managers of this programme have had to search for additional donors to keep the programme running properly. Fortunately for the Ebenezer feeding programme and the 75 students that are currently benefiting from it, Speednet Communications stepped up to the plate." (Breaking Belize News, 2015).

The article concludes:

> "Coordinators of the feeding programme said that they have seen academic improvement in the students that benefit from the programme, proving that children cannot focus and excel in school if they are not eating properly." (Breaking Belize News, 2015).

Another example of a community based SFP is in a rural Anglican school, St. Matthew's. This school has a feeding programme, which is aided by Anglican friends in the UK. Since the feeding programme started, it is reported that the school's academic performance has steadily improved, and St. Matthew's is now the school of preference for most parents in the area.

Operations at the school level

School principals are responsible for the administration of the SFP in their schools and they may also request assistance from their teaching staff. One of their main functions is to coordinate the delivery of meals by caterers and the return of the equipment of the caterers. In schools where cooking takes place, the school principals are also responsible for general operations in the preparation of the meals.

Operations at the national level

The meals are prepared by contracted caterers, on-site at the schools or off-site at approved premises. The contracts specify the terms and conditions of the caterers, including a cost-sharing arrangement with the administration of the SFP, with respect to the replacement of appliances. Caterers are paid monthly, based on the number of meals they have delivered.

Recently, a new SFP was initiated in the Toledo district through the "Mesoamerica Hunger Free" (also referred to "Mesoamerica Without Hunger") programme. This programme has received aid from the Mexican Government through the Mexican International Development Cooperation Agency (AMEXCID) and technical support from the FAO, and Belize has recently joined the programme. (Nunez, 2016).

In April 2016, this new SFP was launched in four Roman Catholic schools namely: San Francisco de Jeronimo, Santa Elena, Santa Cruz, and San Luis, following the model of a sustainable school feeding programme (Moody, 2017). Thus, the SFP incorporates school gardens and nutrition education as a way to promote lifelong healthy eating habits for the school children and by extension their families. It also focuses on the utilization of local products, especially from family farms. Through

this initiative, the consumption of fresh local and healthy foods should be promoted and local production and local job creation should be boosted (Government of Belize Press Office, 2016).

Menus and nutrition

The MOE has developed a detailed programme of suggested menus on a 2-week cycle. Caterers claimed to follow this menu plan and it was also reported to have been followed in the Toledo pilot project.

9.4. Governance of the school feeding programme

The general governance arrangements for the state-sponsored SFP in Belize are illustrated in Figure 9.1. The SFP is administered by the MOE, directly under the office of the chief education officer. There is a functional SFP unit with two staff consisting of the director of education support services in her role as director of school feeding and a food and nutrition coordinator. As stated earlier, the Ministry of Human Development Social Transformation and Poverty Alleviation provides the names of families on the BOOST social assistance programme, whose children qualify for the SFP.

The Toledo SFP is administered by a committee, the Toledo Association for School Feeding Programmes made up of representatives of all the schools (teachers or principals) supporting an elected executive committee. This committee has assisted Plenty Belize in the planning, monitoring, and implementation of the GATE Programme. This voluntary committee is assisted by the district education manager on behalf of the MOE. Also, a representative of Plenty Belize sits as an ex-officio member of the committee. In addition to the committee, each school has a team which implements the feeding programme for that school. This team may consist of several supportive parents and in many cases an additional supervising teacher.

The Ministry of Agriculture coordinates the National Food and Nutrition Security Commission, whose goal is to coordinate and act as an advocate "… with all sectors of the economy and other stakeholders on national food and nutrition security matters, in order to improve the well-being and quality of life for all Belizeans" (Ministry of Agriculture Belize, 2017). "The commission was established in 2001, to serve as an advisory body to Cabinet on matters related to food and nutrition security. Overall, the Ministry of Agriculture is responsible for chairing the commission and providing oversight powers for policy and programme implementation" (Ministry of Agriculture Belize, 2017).

One of the major area of activities of the commission has been the promotion of the expansion of sustainable SFPs throughout Belize, especially incorporating school gardens. Towards this end, the commission has played a key role in the launch of the "MesoAmerica Hunger Free" project in the Toledo District.

9.5. Procurement arrangements

As seen in Figure 9.1, caterers obtain their food supplies for the meals from commercial private food suppliers such as supermarkets. Caterers reported that only very limited food supplies are obtained from farmers in their local communities or districts. It appears that no more than about 5 percent to 10 percent of the total supply of foodstuffs used by the caterers in the SFP are sourced from farmers in the communities, where the schools are located.

The main items obtained appear to be seasoning herbs, fresh fruit (particularly watermelon, citrus and bananas) and vegetables (onions, sweet pepper, cilantro and garlic). It has to be emphasized however that a very high percentage of total food consumption in Belize is derived from national (or domestic) food production. Therefore, while the supply of produce from the immediate community or district to caterers may be low, the supply or input of domestic produce from national food production into the SFP could be considerably higher.

9.6. School gardens and aspects of food and nutrition education

Many schools have operational school gardens and most schools (especially secondary schools) have an area dedicated to such activity. Especially in the Toledo district, these school gardens supply produce for meals served in the schools. Some produce may also be sold to staff and nearby residents, as a means of raising funds for continued operations of the school gardens.

The nutrition officer in the Ministry of Health also reported that she has held training sessions for cooks and caterers of the SFP, especially on food groups and healthy eating.

9.7. Quality assurance and monitoring and evaluation

Caterers have to meet specific public health standards, before they are allowed to serve meals in the schools. Certification by the Public Health Department of the Ministry of Health is also necessary for the caterers to prepare meals. The kitchens that are used to prepare the meals by the caterers and vendors are also inspected by the Public Health Department. Part of this certification involves training in food safety. However, the enforcement of these food safety regulations may not be very stringent.

9.8. Annual net benefit analysis of the school feeding programme

In the case of the SFP of Belize, financial data for the SFP was only available for 2016/17 period. The contributions of the four individual benefits (or the drivers of benefits) of the SFP are presented in percentage form in Table 9.3. Here it is seen that the major contribution to programme total benefits was from value transfers (40.9 percent) and increased productivity (35.0 percent). The other major contributor to the programme total benefits was the benefit of healthier and longer lives of the beneficiary students (23.3 percent). Return on investment made an insignificant contribution to the total benefits (0.9 percent).

Details of the operational costs of the SFP in Belize are given in Table 9.2. Here it is seen that the payment to contracted caterers is the major cost comprising approximately 83 percent of the total operational cost. The other major operational cost is the cost of eating and cooking utensils (16.5 percent). It should be noted that the payments to caterers in their contracts include the cost of distributing the meals to the schools.

Table 9.3 also contains the programme total costs of the SFP. The major cost item is the total operational cost (91percent). The administrative costs of the programme to the MOE comprised the remaining nine percent of the programme total costs. Un-estimated are the lesser indirect costs to the SFP of the administrative costs of the Ministry of Human Development Social Transformation and Poverty Alleviation with respect to the provision of the list of beneficiaries from the BOOST social assistance programme.

In Table 9.3, the annual net benefit of the SFP was estimated at BZD 112 991 and the benefit–cost ratio of the SFP was estimated as 1.13.

9.9. Overall assessment of the school feeding programme

The annual net benefit analysis carried out has demonstrated that the state-sponsored SFP of Belize can justify its existence from a social welfare perspective with a benefit–cost ratio of 1.13. However, this is a small programme even by CARICOM standards, in terms of the number of children served by the SFP. In a simulation exercise, if the number of students served by the SFP at its current cost is increased to 1 500 (from the current 1 147 students) the benefit–cost ratio of the SFP will increase to 1.33.

Table 9.2: Operational costs of the school feeding programme

Operational item	Cost BZD	%
Caterers' contract payments	650 000	82.49%
Repairs to kitchen and servicing of equipment	8 000	1.02%
Eating and cooking utensils	130 000	16.50%
Total operational cost	**788 000**	**100.00%**

Table 9.3: Determination of the annual net benefit for the state-sponsored school feeding programme

Programme element	Element manager	BZD	%
Total operational cost	Min. of Education	788 000	90.91%
Administrative costs	Min. of Education	78 800	9.09%
Paid to school by community	Schools	0	0.00%
Paid to school by parents	Schools	0	0.00%
Programme total cost		**866 800**	**100.00%**
Benefit sources	**% of total benefits**	**Benefits**	
Value transfer	40.9%	400 273	
Return on investment	0.9%	8 639	
Increased productivity	35.0%	342 476	
Healthier and longer life	23.3%	228 403	
Programme total benefit	**100.0%**	**979 791**	
Annual net benefit		**112 991**	
Benefit–cost ratio	**1.13**		

A number of clear areas for the improvement of the SFP have been identified in this study. The first area is increasing the contribution of the school feeding system to the reduction of under and over-nutrition and the promotion of healthy eating lifestyles in the Belizean society. Thus, the recommendations in this regard in Chapter 4 are particularly relevant to Belize.

The second area concerns the sustainability of the SFP. Any reductions in the budgetary allocations to this programme would jeopardize the viability of caterers, who produce meals for the programme. Thus, the specific recommendations detailed in the next section focus specifically on ways that can improve the sustainability of the SFP.

9.10. Specific recommendations

The specific recommendations for Belize arising from this study are now presented.

Expansion and consolidation of school feeding in Belize

There is the immediate need to improve the sustainability of the SFP, by the consolidation and regularization of school feeding in Belize. This can best be achieved, in the first instance, by the enactment of legislation to govern school feeding in the country by way of a school feeding act of Parliament. Such legislation should set out:

- the goals of school feeding in the country;
- the organizational structure under which such feeding should take place;
- the role of the state in the provision and regulation of school feeding;
- the parameters within which private programmes will be allowed to operate;
- the standards that must be maintained in all school feeding in Belize; and
- the institutions and agencies that will promote, monitor and enforce these standards.

Based on the provisions of such a school feeding act, the State should then proceed to expand the state-sponsored SFP, by the incorporation and consolidation of the disparate and ad hoc programmes that currently exist, based on an appropriate model of school feeding for Belize. The recommended model should be along the lines of the Mesoamerica Hunger Free programme of Belize. Therefore, the pilot programme that is currently on the way should be carefully monitored and assessed,

with a view to its eventual expansion to all districts of Belize.

This consolidated SFP in Belize must also be based on strict standards and enforcement. In particular, all kitchens that are being used in the SFP for meal preparation should be inspected and certified.

The certification of kitchens where the meals are prepared for students can yield several benefits including:

- greater control over the meal preparation;
- lesser liability of the state-subsidised SFP, as operations can be better monitored;
- School kitchens can serve as "demonstration kitchens" for other caterers and students and centers for nutrition education.

Establishment of Agricultural Science and 4-H programmes at all relevant levels of the school system

Agricultural Science programmes, as well as the 4-H programme in schools could serve to promote the SFP and agricultural production in Belize in many ways such as:

- being a vehicle for nutrition education especially "a healthy eating initiative", by fostering the greater use of healthy foods, especially fresh fruit and vegetables and root crops in diets; and
- the promotion of school feeding programmes in the community;
- the promotion and early exposure of students to food production and agribusiness, especially associated with small-scale farming.

10. Dominica

10.1. Introduction

The Commonwealth of Dominica (Dominica), the northernmost of the Windward Islands in the Caribbean Sea is a member of the Organization of Eastern Caribbean States (OECS). With a size of 750 sq km and an estimated population of 72 000, the country's land mass consists primarily of luxuriantly wooded mountains and rugged and steep terrain (The Commonwealth, 2019).

Dominica is vulnerable to tropical storms and hurricanes. This is evidenced by the losses sustained in the Category 5 hurricane which devastated the island in September 2017. The Government of Dominica Post-Disaster Needs Assessment (PDNA) document concluded that Hurricane Maria resulted in total damages XCD 2.51 billion (USD 931 million) (Government of the Commonwealth of Dominica, 2017). The country was at the time of Hurricane Maria, recovering from the effects of Tropical Storm Erika, which hit the island in August 2015, and wreaked damage totaling more than USD 1 billion.

10.2. School feeding in Dominica

Figure 10.1 illustrates the school feeding system in Dominica, which comprises the following:

- the Government sponsored SFP which provides free meals for needy students and meals for other students for a contribution of XCD 1.00 per meal;
- vendors who sell snacks on or off the school compound;
- meals prepared by parents and brought to school by the students; and
- food supplied by school cafeterias.

Many infant and primary schools have school cafeterias, which provide mainly snack items for purchase by the students. These school cafeterias do not provide lunch for sale to students, so that there is no direct competition between the meals provided by the SFP and offerings from the school cafeterias. However, concerns were raised by some school teachers and administrators that students make the choice to purchase items from the school cafeterias rather than use the money to buy a healthy SFP meal. Some of the school cafeterias are managed by the schools themselves, as a means of raising funds.

Vendors can be found mainly outside school compounds, but school administrators are of the general view that these vendors fall outside of their remit. Generally, vendors are not allowed to sell lunches to the students. Parents provide home cooked meals for many students, which they consume in school, instead of meals prepared by the SFP.

10.3. School feeding programme of Dominica

Overview

The "Operations and procedures manual for the school feeding programme in Dominica" (Procedures manual) states that this SFP was established in 1991, with external funding from the United Nations World Food Programme (WFP) to provide a daily lunch to all primary school students, to ensure their nutritional development (Government of Dominica, undated a). In 1997, the Government of the Commonwealth of Dominica assumed responsibility for the SFP, which is operated through the Ministry of Education and Human Resource Development (MOE) (Government of Dominica, undated a).

The SFP in Dominica, seeks to enhance the nutritional status of primary school children in Dominica, through an affordable lunch meal. Among the objectives of the programme are:

- the reduction of the level of hunger being experienced by students in some primary schools, by ensuring that students have at least one nutritious meal per day;
- increased school attendance particularly in the post lunch period;
- fostering the development of good food choices and eating habits; and
- encouraging the participation and involvement of the community in school activities (Government of the Commonwealth of Dominica, 2016).

According to the OECS Education Statistical Digest 2016, for Dominica, the total preschool (infant), primary and secondary school population in Dominica was 14 930 of which 1 843 attended pre-schools, 7 526 attended primary schools and 5 561 students attended secondary schools (OECS, 2017). For the school year 2016/17, there were 2 169 beneficiaries of the SFP comprising approximately 23 percent of the infant and primary school population and approximately15 percent of the total student population of Dominica up to the secondary level. Seventy-three secondary school students at two public secondary schools on the island are provided with breakfast daily.

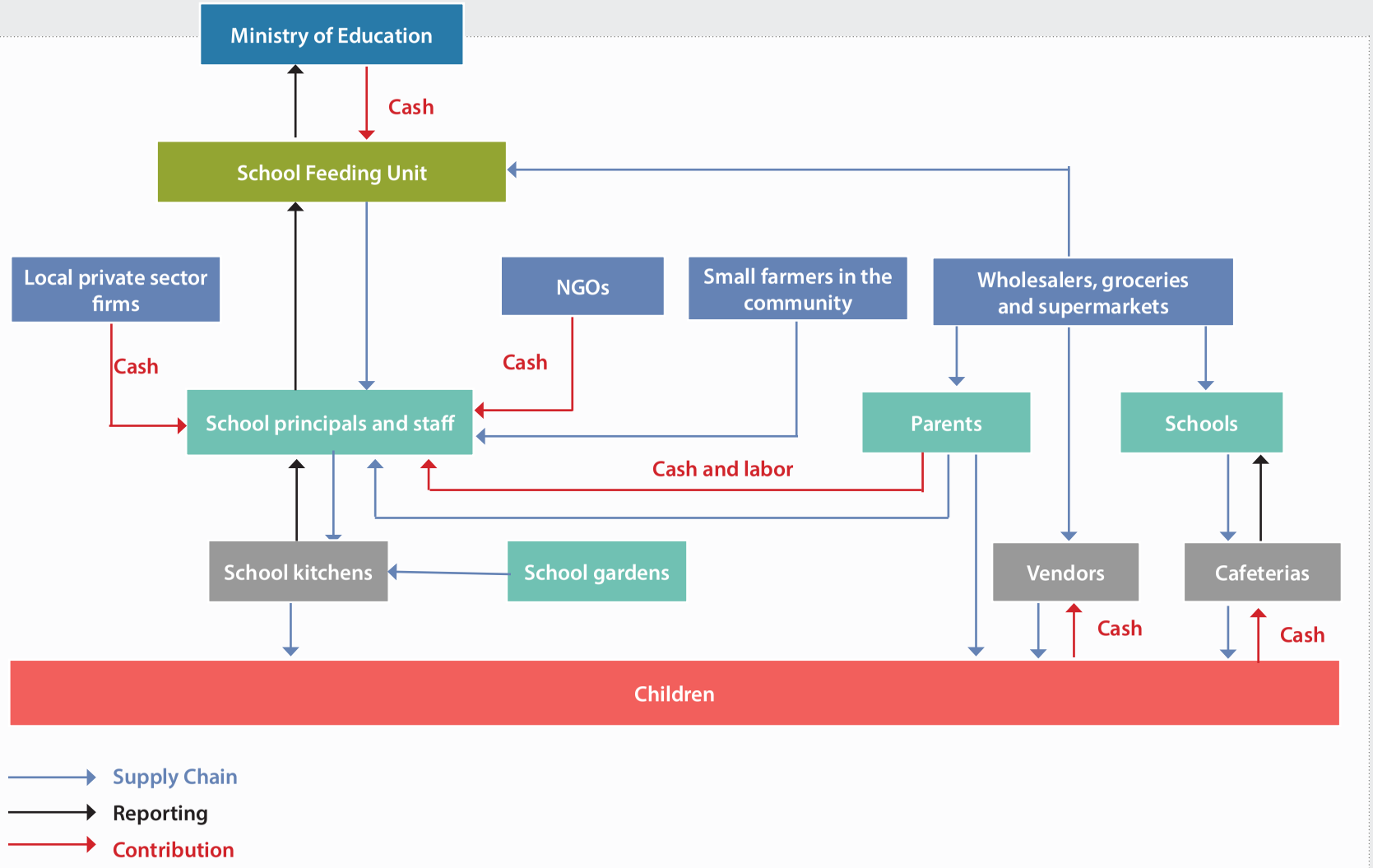

Figure 10.1: Operating model of school feeding in Dominica

Selection of students

The Procedures manual states that the main procedure for identifying schools for inclusion in the SFP is through the poverty map derived from the country poverty assessment report and its updates (Government of Dominica, undated b). The process is described as follows:

- The School Feeding Programme Coordinator (SFC) consults the poverty map and its updates to identify communities in need. Ballini *et al.* (2009) describe in detail how these maps are derived.
- Primary health care professionals then assess the nutritional status of the children in the identified communities and the distance they travel to school, especially in the cases of those communities not served by a school bus.
- Principals of schools in the identified communities may be requested to provide their assessment of need and indigence among the students in the community.
- Once a school has been included in the SFP, all children in that school are entitled to participate in the SFP.

Some of the children in the selected schools may also be entitled to a fee waiver, based on the inclusion of their households in the beneficiary list for social assistance (Government of Dominica, undated b).

School principals may also request inclusion of their schools in the SFP, once they can provide reasonable evidence of indigence or need among their student populations. Generally, the principal of the school makes a request to the SFC for students at the school to access the SFP. An assessment is done by the SFC, as to the readiness of the school to participate in the SFP. The SFC then sends the report, through the Senior Planning Officer, to the Chief Education Officer, who decides whether the school would be included in the SFP.

Before a given school becomes part of the SFP, the staff and parents are given an orientation, by the SFC on the requirements for their success in the SFP. Kitchen and storage facilities are also constructed in the school, "jointly by the Government and the community" (Government of Dominica, undated b).

Once a school is included in the SFP, all students can participate voluntarily in the programme at a cost (or financial contribution) of XCD 1.00 per meal per day.

However, where parents cannot afford to pay for the meals, their children are provided with the meals, free of charge. All students from the indigenous population of Dominica (found mainly in the 15 sq km district of the Carib or Kalinago Territory), who so request, are provided with lunches free of charge.

Community participation

Forty-two schools were participating in school feeding in Dominica:

- 27 primary schools on the SFP, representing a 50 percent coverage for primary schools;
- breakfast to selected students in two secondary schools under the SFP;
- The Swiss Agency provides assistance for 10 schools; and
- a collaborative effort of Lamb's Feast Outreach Ministry, a non-denominational ministry and "Care for the Elderly", assists in the provision of meals to the three schools.

For 13 schools outside the SFP, lunch is provided with some assistance from the MOE. For schools in the SFP, communities provide in-kind contributions of vegetables, provisions and fish, as well as voluntary labor for the preparation of meals. The SFC conducts an orientation session for parents and staff for all schools entering the SFP, where emphasis is placed on:

- adherence to menus provided, which are based on nutritional and dietary guidelines; and
- the need for community support for the successful participation of schools in the SFP.

According to the Procedures manual, before the beginning of the school year, the local school meals coordinator and the head cook estimate the weekly requirements of the food items for the school, to be obtained from the community, based on:

- the menu;
- the requirements per student; and
- the projected number of students in the SFP for the school.

They also obtain the commitment of members of the community to supply various items of food, such as fish, ground provisions, vegetables and charcoal. A roster is then kept of the suppliers and the projected items and quantities expected from them (Government of Dominica, undated b).The local coordinator, the head cook and local suppliers estimate the value of the weekly

in-kind contributions of food items. This information is recorded and submitted to the SFC for monitoring purposes (Government of Dominica, undated b).

Parents are rostered to assist with the meal preparation in the school kitchens, for the term. Parents who volunteer their services and have two or more children in the SFP are exempt from making the financial contributions on the days they are volunteering their services. Also, parents, when they make in-kind contributions may be exempt from making the financial contributions. The SFP is an important social support service, as many parents tend to keep their children at home, if they do not have anything to give the children to eat, while they are at school.

Operations at the school level

The Procedures manual details the "…roles and responsibilities of personnel involved in the SFP" including the principal or senior teacher, cooks and assistant cooks in the schools (Government of Dominica, undated b). School principals are in charge of the operations of the SFP in their schools. They are permitted to utilize some of the funds collected from students' payments for meals, to purchase items not provided by the MOE or to meet any shortfall in food supply for the SFP. These purchases are signed for in a receipt book, by the supplier of the locally purchased goods and the records of such purchases are presented to the MOE each month.

The number of students requesting lunch for any school day is sent to the cooks of the school, who together with the teacher responsible for school feeding would allocate from the stores, the amount of food ingredients needed to prepare the required number of meals.

The duties of the cooks, include:

- the receipt and storage of goods purchased;
- the review of menus;
- the pre-preparation and preparation of meals as specified in the menus;
- the service of the meals as set by the "diet scale"; and
- maintenance of the cleanliness and sanitization of the production areas, wares, storage and service areas.

In these duties, the cooks are assisted by assistant cooks (Government of Dominica, undated a).

Each school day, a list is compiled of students who obtained lunch. Teachers send the list to the school principal with the names of students who requested lunch, how many paid and how many were unable to pay. The school principal is required to complete a form each day recording the number of students in attendance, the number who received meals and the amount of cash collected. Any funds used by the principal are also recorded. These forms provide the basis for a financial report, which must be submitted on a monthly basis to the School Feeding Unit (SFU) of the MOE.

As stated earlier, private sector organizations and communities provide assistance to schools in Dominica. School principals may approach the private sector for assistance for the SFP in their schools in the form of construction of kitchens, providing equipment or sponsoring needy children, who cannot afford to pay for the lunch.

Operations at the national level

The MOE through the SFC purchases and distributes – with the aid of one driver – a standard list of items once per month to schools, which provide meals under the SFP. The supplies to be allocated to a given school are based on the menu plan and the school's student population. On the days designated for the distribution of food supplies to the schools, the SFC receives assistance from a driver, who collects the food items from suppliers or the storeroom of the SFC, for distribution to participating schools.

Fifty-six cooks are employed in the SFP , through the National Employment Programme of the Ministry of Trade, Energy and Employment. Meals are prepared by the cooks in the school kitchens. The Dominica Bureau of Standards develops and enforces standards to govern the health and safety of consumers, as well as protecting the environment. Schools, through the cooks, are expected to use these standards to maintain sanitary conditions in the school kitchen.

Funding for the SFP is provided through an annual budgetary allocation from the state, cash contributions from schools (through contributions by parents), and contributions from the community. The SFC orders food items for the SFP, based on the menu plan and the estimated total number of students in the SFP. The bills for the purchases are submitted to the accounts division of the MOE for payment. The SFC records all purchases

in a computerized system. Receipts of all financial transactions are kept for record and auditing purposes. The Director of Audits in the Ministry of Finance audits the accounts of the SFP.

The funds collected from the schools for the state are placed in a checking account with the Accountant General and the Permanent Secretary of the MOE as signatories. Receipts of all financial transactions are kept by the accounts department of the MOE for record and auditing purposes. The average number of school-days per year is approximately180 days, with a reported average of 160 school feeding days.

Menus and nutrition

The menus (or the menu plan) used in the SFP are based on nutritional requirements provided by a nutritionist and a dietitian based in the Ministry of Health. The SFC also liaises with the nutritionist and dietitian at the Ministry of Health to develop these menus and they are then passed on to the cooks. However, based on the food items available at the schools and consultation between cooks and principals or teachers in charge of the school feeding, menus may be changed to make use of available items.

The recommended portions for the food items for meals are standardized for all schools in the SFP. In particular, a meal should have servings of:

- meat protein, 57 g (2 ounces)
- carbohydrates, 141 g (5 ounces)
- legumes, 28 g to 57 g (1 ounce to 2 ounces)
- vegetables, 28 g (1 ounce)

These meals are expected to provide approximately one-third of the recommended dietary daily requirement for protein and energy for children.

10.4. Governance of the school feeding programme

The Procedures manual states that the SFP has been mainstreamed by its inclusion as an education support programme in the National Education Sector Plan (Government of Dominica, undated b). Dominica's 4th Medium Term Growth and Social Protection Strategy (GSPS) 2014 to 2018, on page 12 states that: "The Government of the Commonwealth of Dominica continues to operate a number of education support programmes (such as the education trust fund, school feeding, textbook scheme, transportation and school transition programmes), specifically targeted at the poor" (Commonwealth of Dominica, 2014). The Government of Dominica, through the MOE, also provides support to students from lower socio-economic groups through provision of safety net programmes, such as the SFP, as a measure "to guarantee access and permanence in the education system to the most vulnerable population" (Government of the Commonwealth of Dominica, 2017, p. 68).

The Procedures manual sets out the "… institutional framework for the management of the SFP" which involves the MOE, as well as a number of supporting entities (Government of Dominica, undated b).

The management and coordination of the SFP is done through a School Feeding Unit (SFU) in the MOE headed by the SFC. The duties of the SFC include:

- the procurement and distribution of food supplies;
- monitoring of programme operations through school visits;
- organizing training workshops for cooks in the SFP;
- assessing the readiness of schools for commencement of the SFP; as well as
- providing progress reports through the Senior Planning Officer to the MOE.

The SFC reports to the Senior Planning Officer who has responsibility for all education support programmes, administered through the MOE.

The Procedures manual list the supporting entities as:

- the community as providing in-kind contribution and volunteering labor for meal preparation as discussed earlier;
- the Ministry of Finance which provides a budgetary allocation and also performs evaluation of the SFP and through its central beneficiary registry is responsible for the proxy means test, which generates the beneficiary list for the SFP, as described earlier;
- the Ministry of Health through visits by its environmental health officers and also the technical direction and advice of its nutritionist, who provides technical guidance on the development and implementation of nutrition standards for the programme; and
- the Central Statistical Office which produces the country poverty assessment and poverty

maps which are used to identify schools for participation in the SFP.

School principals play an important role at the local or school level in the management of the SFP and their roles and responsibilities are detailed in the Procedures manual (Government of Dominica, undated a). School principals or senior teachers assigned by the school principal oversee the SFP at the school level (Figure 10.1). In each school, the principal has the overall responsibility for the administration and management of the SFP in that school. The payments by parents are used by the school principals to purchase food items not provided by the MOE such as fish, ground provisions, fruits, vegetables, seasonings and so on from farmers and fishermen from the communities. Some of these same items are donated by parents or obtained from school gardens, where they exist.

School principals, using a financial record form, record the following for each day that students are fed:

- the number of students provided with lunch;
- the number of students paying for the meals;
- the amount of money spent to purchase supplemental food supplies; and
- the balance of funds retained by the school.

These balances retained by the schools are returned to the SFC at the end of the school term, who deposits them into a special MOE bank account, which is used, with the approval of the Permanent Secretary, to purchase equipment and other inputs for the SFP. School principals are encouraged to place a monetary value on the food items (e.g. ground provision or fish) donated each week by parents and members of the community to the school for use by the SFP.

School principals play an important role in the receipt of staples from the SFU, as well as ensuring the inclusion of fresh fruits and vegetables in the school lunch menu. The School Principal keeps a record of the supplies issued to the school for the SFP and issues supplies to the cooks, based on the number of students to be fed daily.

The keys to the storage location of the food items in the school are kept by the school principal or the senior teacher in charge of school feeding or the cook depending on the school arrangement, while the school principal or senior teacher would keep an inventory of equipment and utensils. Storage locations for supplies issued to the school for the SFP range from boxes in the principal's office, to locked cupboards in the school kitchen.

One constraint identified by the SFC was the need for better management of the balances of funds due to the MOE. It was reported that there were difficulties obtaining these balances from some principals, while there were tardy monthly financial returns to the SFC by others.

10.5. Procurement arrangements

The Procedures manual sets out details of the procurement of food items for the SFP (Government of Dominica, undated a). The SFU provides all bulk dry goods for the SFP in Dominica. The SFC orders supplies and submits the bills to the Accounts Division of the MOE. The open market or informal system is preferred as the method of purchase with the utilization of local vendors and the local market system. The manual recommends that two or three vendors should provide price quotations for items, before purchases are made to help ensure that the best quality food items are obtained, for the least possible cost (Government of Dominica, undated a).

Principals are responsible for the receipt and storage of goods supplied by the SFU. They are authorized to purchase ground provision, seasonings and fruits and vegetables from small farmers in the community, to encourage the production and consumption of local foods. Schools are expected to make their own selection of vendors" (Government of Dominica, undated a). However, the supply of food items from these vendors at the local level was reported to be inconsistent and informal. As stated previously, before the beginning of the school year, the food items to be obtained from the community are estimated, based on the menu and the requirements per student and the projected number of students for the school. Members of the community are then sought to supply various food items such as fish, ground provisions, vegetables and charcoal. A roster is then kept of these community suppliers and their specific items and the projected quantities expected from them (Government of Dominica, undated b).

The Procedures manual sets out detailed procedures and guidelines for the following activities:

- the actual purchase of food items;
- the receipt of food items by the SFU and by schools; and

- the storage of food items including dry and cold storage.

10.6. School gardens and aspects of food and nutrition education

All schools were reported to have school gardens to encourage the teaching and learning of agriculture. The SFPs at the schools utilize produce from these school gardens to supplement the supplies from the SFU.

Schools play an important role in promoting good diets and healthful eating habits in Dominica. This can be seen by the measures that have been adopted to improve nutrition education in schools in Dominica such as:

- the provision of nutrition education lectures and presentations at events such as World Health Day and World Food Day;
- the use of school gardens as a pedagogical tool that links classroom learning with active participation;
- the inclusion of nutrition education in the primary school curriculum under health and family life education; and
- outreach programmes to show cooks in the SFP, new ways to use local ingredients in their menus.

The draft school nutrition policy of Dominica has as its goal the provision of a school environment that is conducive to the development of healthy lifelong eating and activity habits, through nutrition education, physical education and a school food service environment that supports and facilitates the adoption of healthy eating habits (Government of the Commonwealth of Dominica, 2016). The draft policy is also supportive of school health and nutrition services and their role in monitoring trends in nutrition related problems. These services monitor:

- dietary and activity patterns of students;
- parent and community involvement in supporting and reinforcing healthy eating; and
- physical activity in school and community settings.

The SFP is seen as an important facilitator for the consumption of healthy foods, which is important to Dominica especially because, overweight in school-age children and adolescents five to19 years of age was 32.6 percent in 2016 (WHO, 2018). Dominica has also introduced taxes on sugar-sweetened beverages, and energy drinks as another policy aimed at improving the nutrition of its citizens (Xuereb, 2017).

10.7. Quality assurance and monitoring and evaluation

The Procedures manual states that the SFP should implement quality assurance measures to monitor and evaluate the food service process and the quality of the end product (Government of Dominica, undated a). It further states that monitoring procedures should *inter alia* indicate portion sizes, the extent of handling of food items and congruence with the menu.

The manual also speaks of training in monitoring and evaluation measures internally and the use of external monitors at least twice a term. Quality standards are then set out for the following activities:

- menu planning
- procurement
- purchasing and receiving
- storage
- issuing
- ordering and producing meals
- service and delivery
- sanitation
- recording and reporting and
- general procedures.

10.8. Annual net benefit analysis of the school feeding programme

Annual net benefit analysis of the SFP of Dominica was conducted for the year 2016/17. The contributions of the four individual benefits to the SFP are presented in percentage form in Table 10.2. The major contribution to programme total benefits was from value transfer (37.3 percent), increased productivity (35.4 percent) followed by healthier and longer lives of the beneficiary students (26.5 percent). The contribution of return on investment to the programme total benefits was not significant (0.9 percent), when compared to the other benefits.

As seen in Table 10.1, the estimated total operational cost for the SFP was XCD 737 910. Approximately 46 percent of these costs were incurred for the payment of cooks, who prepared the meals in the schools, through the Ministry of Trade, Energy and Employment. The central

Table 10.1: Operational costs of school feeding programme

Operational item	Cost XCD	%
Central purchase of food ingredients	192 333	31.70%
Wages for cooks	336 000	55.39%
Purchasing of cooking gas and utensils	47 366	7.81%
Repairs to kitchen and servicing of equipment	30 942	5.10%
Total operational cost	**606 641**	**100.00%**

Table 10.2: Determination of the annual net benefit for the school feeding programme

Programme element	Element manager	XCD	%
Total operational cost	Min. of Education	737 910	56.04%
Administrative costs	Min. of Education	94 419	7.17%
Paid by the community	Schools	153 787	11.68%
Paid to school by parents	Schools	330 660	25.11%
Programme total cost		**1 316 776**	**100.00%**
Benefit sources	**% of total benefits**	**Benefits**	
Value transfer	37.3%	805 551	
Return on investment	0.9%	18 893	
Increased productivity	35.4%	764 247	
Healthier and longer life	26.5%	572 581	
Programme total benefit	**100.0%**	**2 161 272**	
Annual net benefit		**844 496**	
Benefit–cost ratio	**1.64**		

purchase of food ingredients comprised 42.32 percent of the total operational cost.

The programme total cost was estimated at XCD 1 316 776. The major element of the programme total cost was the total operational cost (56.04 percent). Payments by parents to the school comprised 25.11 percent of programme total cost and this was the other major cost item in the total programme costs of the SFP. It is estimated that 86.4 percent of the students in the SFP pay (XCD 1) for their meals.

As seen in Table 10.2, the programme total cost is XCD 1 316 776 but the programme total benefit of XCD 2 161 272 far outweigh the programme total cost with an annual net benefit of the programme of XCD 844 496 and a benefit–cost ratio of 1.64.

10.9. Overall assessment of the school feeding programme

Given that the benefit–cost ratio of the SFP in Dominica was 1.64, the programme can be considered to be currently very beneficial to this country and thus the Dominican SFP can be justified on purely economic grounds. The value obtained for the benefit–cost ratio was in fact one of the highest values for the 14 CARICOM

states in this study, Thus, the existing SFP in Dominica may be a feasible model.

One of the major issues in this SFP is the small percentage of the primary school population actually served by the programme (28.7 percent). Given that around 86 percent of the parents of students receiving food in the SFP actually pay for the meals (although perhaps at a subsidized price), the reasons for this small percentage can be explored. Like all public-sector programmes, the sustainability of the SFP is of concern, in view of the economic constraints of the Government of Dominica in the post-banana era (Harris, Pemberton and De Sormeaux, 2010). These realities provide a rationale for a consideration of ways by which the costs of the SFP may be reduced, so as to increase the likelihood of sustainability. Recommendations on these issues will be detailed in the next section.

10.10. Specific recommendations

Expansion of the school feeding programme

It is recommended that the SFP in Dominica be expanded to serve a greater number of primary schools, as well as secondary schools. Since a large percentage of parents currently pay for the school meals, expanding the SFP can be explored. Policies and strategies should be continued of:

- targeting the most vulnerable students for free meals and the provision of meals at a subsidized cost for other vulnerable students; and
- reducing food waste in all operations.

Sophisticated procedures are already in place for determining the schools to participate in the SFP and the students to be provided with free meals. There is also a cost recovery element in the SFP. These features should form a sustainable basis for the expansion of the SFP throughout the school system, especially to pre-schools in Dominica.

Strengthen monitoring and evaluation systems for the school feeding programme

It is recommended that the monitoring and evaluation systems of the SFP should be strengthened. This strengthening will be particularly desirable for an expanded SFP. Monitoring and evaluation should especially focus on nutrition related indicators and studies that determine the impact of nutrition education and other health and nutrition initiatives linked to the SFP.

Data collection and impact evaluations can also provide valuable feedback to policy makers for programme improvement and expansion. In a study to determine baseline anthropometrics and nutrient intakes among Commonwealth of Dominica primary school children, and investigate the possible contribution of school feeding programmes, Wall-Bassett et al. (2012) found that there were no significant differences between regions with respect to the presence of the SFP. Enhanced monitoring and evaluation and impact evaluation of the SFP can provide the information needed to find out, if this situation has changed over the intervening years. Increased monitoring is also necessary for the food preparation and food service activities in the schools. In addition, cooks involved in the preparation of school meals should receive more training and there is need for improved supervision of food preparation and service at the school level.

Refurbishment of school kitchens damaged by Hurricane Maria

The Government of the Commonwealth of Dominica (2017) estimated that total damages and losses to the Education sector caused by Hurricane Maria, in September 2017 were XCD 208.4 million (USD 77.19 million). Overall 83 percent of schools reported some level of damage, inclusive of the destruction of teaching materials, furniture and equipment and other educational resources. Several issues caused by the Hurricane have affected the provision of meals to students:

- In some cases, where kitchens were not damaged, they were converted to classrooms.
- Some schools were used as hurricane shelters.
- Several schools in close proximity were merged into a single school, which had a physical structure that was deemed to be safe, which has stressed the available kitchen facilities.
- Community centers and tents with limited or no kitchen facilities were used to house schools.

It is therefore being recommended that resources be provided, as soon as possible, to facilitate the full operations of the SFP, post-Hurricane Maria, especially to provide school meals to needy children, whose circumstances would have been further compromised because of the hurricane.

11. Grenada

11.1. Introduction

Grenada is a tri-island state. The island of Grenada is the largest and is the world's second largest producer of nutmeg after Indonesia (The Commonwealth, 2020c). It is commonly known as the "Spice Isle". It is followed in size by Carriacou and Petite Martinique and together they total 344 sq km (The Commonwealth, 2020c). Being a Caribbean island nation, it is subject to natural disasters such as hurricanes and environmental vagaries such as deforestation.

11.2. School feeding in Grenada

School feeding in Grenada is illustrated in Figure 11.1 and is made up of the following elements:

- the government funded SFP, which provides free meals for special cases and meals for sale;
- vendors who sell snacks on the compound; and
- parents who prepare meals for their children.

Parents may prepare meals for students, who do not receive lunches from the SFP. Children at times may exchange their home meals for the SFP offerings. Two categories of vendors sell snacks to students. These are:

- vendors who sell outside of the school gates or "outside vendors"; and
- vendors who sell on the school compound authorized by the school or "school vendors".

The food offerings of outside vendors sometimes do not comply with the nutritional objectives of the SFP. Students also purchase food items (lunch or snacks) from vendors on the school compound. Assistant school officers sometimes give advice to the school vendors, about providing healthier snack options, because the items sold may seem more "attractive" to the students. The students enjoy the "roti meal" and fried snacks and may forgo the lunches from the SFP for these other meals.

11.3. The school feeding programme

Overview

School feeding in Grenada started in the late 1940s as a milk and biscuit programme through the European Union and the support of some churches. The current SFP operated by the Ministry of Education and Human Resource Development (MOE) has been operational since 1979, initially through funding by the WFP.

Selection of students for the school feeding programme

The SFP is targeted to all primary and secondary schools, and selected pre-schools in Grenada. Several criteria are utilized for the selection of students to obtain free lunches under the SFP. They include the following:

- referral from the Grenada Food and Nutrition Council of children at nutritional risk;
- referrals from the student truancy officers;
- referrals from child guidance and counseling officers;
- requests by parents;
- requests from the community, including churches;
- requests from members of Parliament or other state officials; and
- children who were born as low-birth weight babies get free meals for their entire school lives.

Community participation

There is evidence of substantial community and NGO support to the SFP in Grenada (Campbell, 2018). This support is in the form of infrastructural works, as well as the provision of food items to schools.

Small farmers in the communities provide about ten percent of the produce used in the SFP. Parents participate in meetings conducted by staff of the SFP and PTAs to reinforce the nutritional education their children receive at school. Likewise, some parents use social media to express their views and criticisms of the SFP.

Operations at the school level

The SFP in Grenada utilizes the DSK model. Meals are prepared in a kitchen on the school premises and served on site. The cooks (approximately 164 in total) are hired by the MOE and paid out of the SFP budget. They prepare and serve the lunch meals at the school kitchens. The cooks follow menus provided by the MOE.

School principals are responsible for the receipt and storage of goods supplied by the MOE. Periodic checks are done by the assistant school officers for quality assurance. The MOE also trains food preparation staff.

Children consume the lunches in designated feeding areas and are provided with re- usable eating utensils. The children who can afford to pay for the meals, purchase at a cost of XCD 1.00. Every morning, food assistants from the cooking staff collect the money from each form or class teacher, as well as the number

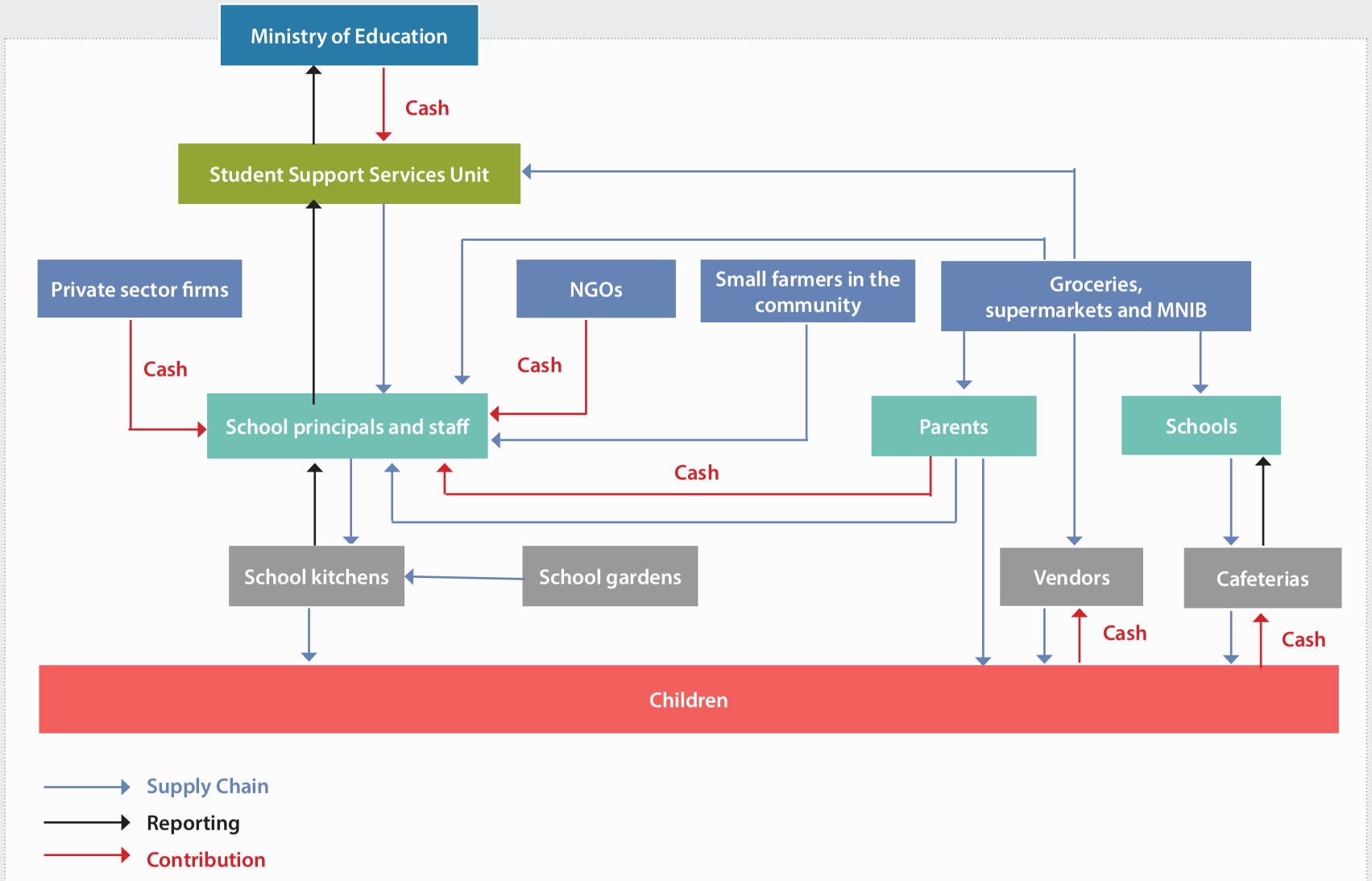

Figure 11.1: Operating model of school feeding in Grenada

of paid and unpaid meals each class has to receive. This information is recorded. Some parents who can afford, may pay for the meals in advance, weekly or monthly.

Operations at the national level

The SFP spans the three islands of Grenada, Carriacou and Petite Martinique. School enrollment in the tri-island state is approximately 23 155, 54 percent of the students being in primary schools (Table 11.1). The SFP was operating in 99 schools and approximately10 000 students received school lunches, which represented approximately 43 percent of the total student in all three islands, Grenada, Petite Martinique and Carriacou.

On the small island of Petite Martinique, there is one school which is sub-divided into an early childhood and a primary school. Meals are offered to 100 students. On the bigger isle of Carriacou, 130 meals are served daily at the two secondary schools but the number of meals served at the six primary schools on this island was undetermined.

Menus and nutrition

A menu cycle of four weeks is utilized in the SFP. The school feeding manual guides the purchase of food based on standard serving sizes for each food item from the six Caribbean food groups. The recommended portions for the food items are also standardized. The meals are designed to meet the one-third standard for lunch meals. However, samples of these meals have not been analyzed for their nutritional content.

Despite the use of a standard menu, only four schools in a FAO funded pilot project utilize standardized recipes. In particular, the servings of fruits and vegetables are not always met, because of unavailability (seasonal), cost, and sustainable supply. Nevertheless, the SFP may have contributed to decreasing the food and nutrition problems among school aged children because:

- The children are appreciating vegetable consumption, which is strongly supported by the Grenada Food and Nutrition Council.
- In the government's early childhood education programme (greater than 3 years old) and day care centers (greater than 6 months old) the children are introduced to local foods- juices, fruits, vegetables and soups, thereby developing the taste and preference for local foods at an early stage in life, when food likes and associations are established.

Table 11.1: Grenada – school population by levels

Level	No. of schools	Student enrollment
Pre-Primary	66	2 570
Primary	56	11 716
Secondary	21	8 679
Tertiary	3	190
Total	**146**	**23 155**

Source: Ministry of Education and Human Resource Development, personal communication, 2017.

11.4. Governance of the school feeding programme

The SFP is a component of Grenada's food and nutrition security policy, which "fully recognizes the right to food and to ensure that all Grenadians, at all times, have physical, economic, and social access to safe, nutritious, culturally acceptable, and affordable food in sufficient quantities to meet their dietary needs for an active and healthy life" (Government of Grenada, 2013a, 2013b). Grenada has a food and nutrition security action plan to implement its food and nutrition security policy.

The governance structure of the SFP is shown in Figure 11.1. In the MOE, the SFP is managed by the Student Support Services Unit. The head of the SFP has the responsibility for:

- site visits and monitoring the SFP throughout the three islands (Grenada, Carriacou and Petit Martinique) (Paterson, 2019);
- procurement of equipment and utensils; and
- other administrative duties.

The SFP head works closely with the two assistant school officers, who visit schools to monitor operations of the SFP. The food aid coordinator orders the food and manages the finance.

The budget of the SFP covers the cost of food ingredients and the wages of cooks, but the emoluments of the other workers in administration of the SFP come from the budget of the MOE (Table 11.2).

Table 11.2: Emoluments of administrative staff of the SFP

Salaries and wages	Total XCD
Officials	164 382
Driver and loader	38 822
Total Administrative Cost	**203 204**

Approximately 43 percent of Grenadian schoolchildren receive lunches from the SFP. Most students contribute XCD 1.00 for the lunch and 25 percent (XCD 0.25) of this payment goes to the state's consolidated fund. School principals are responsible for paying these funds to the MOE. Some students receive free lunches as described above.

11.5. Procurement arrangements

The MOE is the sole provider of food ingredients for the SFP. These ingredients consist of bulk goods, fish and poultry. The schools receive this package (or food basket) on a monthly schedule.

There are four main sources of food ingredients for the SFP:

- the Marketing and National Importing Board (MNIB)- this Board supplies rice, sugar and milk;
- private entrepreneurs from Trinidad and Tobago who transport goods on Fridays to Grenada;
- private merchants from Brazil and USA; these merchants supply imported poultry; and
- local fisher-folk who supply fish.

An arrangement was made to purchase chicken from a local poultry farmer. However, this supply of chicken is unreliable. On the other hand, all turkey meat is imported. Table 11.3 illustrates the typical monthly food allocation for schools in the SFP.

Even though the main staple food ingredients are provided by the MOE, school principals have the

Table 11.3: Typical monthly food allocation for schools in school feeding programme

Item	Quantity purchased	Unit	Unit price	Cost XCD	Percent of cost
Brown rice	82	100 lbs	129.34	10 605.88	7.4%
Brown sugar	100	100 lbs	140	14 000	9.8%
Milk	21	10 kg	140.75	2 955.75	2.1%
Macaroni or pasta	91	30 lbs case	85	7 735	5.4%
Split peas	81	10 kg	42.7	3 458.7	2.4%
Pigeon peas	16	100 lbs	500	8 000	5.6%
Lentil peas	84	10 kg	62.77	5 272.68	3.7%
Onions	19	50 lbs	70	1 330	0.9%
Cooking oil	26	1 gal.	42.5	1 105	0.8%
Ketchup	59	12 bottles	45	2 655	1.9%
Chicken legs	17	33 lbs case	91.5	1 555.5	1.1%
Chicken wings	178	30 lbs case	105	18 690	13.1%
Chicken leg quarters	75	33 lbs case	70.55	5 291.25	3.7%
Chicken drummettes	125	33 lbs case	115	14 375	10.1%
Local chicken	1 073	1 pound	4.75	5 096.75	3.6%
Turkey wings	34	33 lbs case	57	1 938	1.4%
Fish (frozen slices)	5 135	1 pound	7.5	38 512.5	27.0%
Total cost				**142 577**	**100.0%**

Source: Ministry of Education, Grenada, personal communication, 2017

authority to purchase fruits and vegetables from farmers in the community and other staples and food stuff, if the school's allocation from the MOE is insufficient. However, the supplies of local fruits and vegetables are inconsistent. There has been no formal contractual arrangement for local farmers to supply fruits and vegetables to the schools on a consistent basis. If farmers have excess produce, they either give it to the schools or they offer the items for sale to the schools. The MNIB aims to organize farmers to sell produce to the SFP. However little progress has been made in this area and currently the local food input to the SFP has been estimated to be around ten percent.

The purchase of equipment and utensils is challenging, because there are no stores in Grenada that specialize in industrial grade foodservice appliances.

11.6. School gardens and aspects of food and nutrition education

Some schools have gardens to supplement the supply of mainly vegetables and fruit to the school meals. These school gardens are the responsibility of the school principals who receive assistance from community members and parents. Proceeds from the sales of any excess produce are factored back into the farming initiative. In one of the schools visited, the school farm included livestock farming (goats), which has been a successful venture.

11.7. Quality assurance and monitoring and evaluation

The SFP has a monitoring and evaluation plan that captures meal guidelines and the nutritional quality of meals. The MOE has not implemented systems to track the financial feasibility of the SFP or to conduct any other form of monitoring and evaluation. Also, the Student Support Services Unit does not have formal procedures to capture the data, perform data analysis, derive programme indicators and to prepare baseline or systematic impact evaluation reports.

School feeding committees in the schools facilitate the quality assurance of the SFP. These committees are multi-functional and they generally:

- ensure adherence and compliance with the written menus;
- give assistance to cooks and supervise the preparation and distribution of meals;
- perform basic record keeping of meals;
- maintain dining protocols for the students;
- keep inventories of equipment and utensils; and
- submit reports to the MOE.

As noted earlier, the head of the SFP works closely with the two assistant school officers, who visit schools and monitor the SFP.

School principals along with assistant school officers provide documentation for daily feeding activities and procure emergency food supplies and non-food items.

In the school feeding manual, guidelines are presented for the SFP including:

- management of the programme;
- accounting practices;
- menu planning and meal preparation;
- food purchasing; and
- food storage; kitchen safety and sanitation. (Government of Grenada, 2005)

Objectives for the SFP are also presented that could form the basis of its evaluation. The main objective of the SFP is stated to be "to enable selected pre-primary, primary and secondary schools to give better service through the provision of an improved, nutritionally-balanced meal to children requiring this form of assistance" (Government of Grenada, 2005) The Food and Nutrition Security Platform (n.d.) expands the objectives to include:

- to improve the overall school enrollment and attendance and reduce dropout and failure rates;
- to improve knowledge of the nutritional value of local foods, through their maximum use in the SFP;
- to increase local food production by the utilization of local food items in the SFP; and
- to expand, equip and upgrade school kitchens and enhance the facilities, where students eat their meals.

Despite the lack of formal impact evaluation mechanisms, benefits of the SFP have been observed such as:

- wide coverage of all schools with the limited budget;

- very low reported instances of food safety issues from clients;
- a very willing staff who go beyond the call of duty and are very committed to their jobs;
- cooks are satisfied despite low wages;
- improvements in clients' performance in sports; and
- achievements in nutritional and educational milestones.

Milestones achieved, based on anecdotal evidence include:

- improved performance of children who were underweight at birth;
- vendors encouraged to provide healthier snack options for the students;
- principals reporting that children on the programme have demonstrated improved behavior and have increased attention spans; and
- students, after joining the programme, have shown improved school attendance.

11.8. Annual net benefit analysis of the school feeding programme

The annual net benefit analysis of the SFP of Grenada was conducted for the year 2016/17. The contributions of the four individual benefits to the SFP are presented in percentage form in Table 11.5. The major contribution to programme total benefits was from increased productivity (45.0 percent) followed by healthier and longer lives of the beneficiary students (31.4 percent) and then value transfer (22.6 percent). The contribution of return on investment to the programme total benefits was not significant (1.0 percent), when compared to the other benefits. As seen in Table 11.4, the total operational cost of the SFP was approximately XCD 2.9 million, which, as noted above, fed approximately 43 percent of the school population at the pre-school, primary and secondary levels. As seen in Table 11.4, the wages of cooks comprise 55.1 percent of total operational cost. The other element of total operational cost was the purchase of food ingredients at 44.9 percent.

Table 11.4: Total operational cost of the school feeding programme

Operational item	Cost XCD	%
Purchase of food ingredients	1 283 193	44.90%
Wages of cooks	1 574 400	55.10%
Total operational cost	**2 857 593**	**100.00%**

As seen in Table 11.5, the estimated programme total cost was XCD 5 463 797, with the total operational cost paid by the MOE, comprising 52.3 percent of this cost. The other major item was the costs paid by the parents for the meals, which were estimated at 33 percent of the programme total cost. It is estimated that 90 percent of the students pay for their meals. These funds are used to purchase food ingredients by the schools and also for the purchase and repairs of appliances and equipment.

As seen in Table 11.5, the programme total cost is XCD 5 463 797 but the programme total benefits of XCD 8 700 173 far outweigh these costs, resulting in an annual net benefit for the SFP of XCD 3 236 376 and a benefit–cost ratio of 1.59.

11.9. Overall assessment of the school feeding programme

Given the substantial annual net benefit and the benefit–cost ratio of 1.59, the SFP is currently beneficial to the society of Grenada. Thus, the SFP can be justified on purely economic grounds. Therefore, the existing SFP in Grenada may be a feasible model, despite the limited local agricultural input into the SFP.

One of the major issues of the SFP is its sustainability. This provides a rationale for a consideration of ways by which the costs of the SFP may be reduced. These considerations led to specific recommendations for improvements of the SFP in Grenada, which are detailed in the next section.

11.10. Specific recommendations

More efficient delivery system

Currently, one vehicle serves to transport food ingredients to 99 schools across Grenada. This vehicle

Table 11.5: Determination of the annual net benefit for the school feeding programme

Programme element	Element manager	XCD	%
Total operational cost	Min. of Education	2 857 593	52.3%
Administrative costs	Min. of Education	203 204	3.7%
Paid to school by community	School	600 750	11.0%
Paid to school by parents	School	1 802 250	33.0%
Programme total costs		**5 463 797**	**100.0%**
Benefit sources	**% of total benefits**	**Benefits**	
Value transfer	22.6%	1 965 841	
Return on investment	1.0%	87 905	
Increased productivity	45.0%	3 915 000	
Healthier and longer life	31.4%	2 731 427	
Programme total benefits	**100.0%**	**8 700 173**	
Annual net benefit		**3 236 376**	
Benefit–cost ratio	**1.59**		

has not been fitted for standardized food transport and urgently needs an upgrade. As such, at least two transport vehicles should be purchased, with specifications inclusive of cold-storage capability and closed-back delivery to maintain the nutritional integrity and safety of food items. It is recommended that systems should be put in place to out-source the delivery of certain food items and to improve the efficiency of the transport of the food items to the other islands of Carriacou and Petite Martinique.

More efficient programme monitoring and evaluation

There is need for more efficient monitoring and evaluation of the SFP, to provide timely feedback on priority issues. In order to support the monitoring and evaluation of the SFP, there should be:

- additions of relevant staff to the staff complement of the school feeding unit;
- continued encouragement of community involvement in the SFP; and
- implementation of a national-level coordination body to play a more visible role in the SFP.

Greater utilization of local foods in the school feeding programme

The nutritional recommendations in Chapter 4 are particularly relevant to Grenada. Specifically, and perhaps surprisingly for Grenada, rice and pasta form the majority of the staple offering in the meals of the SFP. Given the high prevalence of childhood obesity in Grenada (Table 1.3), there should be greater utilization of locally grown ground provisions in the SFP. These ground provisions are nutrient dense in dietary fiber, vitamins and minerals and low in fat and will be a healthier food choice. The challenge will be to change food preferences among school-aged children to favor locally grown food and empower local farmers to provide a sustainable supply to the SFP. This will increase farmer incomes and reduce national unemployment. The revitalization of the agricultural sector was also recommended by the International Monetary Fund to stimulate the economy (IMF, 2017).

12. Guyana

12.1. Introduction

The Co-operative Republic of Guyana (Guyana) is geographically the largest country in CARICOM with an area of about 215 000 square kilometers and a population of 747 884 (Bureau of Statistics Guyana, 2017). It is the only English-speaking country located on the South American continent. Guyana is divided into ten administrative regions and eleven education districts. Ten of these education districts correspond with the ten administrative and geographical regions of the country, while the capital, Georgetown, is treated as a separate education district. The Chief Education Officer is the professional head of the education system. The Principal Education Officer (Georgetown) and regional education division officers (REDO) are responsible for monitoring and supervising all educational activities within their respective regional education departments. Guyana is roughly divided into coastal regions and hinterland regions.

The coastal administrative regions are 2, 3, 4, 5, 6, and 10 and include the capital city. These regions contain the higher percentage of the population (89.1 percent) of Guyana. The coastal plain represents the smaller physical geographic area of Guyana. It is generally flat and lies approximately 1.5 meters below sea level. The population of the coastal regions consist of 666 261 persons, which is approximately 89 percent of the population (Bureau of Statistics Guyana, 2017).

The hinterland administrative regions are 1, 7, 8, and 9 and comprise about two-thirds (67.6 percent) of the land area of Guyana. The population of 81 623 persons, represents 10.9 percent of the total population. For the hinterland regions, only region 1 has a little more than one person per square kilometer, with the population density for the remaining three regions being less than one person per square kilometer. Compared to the coastland regions, hinterland residents are spread out in tiny clusters of population throughout the vast areas making up the hinterland (Bureau of Statistics Guyana, 2017).

12.2. School feeding in Guyana

As seen in Figures 12.1 and 12.2, currently there are four SFPs in Guyana. These programmes differ in their:

- mechanisms of operation;
- procurement practices;
- monitoring and evaluation systems;
- types of meals offered to students (e.g. breakfast, snack or hot meal);
- the items making up the meal offerings (e.g. types of snacks that are offered);
- targeted percentage of recommended dietary allowances; and
- geographic distribution – that is catering for hinterland or coastal regions.

Food vending takes place outside of the perimeter of the schools, especially in the coastal regions and is an important source of employment, especially for women. This vending continues to be a major concern, especially with respect to the nutritional content, safety and quality of the food sold to the students (Bates, 2017; Niles, 2019). Schools also operate canteens providing mainly light meals and drinks to students. As well, some parents provide meals for their children to take to school.

12.3. The school feeding programmes of Guyana

Overview

The SFPs in the coastal regions in Figure 12.2 exemplify the CSF model and are:

- the fortified biscuit and juice (B&J) snack programme; and
- the breakfast programme.

The SFPs in the hinterland regions in Figure 12.1 exemplify the DSK model and are:

- the community-based school feeding programme (CBSFP), also referred to as the "community-based hot meal programme"; and
- the peanut butter and cassava bread (PB&CB) snack programme.

As seen in Table 12.1, in the four SFPs in 2017, approximately 81 522 meals were served daily. Students in the PN&CB snack programme also benefit from the meals in the CBSFP, so the total number of children in the four SFPs is approximately 78 000 students, which represents about 41.01 percent of the total student enrollment at the nursery, primary and secondary levels.

Selection of students for the school feeding programmes

Schools are selected for participation in the SFPs in Guyana and once a school is selected, all children in the specific grades of the school are eligible for the receipt of free meals as described for each SFP.

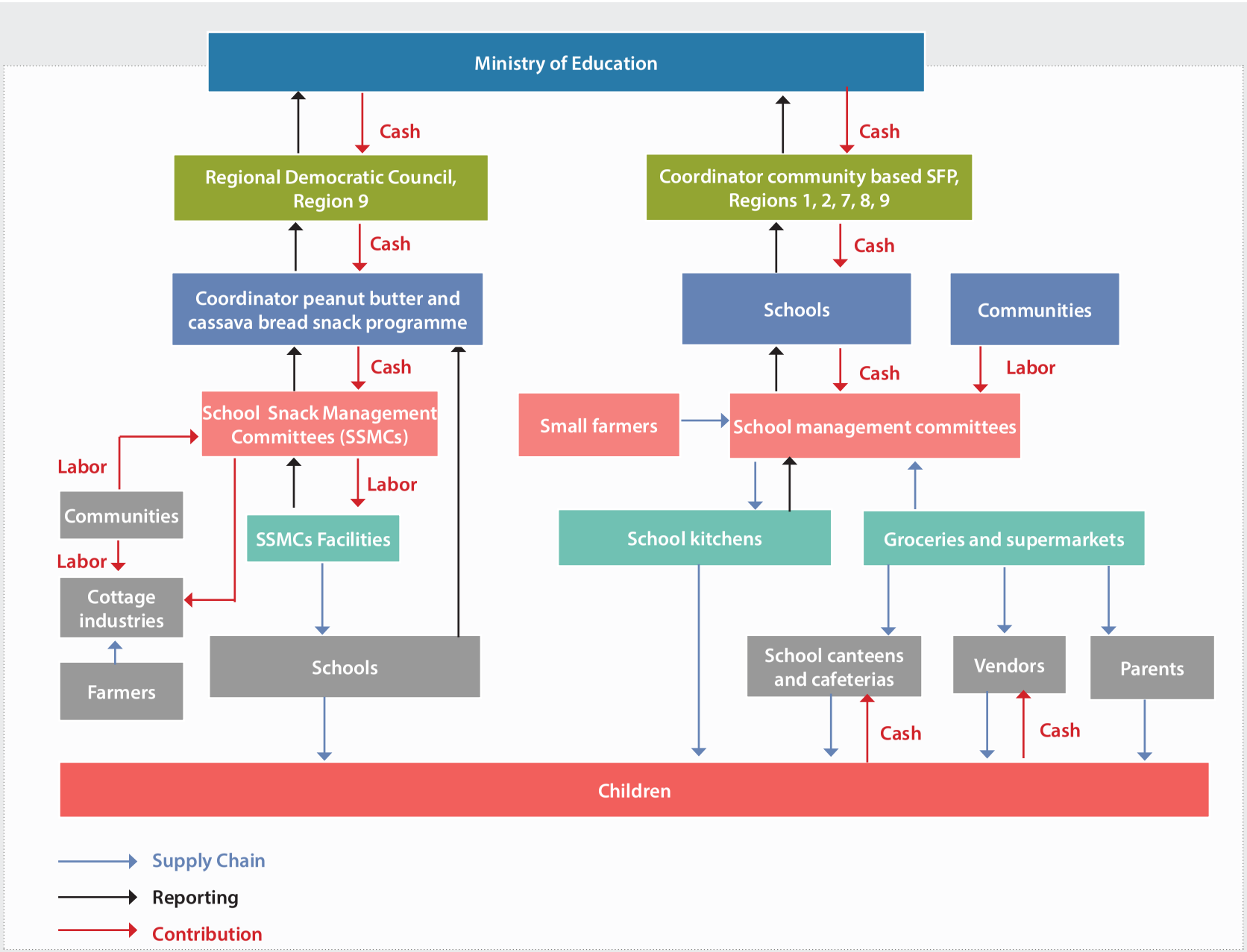

Figure 12.1: Operating model of school feeding in Guyana - hinterland regions

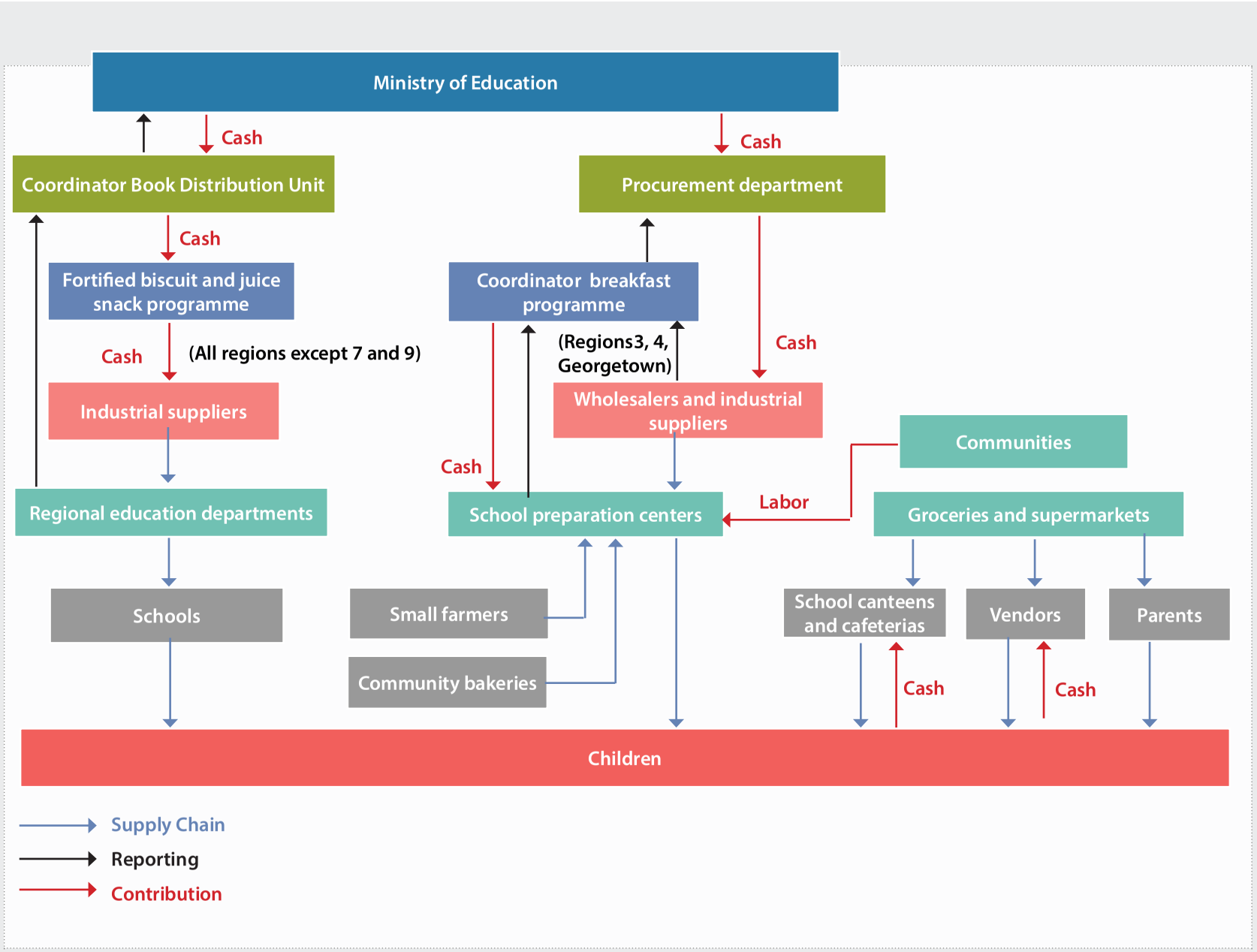

Figure 12.2: Operating model of school feeding in Guyana - coastal regions

Table 12.1: Scale of operations of school feeding programmes (2017)

	Fortified biscuit and juice snack	Breakfast	Community-based school feeding	Peanut butter and cassava bread snack	Total
Education districts	1, 2, 3, 4, 5, 6, 8, 10 and Georgetown	3, 4 and Georgetown	1, 2 (Riverain) 7, 8, 9	9	
Number of schools	489	119	181	44	833
Number of meals/day	37 950	13 359	26 694	3 519	81 522
% total student population	19.66	6.92	13.83	1.82	41.01

The B&J snack programme was introduced as a policy initiative of the Government of Guyana in 2010, through the National School Feeding Programme 2010 Ministry of Education Circular No.1/ 2010, which sought to target students in nursery schools and primary schools in grades 1 and 2 in regions 1, 2, 3, 4, 5, 6,10 and Georgetown.

The breakfast programme which started in 2016, is intended to provide a nutritious breakfast in nursery schools and grades 1 and 2 of primary schools in the three coastal communities of regions 3, 4 and Georgetown. In 2017, 13 359 students in 119 schools were provided with breakfast, representing 6.91percent of the student population. Primary school students in grade 4 to grade 6 and secondary school students in public schools in the coastland regions are not included in any of the two coastal SFPs.

Under the CBSFP, children in the hinterland (regions 1, 2 (riverain), 7, 8 and 9) in nursery and primary schools, are offered a hot lunch.

The PB&CB snack programme operates in region 9. Students in nursery and primary schools in Region 9 are eligible for this programme. Also, where all-age schools exist, all secondary students of these schools are provided with the snack.

Community participation

Community-based school feeding programme:

For the CBSFP, a detailed operational manual is provided to schools and communities with easy-to-use forms and procedures (Ministry of Education Guyana, 2016). Communities are required to prepare and submit their school feeding proposals to be eligible to receive funding. The approved proposals are formalized in an implementation funding agreement. A school feeding management committee (SFMC) is established at each school, which is typically made up of members of the village council, the head teacher, parents, teachers, a health officer, and community members. This committee is responsible for the implementation of the programme in the community, including the building of the kitchen facilities and in some cases, dining areas and the preparation and delivery of the meals to the students.

Peanut butter and cassava bread snack programme:

Under the PB&CB snack programme, cottage industries produce peanut butter and cassava bread as an economic activity, which they supply to this programme. Members of the community also make the juice that is supplied on a daily basis.

This programme is run in each village or community by a school snack management committee (SSMC). These SSMCs are mainly registered as friendly societies. They also carry out other activities to raise funds. The composition of the SSMCs is similar to the SFMCs of the CBSFP. The SSMCs have buildings, where they prepare the peanut butter and cassava bread snacks from the products of the cottage industries. This programme, through the utilization of locally produced raw materials and their value-added products, provides economic benefits to the surrounding communities and is a significant source of employment for women, who mainly run the programme.

Breakfast programme

For the breakfast programme, women from the community are trained and hired as cooks to prepare breakfast. Thus, the programme has resulted in job

creation in food preparation, delivery services as well as in the community production of bread, vegetables, eggs and milk.

Operations at the school level

The fortified biscuit and juice snack programme:

In the B&J snack programme, each child is served with seven fortified biscuits and one box of juice in the timetabled break of the morning session of each school day. The distribution logistics stipulate that schools should receive school feeding supplies on a monthly or termly basis. Sealed boxes, each containing about 365 biscuits are opened and seven biscuits along with a sealed pack of fruit juice are issued at no cost to each student as a mid-morning snack. Head teachers have the responsibility for the coordination of the programme in their respective schools. Staff of the school, especially authorized teachers, collect supplies for the school and distribute the snacks to the students.

The breakfast programme:

The breakfast programme serves a sandwich and a milk-based drink to children. The sandwich which may include eggs, cheese, peanut butter, or tuna is served daily between 8:00 a.m. to 8:30 a.m. and on Friday, a locally produced rice-based cereal is served with the milk-based drink. Cooks prepare breakfast in the preparation centers in the schools and serve breakfast to the children. Some schools with functional preparation centers prepare breakfast, which is delivered by local drivers to other nursery and primary schools in the area, which lack these facilities. The head teacher performs a monitoring role at the school.

Community-based school feeding programme:

Under the CBSFP, children in hinterland nursery and primary schools (most nursery schools in hinterland regions are attached to local primary schools), are offered hot lunches. These meals are prepared by trained community cooks in the specially constructed school kitchen facilities and are based, as far as possible, on foods produced by the community. To participate in the programme, schools and their associated communities are required to:

- submit school feeding proposals;
- undergo training in basic financial bookkeeping, food hygiene and nutritious meal preparation, using locally produced foods, whenever possible;
- build school kitchen facilities in accordance with hygiene and safety standards and guidelines of the national health authorities; and
- utilize menus that are as nutritionally balanced as possible, given the availability and cost of food items.

The peanut butter and cassava bread snack programme:

Region 9 is a cassava and peanut producing area. The core of the PB&CB snack programme in this region consists of seven pilot cottage industries, which buy cassava, peanuts, and fresh fruits from the farmers in the community, to use as food ingredients for this programme. Each school has a teacher liaison officer, who coordinates the operations of the programme, including the monitoring of the quality of the snacks and also the preparation and submission of reports to the coordinator of the programme. Students receive the snack during the morning break along with an 8-ounce serving of juice.

Operations at the national level

The fortified biscuit and juice snack programme:

The National School Feeding Programme 2010 Ministry of Education Circular No.1/ 2010, provides the regulatory framework for all schools participating in the B&J snack programme. The objectives of this programme are:

- to improve the nutritional status of children;
- to increase enrollment at schools;
- to increase school attendance levels; and
- to enhance students' academic performance.

Monitoring of this programme is done through a school report registry and school inspection by Ministry of Education officials.

The Book Distribution Unit (BDU) of the Ministry of Education, under which this programme falls, has overall responsibility for the distribution of fortified biscuits and fruit juice to 37 950 students in 489 schools comprising as follows:

- students in 212 public nursery schools in Georgetown and in regions 2, 3, 4, 5, 6, and 10;
- students in grades 1 and 2 in 277 public primary schools in Georgetown and regions 2, 3, 4, 5, 6, and 10; and
- students in grades 1 and 2 in 12 schools in regions 1 and 8, that are not benefiting from the CBSFP.

This programme therefore operates, at varying levels, in nine of the eleven education districts in Guyana and serves 19.62 percent of the total student enrollment at the nursery and primary levels.

The breakfast programme

The breakfast programme, which started in 2016, is intended to provide a nutritious breakfast in nursery schools and grades 1 and 2 of primary schools in coastal communities of education districts 3, 4 and Georgetown. In 2017, 13 359 students in 119 schools were provided with breakfast, representing 6.91percent of the student population.

Community-based school feeding programme:

After external funding ended in 2012, the Government of Guyana has funded the CBSFP, through the Ministry of Education. Communities have been trained in the establishment of community based school feeding initiatives. The programme has also adopted a multi-sectoral approach, involving the Ministries of Education, Health, Agriculture, and Amerindian Affairs, with each ministry contributing to the training of communities.

As seen in Table 12.1, approximately 23 694 nursery and primary school students in 181 schools in the hinterland regions were being provided with a hot meal, at the lunch hour in 2017, as follows: 55 schools in region 1, 37 in region 7, 22 in region 8 , 54 in region 9 and 13 schools in the riverain areas of region 2.

This SFP was established in 2006 as one component of the Education for All–Fast Track Initiative (EFA-FTI) for the hinterland regions of Guyana, supported by the World Bank Global Partnership for Education Catalytic Fund. The programme was designed to:

- provide a nutritious balanced meal to each pupil, at the primary school level; and
- foster closer collaboration between the school and the community to enhance educational opportunities (Ministry of Education Guyana, 2016).

The expected outcomes of the programme are:

- increased student attendance;
- enhanced student learning and academic achievement; and
- improved physical well-being of children in the key developmental years (Ministry of Education Guyana, 2016).

Operational funds for all schools participating in the programme are disbursed to schools by cash transfers, via commercial banks in the respective districts and through direct cash transfers, in districts where there are no commercial banks. The funds given to each school per month are based on student enrollment, cost per meal (GYD 175 in 2017) and the number of school days for the academic year (192 days). Under this programme, in 2018, approximately 26 694 children in 214 schools in the hinterland regions of Guyana, received a daily meal at the lunch hour.

The peanut butter and cassava bread snack programme:

This SFP is administered through the Regional Democratic Council of region 9 and it started in 2005. Approximately 3 519 students in nursery and primary schools in 44 villages in region 9 are in the programme.

12.4. Governance of the school feeding programmes

The human right to food is enshrined in the constitution of the Republic of Guyana, which explicitly guarantees the right to adequate food. Several national documents also promote school feeding in Guyana including the Poverty reduction strategy paper 2011-2015 (Ministry of Finance Guyana, 2011, p. 14), the Education sector plan 2014 – 2018 (Ministry of Education Guyana, 2015) and the Food and nutrition security strategy for Guyana 2011-2020, which speaks to the specific objectives of:

- improving the nutritional status of school children; and
- upgrading the school feeding programmes to include schools at the nursery and primary levels (Ministry of Agriculture Guyana, 2011, pp. 29–30) .

The 2018 Budget Speech also stated that the Government had boosted the SFP, to provide wider access to a larger cohort of students (Jordan, 2017, p. 60). The role and importance of school feeding is therefore well articulated in the national development agenda of Guyana.

The Ministry of Education currently administers the SFPs in Guyana. The Principal Education Officer (Georgetown) and regional education division officers (REDOs) are responsible for monitoring and supervising all educational activities within their respective regional education departments. The SFPs in the coastal regions

are administered more directly through the Book Distribution Unit (BDU) of the Ministry of Education for the B&J snack programme and the school feeding coordinator (SFC) for the breakfast programme.

The programmes in Guyana, are fully funded by the Government of Guyana through the Ministry of Education – since 2005 for the PB&CB snack programme, 2010 for the B&J snack programme, 2012 for the CBSFP and 2016 for the breakfast programme. All snacks, hot meals and breakfasts are provided free of charge to participating students in nursery and grades 1 and 2 in public primary schools in the coastal regions and all nursery and primary school students in the hinterland regions.

Operational funds for schools participating in the relevant programmes are disbursed to schools by cash transfers via commercial banks in the respective districts and through direct cash transfers in districts where there are no commercial banks. An issue with this disbursement process is the transfer of cash. To address this issue, discussions are in progress to form some level of collaboration with local business persons to eliminate these cash transfers.

A national school feeding committee was reported to have been formed as a multi-sectoral committee with representatives from the Ministries of Education, Local Communities, Agriculture, Social Protection, Indigenous Peoples' Affairs, and Public Health. The committee deals with issues associated with school feeding in Guyana.

As noted earlier, there is substantial community involvement in the administration of the hinterland programmes. For the CBSFP, there is a small programme implementation unit made up of a SFC and support staff. There is also for each school, a SFMC, which involves the village council, parents, teachers, and community members and a representative from the Ministry of Health which manages and monitors the programme and ensure adequate utilization of food in each school.

For the PB&CB snack programme, there is a Regional Democratic Council that assists a SFC in the administration of the programme. At the community or school level, there are local SSMCs, which manage this snack programme. Communities provide members for the SFMCs and the SSMCs, cooks and food supplies. The main constraints reported to community involvement are the reluctance to hold key positions on the committees and inconsistent attendance at meetings.

12.5. Procurement for the school feeding programmes

The fortified biscuit and juice snack programme:

The Book Distribution Unit (BDU) of the Ministry of Education, has the overall responsibility for the distribution of fortified biscuits and fruit juice in this programme. The Permanent Secretary in the Ministry of Education contracts suppliers for this programme under the direction of the cabinet of the Government of Guyana, by public tender. There is a procurement unit under the Deputy Permanent Secretary- Finance at the Ministry of Education, which has responsibility for making the contractual arrangements with the selected suppliers for the B&J snack programme. The Department of Education in each region provides updated enrollment figures to the Deputy Permanent Secretary – Finance and these figures form the basis for the contracts. After contracts are finalized, correspondence is sent to suppliers indicating monthly purchase orders for all regions in the programme. A schedule of delivery is then drawn up.

Currently, fruit juice and fortified biscuits are supplied by Demerara Distillers Limited and Banks DIH respectively (Ministry of Education Guyana, 2014) . The BDU itself does the distribution of the supplies, on a monthly basis, to individual nursery and primary schools in Georgetown. For schools in the other regions, the Department of Education for that region receives juice and biscuit from the depots of the suppliers, for distribution to all schools in their region. Monthly purchase orders are placed with the suppliers, usually two weeks in advance of delivery.

Regional education departments are notified of the amount of juice and biscuits allocated to their respective regions and they are expected to collect and deliver the juice and biscuits, within the first two weeks of the month to schools in their respective regions. The regional education departments are required to maintain receipt books as well as dispatch books or distribution sheets, indicating the amount of juice and biscuits allocated to each named school for a given month. Authorized teachers of the schools are required to sign the dispatch book or distribution sheet, when receiving supplies. Schools are required to submit reports at the end of each month to their respective regional education department. Each regional education department is also required to submit to the BDU, monthly, all delivery notes, original signed distribution

sheets and a covering report detailing the amounts of juice and biscuits received, the amounts distributed, the amounts damaged, as well as the schools' monthly consumption report. Disbursement of funds to suppliers is done through a centralized system, based on supplies obtained through the contractual arrangements.

The proper functioning of this procurement process requires that the food supplies are nationally distributed in a timely manner, with the supplies delivered in good condition and that there is a system for monitoring the supply and receipt of food supplies. Thus, collaboration and systems are in place between the BDU and each regional education department to ensure the collection, quality control, record keeping, and the smooth distribution of supplies.

The breakfast programme:

Procurement arrangements for the breakfast programme are done through the Ministry of Education. All food items (milk, Milo, tuna, cheese, peanut butter, eggs, bread and Morning Glory) are procured by tender by the procurement department within the Ministry of Education. The vegetables used in the breakfast sandwich are procured weekly by the head cook within the community and the bread and eggs are supplied by bakeries and small businesses respectively within the community. Milk and water are supplied by Demerara Distillers Limited.

The community-based school feeding programme:

Procurement for the CBSFP is done through the SFMC at each school, which typically meets at least once per month and manages expenditure for the programme. Usually, the treasurer with the approval of the SFMC decides on the source and amount of inputs for the hot meals in this programme. As much as 70 percent of the total food requirements and support services of this programme are sourced from small farmers in the community or surrounding areas. Typically, the SFMC informs farmers of their needs for inputs into the programme, which farmers try to provide. The funds given to each school per month are based on student enrollment, cost per meal (GYD 175) and the number of school days for the academic year (192 days).

The peanut butter and cassava bread snack programme:

For the PB&CB snack programme, the community provides all the food products. The peanut butter and cassava bread are supplied through the established cottage industries. The community groups also provide fresh fruit juice from fruits available locally. Many women participate in this procurement process:

- by buying farmers' produce;
- operating the cottage industries to produce peanut butter and cassava bread; and
- through membership in the SSMCs, which use these products to make snacks for the schools.

This local purchase of agricultural produce from within the community also creates a steady market for farmers. The funds given to each school per month are based on student enrollment, cost per meal (GYD 85) and the number of school days for the academic year (192 days).

12.6. School gardens and aspects of food and nutrition education

Proposals have been put forward for strengthening existing school gardens and the establishment of new ones in selected schools (Ministry of Agriculture Guyana, 2011, pp. 29–30). Currently, schools gardens are especially prominent in secondary schools associated with the Caribbean Examinations Council's CSEC, Agricultural Science syllabus (Chowbay, 2019).

Food and nutrition education has been offered largely as a small element of the health and family life education (HFLE) as a timetabled subject in Guyana. HFLE was introduced into the curriculum of primary schools in 1998 and is stated to have achieved important successes (Ministry of Education Guyana, 2013). This subject has also been offered at the secondary level (UNICEF and Guyana, 2013). In addition, food and nutrition education is offered as a component of the CSEC subjects in food and nutrition and agricultural science.

With particular respect to the CBSFP, the Ministry of Agriculture has been training community members in improved agricultural practices. The Ministry has also provided support for the establishment of school gardens through its extension officers. These efforts especially in the hinterland have strengthened the linkages among school gardens, school feeding and national agricultural production.

12.7. Quality assurance and monitoring and evaluation

Guyana has implemented a strategy and action plan for institutionalizing monitoring and evaluation (M&E Action Plan) in the Ministry of Education. In line with

this development, the Planning Unit of the Ministry of Education has responsibility for the monitoring and evaluation of education policies and plans, inclusive of data collection and analysis. The Ministry then produces reports based on the data analysis.

The Ministry of Public Health routinely sends public health inspectors to visit school kitchens to ensure food quality and safety standards are maintained. Regular progress reports are produced for the SFPs. The Ministry of Public Health has also indicated its support in the development of policies with respect to school canteens, to ensure that safe meals are provided of acceptable quality, which will support the total health of the school children (Ministry of Health Guyana, 2013, p. 64).

The World Bank conducted an impact evaluation of the CBSFP (Ismali *et al.*, 2012). This evaluation found several positive impacts on students' nutritional status, enrollment, class participation and academic performance (Ismali *et al.*, 2012). The evaluation noted that beneficiaries of the programme were primary school children, teachers, community and regional educational officers in the hinterland areas. Ismali *et al.* (2012) also reported that outstanding challenges of this programme include:

- increasing the use of local agricultural products;
- greater access to safe water; and
- the extension of the programme to the most remote of Guyana's hinterland communities.

In this study, for the breakfast programme, the main constraints identified include:

- inadequate staff to effectively administer the programme;
- the locations of some schools with respect to the transport of goods and services; and
- the late delivery of breakfast to some schools.

The main constraints reported for the B&J snack programme were:

- the untimely submission of reports;
- late collection and distribution of the supplies; and
- insufficient staff to conduct satisfactory monitoring and evaluation of the programme.

One suggested improvement for quality assurance was for the seven fortified biscuits to be packaged as one unit for easier and more sanitary distribution to students.

12.8. Annual net benefit analysis of the school feeding programmes

Approach to the assessment

Two annual net benefit analyses were conducted for Guyana's SFPs. The first was done for all four SFPs combined and the second was done separately for the CBSFP. The latter programme was chosen for separate analysis, since it targets the provision of a healthy food option, which could provide a minimum nutritional requirement for students (e.g. 33 percent of the RDA for energy and protein). Data were available and analyses conducted for 2017/18.

For the first analysis, two simulations were carried out. The first was determine the sensitivity of the benefit–cost ratio to the variable – the percentage of the daily nutritional requirement provided by the programmes. This simulation was carried out, since there was no accurate estimation of the value of this variable for the varied meals that compose the snacks and hot meals provided by the four SFPs. The second simulation determined the sensitivity of the benefit–cost ratio to the amount of community support to the SFPs, estimated as a percentage of the total operational cost. As before, there was no accurate estimation of the value of this variable for the three SFPs that had significant community support - the two hinterland SFPs, as well as the coastal breakfast programme.

These simulations involved keeping all other data for the analyses the same and:

- for the first simulation, varying only the percentage of the daily nutritional requirement provided by the programmes, with the amount of community support to the SFPs, maintained at a default value of ten percent of the total operational cost (*ceteris paribus*) and calculating the benefit–cost ratio for each percentage value of the daily nutritional requirement; and
- for the second simulation, varying only the level of community support to the SFPs, with the percentage of the daily nutritional requirement maintained at a default value of 19.2 percent (*ceteris paribus*) and then calculating the benefit–cost ratio for each level of community support to the SFPs, estimated as a percentage of the total operational cost.

For the analysis of the CBSFP, a simulation was carried out to determine the sensitivity of the benefit–cost ratio to the amount of community support to this programme, again estimated by a percentage of the total operational cost. This simulation was again carried out by varying only the level of community support to the CBSFP, with the percentage of the daily nutritional requirement maintained at a default value of 19.2 percent (*ceteris paribus*) and then calculating the benefit–cost ratio for each level of community support to the CBSFP, estimated as a percentage of the total operational cost.

As seen in Table 12.2, for 2017/18, the SFPs in Guyana cost the state approximately GYD 2.38 billion. These students in the SFPs had access to either a snack, hot meal or breakfast at an average cost per student per day of GYD 152.28.

All programmes

The contributions of the four individual benefits (or drivers) to all four SFPs are presented in percentage form in Table 12.3. Here it is seen that the major contribution to total benefits was from value transfers (45.1 percent) and increased productivity (30.4 percent). The other major contributor to the total benefits was the benefit of healthier and longer lives of the beneficiary students (24.0 percent). Return on investment made an insignificant contribution to the programme total benefits.

Table 12.3 shows that the annual net benefit of the four SFPs was GYD 993 322 491, with a benefit–cost ratio of 1.40, which indicates that the benefits from the four SFPs greatly exceed the estimated costs and should justify the continued existence and support of school feeding by the Republic of Guyana.

Community-based school feeding programmes

The contributions of the four individual benefits to the CBSFP are presented in percentage form in Table 12.4. Here it is seen that the major contribution to total benefits was from value transfers (45.4 percent) and increased productivity (34.4 percent). The other major contributor to the total benefits was the

Table 12.2: Cost of the school feeding programmes in Guyana (2017/18)

School feeding programme	No. of schools	meals/day	% of total meals/ day	Av. cost/meal GYD	SFP cost GYD	% of total SFP cost
Fortified biscuit and juice snack	489	37 950	51.3	129.33	942 357 658	39.54
Breakfast	119	13 359	15.9	141.72	363 496 018	15.25
Community- based school feeding	181	26 694	28.6	201.09	1 030 650 092	43.24
Peanut butter and cassava bread	44	3 519	4.2	69.57	47 002 343	1.97
Total	**833**	**81 522**	**100.0**		**2 383 506 111**	**100**
Total student enrollment Guyana	**190 220**			**Av. cost/meal/ day for all SFPs**	**152.28**	

Source: Derived from figures provided by Ministry of Education
Note: USD 1.00 = GYD 207.733

Table 12.3: Determination of the annual net benefit for all the programmes

Programme element	Element manager	GYD
Total operational cost	Min. of Education	1 810 316 083
Administrative costs	Min. of Education	573 190 028
Paid to school by community	Schools	134 594 991
Paid to school by parents	Schools	0
Programme total cost		**2 518 101 102**
Benefit sources	**% of total benefits**	**Benefits**
Value transfer	45.1%	1 584 906 933
Return on investment	0.4%	13 216 465
Increased productivity	30.4%	1 069 171 733
Healthier and longer life	24.0%	844 128 463
Programme total benefit	**100.0%**	**3 511 423 594**
Annual net benefit		**993 322 491**
Benefit–cost ratio	**1.40**	

Table 12.4: Determination of the annual net benefit for the community-based school feeding programme

Programme element	Element manager	GYD
Total operational cost	Min. of Education	941 859 989
Administrative costs	Min. of Education	88 790 103
Paid to school by community	Schools	94 185 999
Paid to school by parents	Schools	0
Programme total costs		**1 124 836 090**
Benefit sources	**% of total benefits**	**Benefits**
Value transfer	45.4%	792 936 297
Return on investment	0.4%	7 280 741
Increased productivity	34.4%	601 681 692
Healthier and longer life	19.7%	344 735 162
Programme total benefits	**100.0%**	**1 746 633 892**
Annual net benefit		**621 797 801**
Benefit–cost ratio	**1.55**	

benefit of healthier and longer lives of the beneficiary students (19.7 percent). As in the first case of the four SFPs combined, the return on investment made an insignificant contribution to the total benefits for the CBSFP.

Table 12.4 shows that the annual net benefit for the CBSFP was GYD 621 797 801, with a benefit–cost ratio of 1.55 which was higher than the figure for the four SFPs combined, which was 1.40 in Table 12.3. A benefit–cost ratio of 1.55 indicates that the CBSFP is highly beneficial and justifies its continued existence.

12.9. Overall assessment of the school feeding programmes

The net benefit analyses carried out have demonstrated that the four SFPs in Guyana can justify their existence from a social welfare perspective, with a combined benefit–cost ratio of 1.40. Also, the CBSFP can be highly justified with its higher benefit–cost ratio of 1.55. This programme is therefore a good model for school feeding in Guyana, because of its significant social net benefits and high levels of community involvement.

However, it is clear that the SFPs in Guyana are limited in their scope and also in the nutritional contribution to the students, since the second largest programme (40 percent of the students in the four SFPs) only provides a snack of fortified biscuits and juice. The major recommendation for Guyana is therefore the expansion of the CBSFP.

The results of the simulation analysis carried out for the four SFPs combined in Guyana are given in Table 12.5. In the simulation, for the percentage of the daily nutritional requirement of the programmes, the percentages were varied from 16.5 percent to 33 percent, with the level community support to the programmes maintained at a default value of ten percent of the total operational cost (*ceteris paribus*). The benefit–cost ratios calculated ranged from 1.39 to 1.43 showing that the benefit–cost ratio was not sensitive to the percentage of the daily nutritional requirement for the SFPs. In the simulation for the four SFPs for the level of community support to the SFPs, the percentage of the daily nutritional requirement was maintained at a default value of 19.2 percent (*ceteris paribus*). The values of level of community support to the SFPs, estimated as a percentage of the total operational cost ranged from five percent to 25 percent. The benefit–cost ratios calculated ranged from 1.43 to 1.29, as the benefit–cost ratio decreases as the assumed level of community support as a percentage of the total operational cost increases. The results thus show that the benefit–cost ratio was fairly sensitive to the level of community support to all the programmes. It is important therefore that this level of community support is accurately estimated for a reliable estimate of the annual net benefit and the benefit–cost ratio.

Table 12. 5 also gives the results of the simulation for the level of community support for the CBSFP. Here it is seen that for the same range of values for the percentage of the total operational cost, the benefit–cost ratios calculated ranged from 1.62 to 1.38, showing that the benefit–cost ratio was very sensitive to the level of community support for this programme. This suggests that if the current support by the community to the SFP is of the order of say 20 percent of the total operational cost, then this programme has about the same net benefit to society as the four SFPs combined, as calculated with the default values in Table 12.3. This

Table 12.5: Simulation analysis for all programmes and the community based school feeding programme of Guyana

% daily nutritional requirement	Benefit–cost ratio all SFPs	Contribution of community (% of total operational cost)	Benefit–cost ratio - all programmes	Benefit–cost ratio - CBSFP
16.5%	1.39	5.0%	1.43	1.62
19.2%	1.40	10.0%	1.40	1.55
24.8%	1.41	20.0%	1.32	1.43
33.0%	1.43	25.0%	1.29	1.38

is because, as stated above, this community support is added, in this exercise, as an additional cost to the (state provided) total operational cost. Care has therefore to be exercised to ensure that all costs for the CBSFP are kept in check. Also as stated before, it is important to accurately measure the level of community support to obtain reliable estimates of the annual net benefit and the benefit–cost ratio.

A major issue with the programmes is their sustainability. In this regard, the CBSFP appears to be the most sustainable, since it is based on substantial inputs from the community especially in the form of food and labor inputs. In regard to the CBSFP therefore, the conclusions of a recent study are particularly relevant. The study states that the programme has obvious educational and nutritional benefits and plays an important role in providing a safety net by addressing poverty in hinterland communities. Thus, for example, the CBSFP offers guaranteed markets to farmers for their produce and employment for women as cooks. While the CBSFP is cost-effective, the Ministry may wish to consider ways by which costs may be reduced, so as to increase the likelihood of sustainability. These include:

- establishing school gardens to provide produce for the meals;
- encouraging home gardens;
- seeking partnerships with the private sector; and
- finding ways in which the school kitchens could be used on weekends and during school holidays to raise funds through small business enterprises (Ismali *et al.*, 2012).

12.10. Specific recommendation

Expansion of school feeding programmes

It is recommended that the coastal programmes should be expanded on a phased basis to include all primary school grades. Currently, school feeding in the coastal regions target students in the nursery schools and grade 1 and grade 2 in the primary schools, while the hinterland programmes provide for all nursery and primary school students.

It is also being recommended that emphasis should be placed on the expansion of the CBSFP, as the backbone of school feeding throughout Guyana. In this SFP, as noted earlier, most children in the hinterland are offered a hot lunch, prepared by trained community cooks, and incorporating locally produced foods in school meals. This programme has a well-established link with the community, which plays an important role in driving activities at the school, in relation to school feeding. It also provides an avenue to sustain and stimulate the agricultural sector and provide economic benefits to the community, by utilizing locally produced agricultural products in meals. This community ownership empowers parents and the community to work with the Ministry of Education to support their children's nutritional health and education. This systematic development of links between the SFMCs and agricultural production, through community small farmers can foster greater community involvement in schools. Currently a large component of the food ingredients for the hot meals provided to students is sourced from the community.

13. Haiti

13.1. Introduction

The nation of Haiti occupies the western third of the island of Hispaniola (the other two-thirds is the nation of the Dominican Republic). Haiti won independence from France in 1804, making it the second country in the Americas, after the United States, to free itself from colonial rule. Over the centuries, however, economic, political, and social difficulties, as well as natural disasters, have beset Haiti with chronic poverty and other problems (Encyclopedia Britannica, 2018).

Haiti is extremely vulnerable to natural hazards with more than 90 percent of the population at risk (World Bank, 2020a). In January 2010, a catastrophic earthquake and its aftershocks resulted in severe damage to Port-au-Prince and the city of Léogâne near the epicenter of the earthquake (Encyclopedia Britannica, 2018). On 4 October 2016, Hurricane Matthew battered Haiti's southern peninsula, causing damage equivalent to 32 percent of the gross domestic product (GDP). (World Bank, 2020a).

According to CARICOM (2016b), Haiti was admitted to membership in CARICOM on the 1 July 2002. However, some of the provisions of CARICOM do not as yet apply to Haiti. Agriculture is the mainstay of the economy. However, there are very strong informal business and tourism sectors. Agriculture accounts for nearly a quarter of the GDP, about 50 percent of total employment, 66 percent of rural jobs and 75 percent of jobs in low-income households. Agricultural productivity is low and so most rural households, even those involved in agriculture, buy food products in rural marketplaces (Ministére de L'éducation Nationale et de la Formation Profesionnelle (MENFP) (Ministry of National Education and Vocational Training Haiti) , 2016). However, very few countries in the world maintain agricultural prices as low as those of Haiti.

13.2. School feeding in Haiti

Figure 13.1 presents the general structure of school feeding in Haiti and here it is seen that the agencies involved in school feeding include:

- International agencies: According to MENFP (2016) school feeding in Haiti began in the post-war period of the 1950s with the food aid programmes of USAID and the Government of Canada. More organized SFPs began after the passage of Hurricane Hazel on 12 October 1954, when the EU began to provide financial assistance for school feeding. Then the World Food Programme (WFP or PAM in French) began its activities in 1969 and the World Bank in 2004.
- Government of Haiti: Programme National de Cantine Scolaire (PNCS) (National School Canteen Programme) became operational in 1997 and has its own SFP.
- Non-governmental and religious organizations: These entities operate in several ways.
- Private firms and organizations: There are a number of private sector firms and agencies, who act as contractors to (in particular) international organizations and foreign governments in the provision of services to facilitate the importation, port clearance and delivery of food ingredients to the SFPs.
- Parents: Parents supply a very limited amount of meals for children to take to school. This supply is most prevalent, where there is no active SFP in the school.
- Cafeterias: Many schools have cafeterias or canteens run by the school, which provide meals and snacks to the students.
- Private vendors: Vendors are allowed to sell snacks on some school compounds. In most cases, these snacks consist of sweets, soft drinks, juices and sandwiches.

MENFP (2016) reports that during the school year 2015/16, it was estimated that a total of 867 000 children received meals from organized SFPs of local and international institutions and agencies and non-governmental, religious and other organizations. This total was said to represent almost a quarter of pupils of primary and secondary schools (3.7 million) and 30 percent of primary school students. (MENFP, 2016)

13.3. The school feeding programmes

Overview

The following are the main agencies providing SFPs in Haiti:

- PNCS as an agency of the state appears to have the overall coordinating role for school feeding in Haiti (MENFP, 2016). However, in addition to its coordinating role, the PNCS is also directly involved as an agency providing food ingredients directly to schools.
- Foreign governments: At least seven foreign governments assist in SFPs in Haiti. Most of these governments provide their assistance

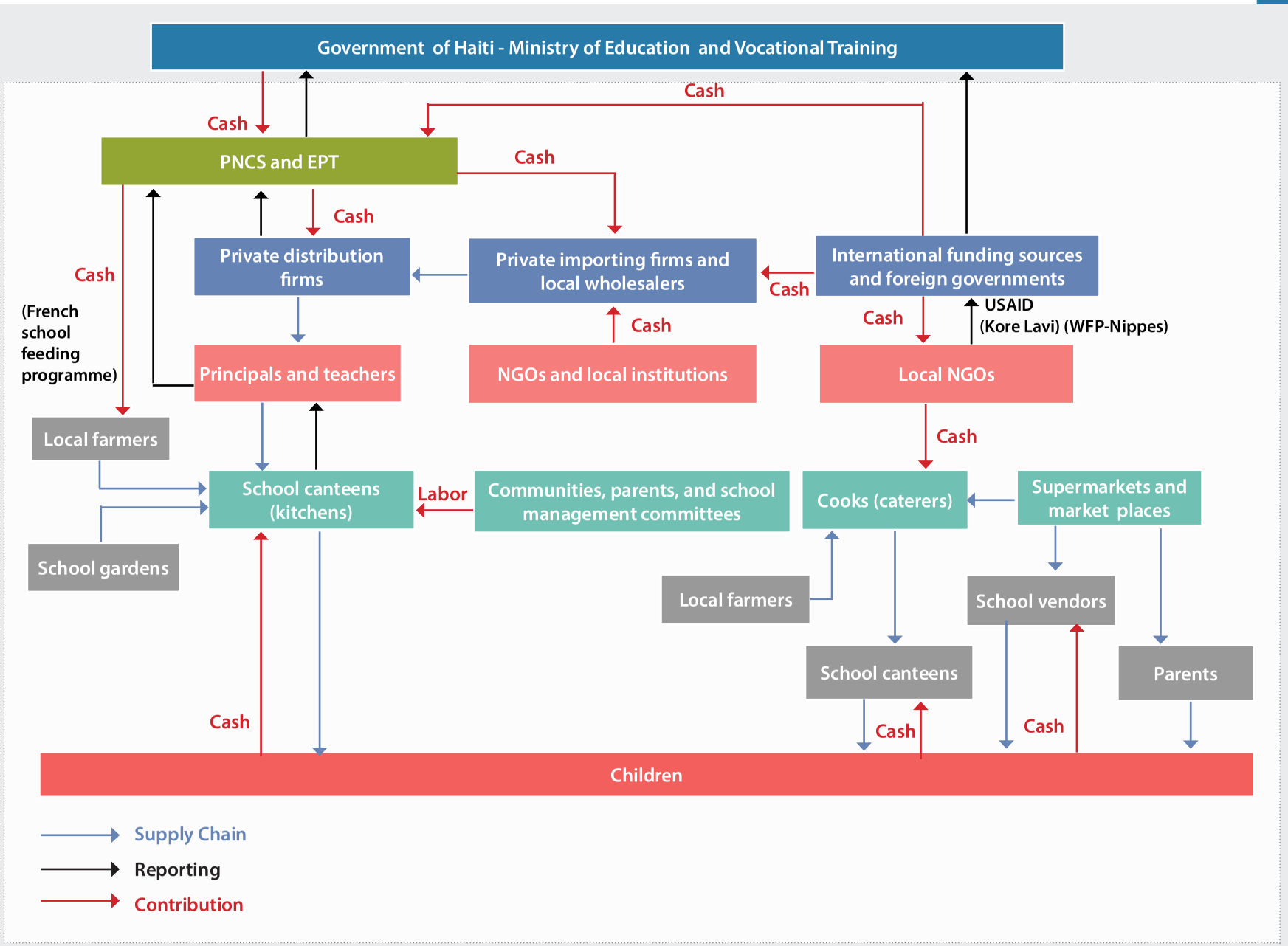

Figure 13.1: Operating model of school feeding in Haiti

through agencies and organizations, such as the WFP and the PNCS. However, some countries provide their assistance through churches and ministries and other agencies of the Government of Haiti.

- International organizations: Several international organizations are directly involved in school feeding in Haiti. The main one is the WFP, but others include USAID and the World Bank Group.
- Non-governmental and religious organizations: Several NGOs (non- governmental organizations) are involved in school feeding at various levels of the system. They include churches and a wide range of other religious organizations.

Selection of students for the school feeding programmes

In general, for the SFPs in Haiti, organizations and agencies select specific districts or departments for the implementation of their SFPs. Once these districts are selected, typically schools are selected, which are located in food insecure areas. Therefore the targeted schools are serving vulnerable children and their families (WFP, 2019a). Schools may be removed from the SFPs, if they fail to meet the rules for participation in the SFPs (WFP, 2019b). In selected schools, students are chosen to actually receive meals, often in three cycles from the first to the ninth year. Priority is given to younger children from the first and second cycles (WFP, 2019b).

The number of school feeding days for the year depends on the particular SFP. Planned distribution varies from 110 to 180 days and in a review of its SFPs, the WFP found the actual number of days school meals were distributed from "functioning canteens was around 120 days per year" (WFP, 2019b).

The SFPs of the PNCS target public schools and a selected number of private and community schools authorized by the Ministry of Education and Vocational Training. Several smaller SFPs, especially of religious bodies and NGOs may also target private schools in addition to public schools. However, the SFPs of the WFP are reported to only target public schools (WFP, 2019b).

Community participation

The level of community participation in the SFPs varies greatly by the model of SFP adopted in the specific programme. In general in Haiti, programmes in rural communities have involved a greater level of community participation.

For the larger SFPs of the WFP and the PNCS, the communities have organized school management committees (SMCs), which are responsible for the preparation and distribution of meals in the schools (WFP, 2017a, WFP, 2019). These SMCs are composed of the principal, teachers, students, parents, and members of the community.

The large majority of these committees were found to be functional in the WFP's review of their programme (WFP, 2017). However, they reported that despite the activities of the SMCs, the level of food management and food preparation still needed substantial improvement. However, there was an active programme for training the members of these local school management committees, especially in the implementation of a school feeding programme, the use of local foods to enrich the diet of the students, as well as general hygiene (WFP, 2017).

A wide range of churches and other religious and non-governmental organizations are involved in SFPs. Many of the SFPs are actually funded by foreign governments, who use the churches and NGOs as executing agencies, as reported in the case of the government of Taiwan (Haiti Libre, 2019). As MENFP (2016) states, most of these organizations receive direct funding from foreign sources and they operate outside the direct purview of the state. Hence, they may vary widely in their modes of operation.

Operations at the school level

For the SFPs of the international and state agencies, food commodities are generally distributed to schools by the use of private carriers or firms. The schools store the food supplies in secure storerooms. Food ingredients are then withdrawn daily to meet the requirements for the meals for the children for that day under the guidance of the SMCs and the authority of the school principal.

The meals are prepared by cooks, who are usually female parents and female members of the community. The cooking is usually done outdoors, using open wood fires and very large iron pots. The cooks work six to seven hours a day under difficult conditions that may be detrimental to their health.

The food is generally served in disposable plates by the cooks and their assistants. Generally, infants are served in their classrooms, while the older children choose comfortable locations on the school compound to consume their meals. Children generally drink water with or after their meals.

Parents are expected to contribute to the meals their children receive through payments of cash or the in-kind contribution of labor or food ingredients. These payments assisted in the purchase of fuel for cooking, as well as the remuneration of cooks. These contributions were deemed by the WFP to be greatly insufficient to meet the school kitchens' (canteens') daily needs and ensure long-term sustainability of the SFPs (WFP, 2019b). WFP (2017) reported that the government's policy on free education has created a disincentive for parents to pay for the meals their children receive, resulting in a decrease in parents' contributions.

Operations at the national level

Programme National de Cantine Scolaire

MENFP (2016) reports that this organization was launched in July 1997 with the following initial implementation objectives:

- to contribute to the expansion of the existing school feeding activities financed by international aid agencies;
- to introduce new SFPs by service providers, contracted by the government;
- to provide hot meals at schools; and
- to establish a coordination and management structure, which would be responsible for regulating expenditure and monitoring and controlling the execution of contracts for SFPs.

The PNCS administers two SFPs funded by the governments of Haiti and France, with the assistance of the Government of Taiwan in the form of the provision of imported rice. These SFPs fed approximately 107 000 students in 295 schools in 2016.

The French supported SFP focuses on the development of the agricultural sector and rural communities. Hence Haiti Libre (2018a) reports that this French supported SFP spent in 2017, USD 2 million for the purchase of 930 tons of local agricultural products (cereals and legumes) to supply school kitchens or canteens. The article went on to report that "in accordance with its purchasing policy, all these purchases were made from producer organizations in Artibonite and North (Haiti) to guarantee their income and support family farming" (Haiti Libre, 2018a).

In very recent developments, Haiti Libre (2018a) reported the establishment of the "PNCS in the South", a new SFP, which will provide food for an additional 35 000 children beneficiaries, bringing the total number of students that PNCS will fund for 2018/19 to 85 000. Then Belfort (2018) reported on 31 August 2018 that "Two days before the start of the school year, the coordinator of the PNCS, presented her plan to allow school children to enjoy a hot meal." This plan includes:

- the addition of 350 schools in its feeding programme bringing the total number of schools to 1 190 for the 2018/19 school year;
- revitalizing and strengthening the capacity of the PNCS to provide quality food to children; and
- the setting up of school gardens, so that children can consume more fruits and vegetables.

Belfort (2018) reported that this set of activities will be carried out by the PNCS, despite the damage that the institution had suffered during the civil disturbances of 6 July and 8 July 2018.

World Food Programme

The SFP of the WFP is the largest in Haiti. WFP (2017a) reports that the WFP collaborates with foreign country donors, UN agencies and NGOs to support the Haitian Government in developing sustainable solutions to hunger and malnutrition. With particular regard to school feeding, the foreign donor countries for the WFP are Canada, Brazil and France.

Recently, the main project for school feeding of the WFP was "DEV 200150 (2012 to 2017): Assistance to the National School Feeding Programme in Haiti, with an approved budget of USD 124 million aimed to distribute mid-day hot meals to 485 000 school aged children in Haitian public schools. (WFP, 2017). The second SFP followed the home-grown school feeding (HGSF) model funded by a trust fund which provided schools with foods produced locally by small farmers (WFP, 2017a). This HGSF programme is located in Nippes.

WFP (2017a) stated that both projects supported the Government of Haiti in its vision of a national SFP linked almost exclusively to local agriculture by the year 2030. DEV 200150 (2012 to 2017) also provided significant support for the development of the national policy on school feeding.

WFP (2017) has provided a good review of the achievements of the its SFPs. The relevant objective, outcomes and the activity were:

- objective: reduce undernutrition and break the intergenerational cycle of hunger;
- outcome 1: increased access to education and greater priority given to human capital in schools receiving WFP assistance;
- outcome 2: nutritional status of the targeted boys and girls improved; and
- activity: nutrition-sensitive SFPs in nine out of ten departments of Haiti.

WFP (2017) reported that in 2016, its two SFPs "assisted almost half a million children in almost 1 800 schools all across Haiti, making the school meals programme the single largest safety net in Haiti". For many families, school meals were the greatest incentive to keep their children in school. However, due to a lack of funding, WFP reduced the number of school children assisted for the school year 2016/17, by 26 percent to 363 000 children in 1 403 schools (WFP, 2017).

The WFP maintained these SFPs in schools "whose assessments showed satisfactory day-to-day functioning and governance of the school's canteen" (WFP, 2017).

Education Pour Tous

Education Pour Tous (EPT) is a project and an institution with a specific developmental goal "to support the national education strategy of the Government of Haiti by implementing sustainable programmes to improve access, especially for disadvantaged populations, and the quality of basic education, while building institutional capacity" (EPT, 2016).

The objectives of the EPT are:

- to support the enrollment of pupils in non-public schools in disadvantaged areas;
- to promote school attendance in selected non-public schools in disadvantaged areas; and
- to strengthen the management of the basic education sector (EPT, 2016).

The EPT administers a SFP for 459 schools and 140 000 students, supported by the World Bank (BM), the Inter-American Development Bank (IDB) and the Caribbean Development Bank (CDB).

The EPT however is not directly involved in the procurement or the distribution of food ingredients to schools. These functions are performed by firms and in particular by the Bureau of Nutrition and Development (BND). EPT selects the schools and the students to be included in its SFP, mainly through surveys of the rural areas of Haiti.

USAID

USAID through the Kore Lavi SFP is reported to directly support "the Government of Haiti's social protection efforts through the Ministry of Social Affairs and Labor (MAST)" (CARE, 2015). This SFP is being conducted in partnership with the WFP, World Vision and Action Against Hunger. It is a safety net programme which is designed to improve access to locally produced foods among vulnerable households and so reduce malnutrition. A pilot SFP within the Kore Lavi SFP, utilized local food and environmentally conscious cooking methods, as part of the provision of improved food access to the vulnerable students (CARE, 2015).

According to CARE (2015) "distributing healthy and nutritious hot meals and snacks in some public primary schools promotes local entrepreneurship, improved production capacity and marketing practices". USAID (2018) states that the Kore Lavi programmes benefited nearly 86 000 food-insecure individuals, in 2018.

Menus and nutrition

The SFPs of the WFP and the PNCS mainly utilized imported food ingredients for the school meals (WFP, 2017). These ingredients included:

- rice
- bulgur wheat (Hill, 2018)
- maize meal
- pulses (peas or beans)
- fortified vegetable oil
- iodized salt and
- canned fish.

The daily school meal portions based on these ingredients were designed to provide approximately 40 percent of the recommended daily intake for school children (585 kcal/meal). WFP monitoring data showed that 53 percent of boys and girls think the portions served are too small, especially for older children attending primary school (WFP, 2019b). Also, 73 percent of students consider that the meals were monotonous, especially those meals based on bulgur wheat and pulses.

However, WFP (2017) reports that in the HGSF programme in the Nippes department, the children received more nutritious, diversified and seasonal menus,

including cereals, pulses, fresh vegetables, tubers and milk, produced in nearby areas, by small farmers. These menus were also more typical of the smaller SFPs of NGOs and religious bodies, especially the SFPs in rural areas.

In 2017, micronutrient powders were also included in the food basket for distribution in three of the nine Haitian departments benefiting from the SFPs. This initiative was to fight the high levels of anemia and other nutritional deficiencies among the children (WFP, 2017).

In many schools, parents provide complementary items and condiments (such as tomato paste, garlic, dried fish and cloves), to improve the palatability of the meals. School gardens also provide seasoning herbs for the meals and a growing trend, noted on the visits to schools in this study, is the addition to meals of the leaves of the moringa plant from school gardens.

13.4. Governance of the school feeding programmes

Programme National de Cantine Scolaire (PNCS)

PNCS sees itself as the coordinator of school feeding in Haiti. MENFP (2016) however admits as noted earlier that all of the activities in Figure 13.1 are not strictly coordinated. In particular, as also noted earlier, PNCS admits that many NGOs and religious congregations are involved in school feeding, without reference to government entities.

WFP (2017) reports that "the Haitian Government has set up a national school meals working group (table sectorielle de l'alimentation scolaire), which includes representatives of the Government, donors, NGOs, international organizations and local communities, which … coordinates the support to the national school feeding programme to avoid duplication of efforts".

PNCS directs its own SFP providing the food ingredients directly to the schools. A general challenge to the PNCS with its limited funding is to maintain their SFP in the schools. Hence WFP (2017) estimates that feeding takes place at these schools on average for 61 days of the school year. On school visits in this study, it was reported by a school principal that when school feeding by the PNCS stops in his school, many children leave that school and try to enter other schools, where feeding is taking place, which causes a dramatic drop in his school's student population.

In 2016, the Government of Haiti adopted a National School Feeding Policy and Strategy (PSNAS) (MENFP, 2016). In its summary of this policy and strategy MENFP (2016) reports that the school feeding policy has a "vision of universal school feeding in 2030", which ensures

> "that all school children enjoy good health and nutrition necessary for learning, through the provision of safe, complementary and balanced school meals, prepared with almost exclusively local products and meeting nutritional standards, so that hunger is not a barrier to education."

The policy is geared around three main strategic objectives and interventions:

1. The provision of quality food in schools (snacks and hot meals) with the participation of the private sector and other institutions, to generate educational benefits and foster the development of local communities. The hot meals will be expected to provide a greater contribution to social safety nets and food security.

2. Support for the local economy and local food production by requiring that local farmers and food processors provide almost exclusively, the basket of food ingredients that would be provided to the schools.

3. The development of national capabilities for the proper management of SFPs, specifically requiring institutional strengthening of the PNCS.

13.5. Procurement arrangements

MENFP (2016) presented the different modalities that are being used to procure food ingredients for the SFPs in Haiti.

Centralized procurement by public tender

WFP (2017) reports that the PNCS uses this arrangement to purchase food commodities according to the procedures stated in the "law on general procurement rules". The food commodities are then distributed to schools by the use of private carriers or firms. WFP also uses centralized purchasing and distribution, through contracted private firms, the major one of which is BND (Bureau de Nutrition et Développement) (Nutrition

and Development Office, 2007). BND has expertise in warehouse management and food commodity distribution and offers these services, especially for imported food commodities, to international and national organizations.

Decentralized procurement in the departments and municipalities implemented by NGOs and firms

In this modality, the agency responsible for the SFP contracts an NGO or firm to carry out the procurement and distribution of the food commodities at the level of the department or municipality of Haiti.

One case of the use of this modality is the EPT, which administers a SFP for 459 schools and 140 000 students making it the second largest SFP in Haiti. This SFP is supported by several institutions including the World Bank, the IDB and the CDB. The EPT utilizes at the municipal level the distribution services of BND, which directly supplies schools with food commodities from municipal sources, local farmers and food processors.

Decentralized procurement in the departments and municipalities by NGOs and school management committees

In this modality as in modality 2, the agency responsible for the SFP may contract an NGO or firm to carry out the procurement and distribution of the food commodities. This NGO or firm may itself further collaborate with another organization at the level of the department or municipality of Haiti. Then at the school level, there are SMCs, which comprise persons from the community including parents, which make the final decision on the commodities to be procured, in accordance with the menus that appeal to the students of the particular school. The meals are then prepared by cooks in the schools.

One case of this approach is the SFP of the WFP in the Nippes municipality, where the BND is the national level agency associated with the project and the Reseau des Producteurs Agricoles de Nippes (ROPANIP) is the municipal level collaborating agency, which in turn collaborates with SMCs in the schools.

Decentralized procurement by local communities

In this modality, the agency responsible for the SFP contracts groups or individuals at the school or community level to carry out the procurement of the food commodities for the school meals. One example of this modality is the Kore Lavi project of the USAID. USAID collaborates with CARE in the execution of this project (CARE, 2015; USAID, 2018).

CARE has instituted a voucher system for the payment for food commodities from local farmers and merchants. These vouchers are paid to the cooks in the local communities, who are contracted to prepare the meals in the SFP. With these vouchers, the cooks are able to purchase the food commodities for the school meals. The cooks are then able to use the left over or surplus vouchers to obtain food commodities for their own needs. Hence the cooks are paid in vouchers, which are also the means of food procurement.

This modality is said to highly favor the utilization of locally produced food, especially the highly favored fresh fruits and vegetables. The Kore Lavi SFP directly supports the Government of Haiti's social protection efforts, through the Ministry of Social Affairs and Labor (MAST) and is specifically targeted at the lowest income households (CARE, 2015).

13.6. School gardens, infrastructure and food and nutrition education

Most schools in Haiti have an area on the school compound dedicated to a school garden. However, the school gardens vary from a few leguminous and fruit trees to several cultivated plots. Livestock are also reared in some school farms.

There have been a number of initiatives however to promote school gardens in Haiti. The Haitian NGO "Promotion for Development" (PROMODEV), has encouraged principals, teachers and parents to implement school gardens and environmental education (Haiti Libre, 2018b).

To promote the implementation of a school garden project, PROMODEV offers assistance with nurseries with fruit trees and forest trees and environmental education. Also, if a school carries out the school garden and an environmental education project, it becomes a member of the national school garden network (Haiti Libre, 2018b).

WFP (2019b) reports that BND created 128 school gardens and it focused on the distribution and cultivation of moringa plants. Also, NGOs such as Hope for Haiti and Partners in Agriculture have also reported school garden projects. These school gardens provide:

- fresh vegetables to support the SFP in schools;
- the facility for students to learn about agriculture and protect their environment;
- the framework for food and nutrition education to emphasize the critical role of nutrition for the health and well-being of students and their families (Duquais, 2018; Partners in Agriculture, 2016, 2018).

One major factor that could affect the nutrition of the students on the SFPs is the low quality of water available to the students. No school visited in this study had an acceptable water supply, as all the water supplies encountered were nonfiltered and were not tested on a regular basis. Even where filtration equipment was present at the school, it was non-functional. In general, WFP (2017) reported that the infrastructure in most schools was sub-standard and the water supply, hygiene and sanitation were well below international standards.

13.7. Quality assurance and monitoring and evaluation

Because of the diverse nature of the various SFPs in Haiti there are no overall quality assurance or monitoring and evaluation systems in place for school feeding. Even though the PNCS is slated to have overall quality assurance and monitoring and evaluation functions for SFPs in Haiti, as outlined in the PSNAS, it has not started to perform these functions.

However, it is recognized that the implementation and periodic updating of the PSNAS requires "well-established monitoring and control mechanisms to ensure proper use of resources by operators and stakeholders" (MENFP, 2016). Such mechanisms require, the collection of data measuring the impact of SFPs on the education and nutrition of students and the development of local communities. Also, the measurement of this impact will be strengthened by studies and specific research (MENFP, 2016).

However, several SFPs have been subject to rigorous monitoring and evaluation, especially the SFPs of the WFP and the PNCS (WFP, 2017, 2019b). In general, an evaluation by the WFP of one of its SFPs, in 2019 found that this SFP is highly beneficial to school children, both boys and girls and their families, as it is being implemented in food insecure areas, particularly rural areas and in public schools. The evaluation also found that the SFP has been effective in achieving its projected outputs and outcomes.

13.8. Annual net benefit analysis of the Programme National de Cantine Scolaire school feeding programme

Annual net benefit analysis was carried out for the SFP of the PNCS, for which data was available for 2016. The contributions of the four individual benefits of the SFP are presented in percentage form in Table 13.2. Here it is seen that the major contribution to total benefits was from value transfers (47.4 percent) and increased productivity (32.6 percent). The other major contributor to the total benefits was the benefit of healthier and longer lives of the beneficiary students (19.1 percent). Return on investment made an insignificant contribution to the total benefits (0.8 percent).

Table 13.1 presents the operational costs of the SFP. Here it is seen that the major element of the operational cost (49.5 percent) was the purchase of the produce of farmers associated with the French supported programme in rural Haiti. The other major operational cost item was the purchase of other food commodities, which comprised approximately 29 percent of the total operational cost. The wages of cooks were approximately nine percent of the total operational cost, but some cooks are also compensated for their labor by obtaining meals from the SFP. The cost (and benefits) associated with these meals for the cooks could not be estimated in this study.

As seen in Table 13.2, the administrative costs of the SFP of the PNCS were four percent of the programme total cost. The PNCS stressed that this percentage figure (of administrative cost to programme total cost) was very much lower for their programme than for the other major SFPs in Haiti. Total operational cost comprised 76.5 percent of the programme total cost while the payments by parents for meals comprised approximately 20 percent of programme total cost. The payments or cash contributions of the communities to the SFP of the PNCS could not be estimated.

The annual net benefit of the SFP was estimated at just under USD 1.08 million and the benefit–cost ratio was estimated as 1.23.

Table 13.1: Operational costs of the school feeding programme of the PNCS

Operational Item	Cost USD	%
Purchase of farmers' produce	1 800 000	49.47%
Wages of cooks	340 385	9.36%
Purchase of other foods	1 013 815	27.86%
Other operational staff costs	484 300	13.31%
Total operational cost	**3 638 500**	**100.00%**

Table 13.2: Determination of the annual net benefit for the school feeding programme of the PNCS

Programme element	Element manager	USD	%
Total operational cost	Min. of Education	3 638 500	76.50%
Administrative costs	Min. of Education	191 500	4.03%
Paid to school by community	Schools	0	0.00%
Paid to school by parents	Schools	925 962	19.47%
Programme total cost		**4 755 962**	**100.00%**
Benefit sources	**% of total benefits**	**Benefits**	
Value transfer	47.4%	2 767 400	
Return on investment	0.8%	48 488	
Increased productivity	32.6%	1 901 363	
Healthier and longer life	19.1%	1 116 594	
Programme total benefit	**100.0%**	**5 833 845**	
Annual net benefit		**1 077 885**	
Benefit–cost ratio	**1.23**		

13.9. Overall assessment of the school feeding programme of the Programme National de Cantine Scolaire

The annual net benefit analysis carried out on the SFP of the PNCS has demonstrated that the SFP of the PNCS in Haiti can justify its existence from a social welfare perspective with a benefit–cost ratio of 1.23. However, this programme is limited in its coverage, both with respect to the Departments and municipalities where it exists and the number of days per year that food is given to an individual school. It is unclear, for example, as to the nutritional benefit of meals, if a student only receives these meals for 61 out of the 180 days of the school year.

In this study, it was estimated that the entire SFP of the PCNS provided meals for 50 percent of the school days because of the inclusion of the French supported project. In a simulation using the percentage of school days that meals were served as 75 percent, the benefit–cost ratio increased to 1.60.

There is thus the clear need for the improvement of the sustainability of the programme. The programme obviously needs a larger and steadier budgetary allocation, to allow it to offer a longer and steadier supply of meals to schools, especially in the main (state funded) SFP.

13.10. Specific recommendations

Implementation of the National School Feeding Policy and Strategy (PSNAS)

There is an obvious lack of control of the SFPs in Haiti with a large number of actors and agencies operating a wide variety of these SFPs. While this situation may have been the result of the natural disasters that have affected Haiti, this situation is far from ideal.

There is therefore the urgent need to have all organizations in Haiti recognize the PSNAS as the document to guide the future directions of school feeding in Haiti. All efforts must be made to ensure that the implementation of this strategy and policy proceeds along the three phase path set out in MENFP (2016) and wherever possible that these phases be implemented at a faster rate.

Establishment of the Programme National de Cantine Scolaire as the controlling agency for school feeding in Haiti

There is the urgent need to establish the PNCS as the agency to coordinate school feeding in Haiti. Thus, the PNCS must be given a clear legal status within the national governmental structure of Haiti. The PNCS would also have to be strengthened with a larger, dedicated staff comprised of nutritionists, logistic, administrative and statistical staff. The main tasks of the PNCS should be to:

- ensure the implementation of the PSNAS;
- monitor the performance of the SFPs to determine if they are performing effectively and meeting international standards and procedures with respect to food service;
- obtain the necessary funds for the expansion and proper functioning of school feeding, especially with respect to the objective to have the majority of the system (80 percent) funded by 2030, from the Haitian Treasury (the State) and local sources including the parents of the students (MENFP, 2016); and
- be responsible for and administer 80 percent of the school feeding system of Haiti (MENFP, 2016). This new and improved SFP of the PNCS should provide meals for students for the entire school year and utilize a targeted percentage (greater than 40 percent) of local food commodities.

The implementation of the PSNAS will be strengthened by the establishment of a strong inter-sectoral national technical school feeding committee with representation from the relevant government ministries, international organizations and agencies and NGOs.

Creation of improved canteen (kitchen) infrastructure in schools

It is recommended that the infrastructure of the school kitchens or canteens should be improved. Improvement to these facilities can yield several benefits:

- greater control over the meal preparation;
- lesser liability of the state-subsidized programmes; and
- improved, modern school kitchens can serve as centers for nutrition education for the students.

Currently most of the cooking in the SFPs is done in the open yards using wood and coals as the fuel. The use of this fuel adds to the environmental pollution and the degradation of forests in Haiti. It is therefore recommended that alternative greener sources of fuel be used in the SFPs.

Improved water and sanitation

PNCS (2016) reports that only one-third of schools in Haiti have a source of drinking water and as observed in this study, much of this water is unfiltered and untested. Improved school feeding in Haiti should emphasize the use of soap and the availability of and use of only potable water, for the good hygiene of the students at meal time and for cooks in the preparation of the meals.

14. Jamaica

14.1. Introduction

Jamaica, part of the Greater Antilles, is the largest island of the English-speaking Caribbean and the fifth-largest island country in the Caribbean region.

The operations and procedures manual of the SFP of the Ministry of Education, Youth and Information (MoEYI), provides a very useful survey of the history of school feeding in Jamaica (MoEYI, 2017). School feeding has been in existence in Jamaica since1926, when lunches were provided in schools through charitable efforts. In 1939, the Government of Jamaica (GOJ) participated in limited provision of school lunches and by 1955, the programme was expanded with the aid of food commodities from the United States of America.

In 1976, with assistance from the WFP, the patty and milk programme was introduced. This ended in the early 1980s. In 1984, the MoEYI with support from the WFP implemented the nutribun and milk programme pilot project. Under this agreement, supplementary food commodities were received from the United States Agency for International Development (USAID), as well as from other donors, such as European Economic Community (EEC) and Canadian International Developmental Agency (CIDA), until 1998. In 1998, when the participation of the WFP ended, the GOJ maintained the nutribun and milk pilot project, which gradually became an important part of school feeding, providing at least one meal per day to selected students in recognized basic, infant, primary, all-age and secondary schools in Jamaica. In 2014, breakfast was introduced into school feeding.

14.2. School feeding in Jamaica

Overview

As seen in Figure 14.1, school feeding in Jamaica is a combination of:

- Two state-funded SFPs consisting of:
  - a cooked lunch SFP with lunches prepared in the kitchens of school canteens;
  - a pre-packed snack SFP with products from the Nutrition Products Limited (NPL) (breakfast, nutribun snacks and drinks);
- private vendors, including a system of concessionaires, who are allowed and approved or certified to prepare and sell lunches at the schools;
- canteens and tuck shops operated by the schools; and
- meals provided by parents.

A health promoting school survey was conducted in a sample of schools in Jamaica in 2011(Ministry of Health Jamaica, 2013). The survey targeted 5 800 students aged 10 to17 years old and administrators in the 60 selected schools (Ministry of Health Jamaica, 2013). Only 4 090 students responded with respect to where they obtained their lunches and snacks. Students were allowed to give multiple responses. Students indicated that the primary sources were school canteens at 76 percent, followed by school tuck shops at 66 percent. Approximately two out of five students (39 percent) noted school vendors as a source of food, while 16 percent indicated that they brought their lunches and snacks from home.

Approximately one in eight students (13 percent) indicated a SFP as their source of food, while a few students (less than one percent) provided a response noting, that the Programme of Advancement Through Health and Education (PATH) was a source of their lunches and snacks (Ministry of Health Jamaica, 2013). The report noted that while a relatively low percentage (13 percent) of students reported a SFP as the source of their lunches and snacks, the vast majority of the responding administrators (91 percent) reported that a SFP was present at their school (Ministry of Health Jamaica, 2013).

Concessionaires

Concessionaires such as Juici Patties, Tastee Limited and Mother's operate some school canteens, which provide cooked meals and snacks at appointed times during the school day. Concessionaires are present at secondary and primary schools. Administrators, canteen supervisors and canteen committees are required to ensure that concessionaires meet national standards for food preparation, storage, hygiene and safety. These concessionaires offer a variety of cooked meals for breakfast and lunch, as well as pastries, snacks and beverages.

Tuck-shops and canteens

Schools supplement their income by having canteens or tuck-shops that offer students meal options. In the

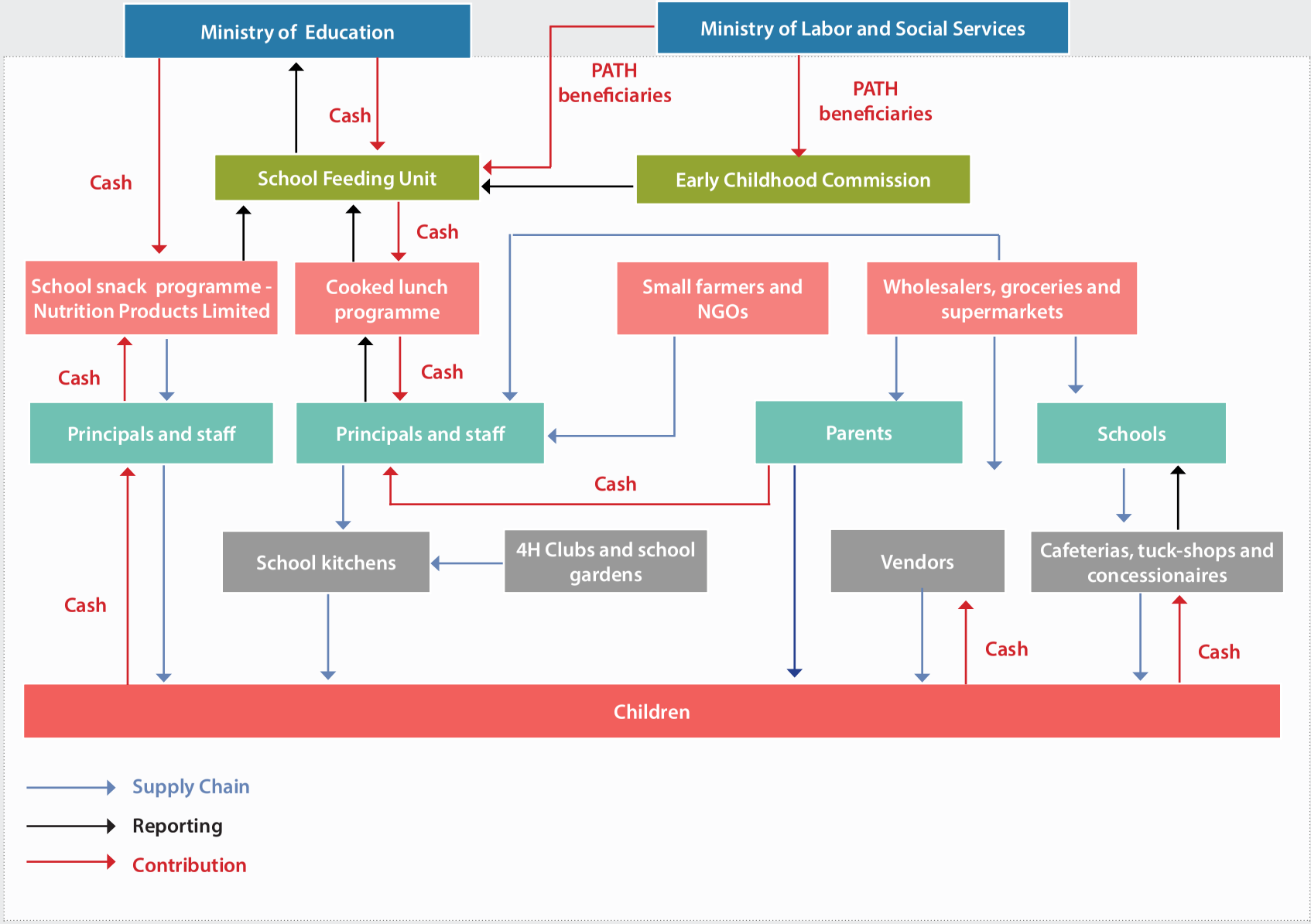

Figure 14.1: Operating model of school feeding in Jamaica

Ministry of Health Jamaica (2013) study of sources of lunches and snacks done in 2011, students were asked to indicate what food items were generally available at the tuck-shops. Using a pre-determined list of items, over 80 percent of students reported that sodas, bag or box drinks, patties and fruit juices, were available at their school's tuck shop. Sweets were listed by over 60 percent of the students, while approximately 50 percent indicated that fried chicken, cooked meals and pastries were also available. The school determines the price students pay for meals prepared in school operated canteens on the school compound. Cooked lunch meals are generally available at the school canteens for approximately JMD 100.

Other vendors

Vending is a significant feature of the school feeding system of Jamaica. Most of this vending takes place on, or around school compounds, but mainly outside of the school gates. Vending has been of concern to the MoEYI, which has considered policies and procedures to regulate this activity (Linton 2014). The concern is mainly with respect to the lack of the required permits and the absence of proper facilities by vendors, which pose security and health hazards to the students (Linton, 2014). Linton (2014) also reported that attempts have been made to control vending on school premises, by the school providing an area for vendors inside the school, and imposing restrictions on what can be sold to students, and the time-frames in which this selling is allowed.

14.3. The school feeding programmes

Overview

The MoEYI has produced an excellent operations and procedures manual for the SFPs, which provided valuable information to this study (MoEYI, 2017). There are two state-funded SFPs, which provide meals for children in the public-school system and early childhood institutions (ECIs) in Jamaica. They are:

- the cooked lunch programme (CLP) (referred to in the Jamaica Budget as the "school feeding programme") providing lunches cooked in school canteens and kitchens. This SFP follows along the lines of the DSK model; and
- factory prepared and delivered pre-packaged nutribun snacks and breakfast products (referred to in the Jamaica Budget as the "school snack programme" (SSP)) This SFP follows along the lines of the CSF model (Ministry of Finance and the Public Service Jamaica, 2017; MoEYI, 2017).

Selection of students for the school feeding programme

According to the (MoEYI, 2017), the Public Assistance Division (PAD) is responsible for the administration of all non-contributory social assistance programmes provided under the Social Security arm of the Ministry. The PAD provides assistance to the neediest Jamaicans through two programmes:

- the rehabilitation programme, which targets "… immediate/emergency needs that may be successfully alleviated by one-off interventions"; and,
- the PATH which targets "… longer term human capital developmental needs requiring sustained intervention" (Ministry of Labor and Social Security Jamaica, 2018).

The PATH is a nation-wide conditional cash transfer (CCT) programme created by the Government of Jamaica (GOJ) in 2001. The beneficiary identification system (BIS) uses a proxy means test designed by the Planning Institute of Jamaica (PIOJ), to determine eligibility for benefits under PATH and thus, to select PATH beneficiaries. Each school day, students on the PATH programme received either cooked lunched or NPL meal items in basic, infant, primary, all-age and secondary schools in Jamaica. The CLP provided in 2017/18, a cooked meal at no cost to approximately 188 000 PATH beneficiaries.

PATH also provides an education and social intervention (ESI) grant to assist children, who are affected by the inability of their parents or guardians to provide uniforms, school books and other basic needs. Many of these children in the absence of the grant, cannot attend school or demonstrate irregular attendance (Ministry of Labor and Social Security Jamaica, 2018). Parents or guardians of such children may simultaneously access rehabilitation grants, to establish income generating projects (Ministry of Labor and Social Security Jamaica, 2018). The ESI grant is contingent on children aged 6 to 17 attending school, for at least 85 percent of the total number of school days each month.

Community participation

There is substantial community participation in the CLP as opposed to the more centralized SSP. With respect to the CLP, cooks in the schools are drawn from the

community and this provides an important source of employment of women. These females from the community are often given basic food and nutrition education and they are trained in the preparation of meals for children (The Gleaner, 2011). Parent Teacher's Associations (PTA) form a useful forum for members of the community, especially parents to influence the nature of the meal option served in the CLP (The Gleaner, 2018).

Most schools are equipped with canteens with kitchen facilities and equipment, for on-site preparation of the cooked lunch meals. In some instances, NGOs and other corporate bodies may assist these schools directly by contributing products or other assistance.

Operations at the school level

Each school in the CLP receives a grant from the MoEYI, termed "a nutritional subsidy" for the provision of meals to students on the PATH programme, as registered by the Ministry of Labor and Social Security (MoEYI, 2017). The grant is JMD 120 per child per day for five days per week for infants four to six years and children in grades 1 to 3 and JMD 150 per child per day for five days per week for children in grades 4 to 11. This grant is paid each school term and uploaded directly to the school's account.

In the CLP, the number of students requesting lunch for any school day, as seen from the lunch register is sent to the kitchens of the school canteens, where cooks prepare the required number of meals. The meal preparation system is the conventional method, i.e. all lunch meals are prepared from scratch, with few convenience foods utilized, and all items are prepared on site at the schools. The meals are served in appropriate portions to students in designated dining areas, where available, or other available appropriate areas, such as classrooms or auditoriums.

The administrative requirements of schools in the CLP and the SSP are well set out in the Operations and Procedures Manual of the SFP (MoEYI, 2017). These administrative requirements include the following:

- A committee or an individual (the principal, or someone delegated by the principal) should be identified to have responsibility for the CLP or the SSP in the school.
- For the CLP, every school day a record should be compiled, which gives details of the meals provided, the quantity of food ingredients used in meal preparation and the number of lunches served. These records are summarized and presented to the School Feeding Unit (SFU) of the MoEYI each month.
- The school should efficiently conduct the following functions:
    - o procurement of food and non-food supplies;
    - o maintenance of accurate records of use of funds on the stipulated forms including accurate financial records on the purchase and delivery of items used in the CLP (Form ME 260);
    - o daily recording for each eligible student enrolled in the school on:
    - o whether he/she receives a fully subsidized (completely free), partially subsidized or non-subsidized meal (fully paid for by the student), and
    - o whether he/she receives a cooked meal or a NPL snack.
- The school should input data on the SFPs into the Ministry's Management and Monitoring Information System (MMIS).
- The school should endeavor to raise the standard of the meals served and encourage students to adopt healthy eating habits.

Schools on the SSP receive deliveries of pre-packaged snacks and drinks from Monday to Thursday and the schools are required to have adequate cold storage facilities to hold meal items from Thursday to Friday. Meal items are distributed from the schools' canteens or tuck shops, since approximately 53 percent of the meals delivered by the NPL to schools are sold to students. Students purchasing meals contribute JMD 2 per snack. However, if a student is unable to pay, the student is provided with the snack free of charge.

Schools on the SSP deposit the funds received from the sale of the snacks into the NPL, except for schools in some rural areas, where NPL officers collect the funds, which are then deposited into the NPL account.

Operations at the national level

According to the MoEYI, in 2017/18, approximately 248 000 students or approximately 46.7 percent of students in the age group 3 to19 years benefited from this state-funded SFPs in Jamaica. The cooked lunch programme provided daily lunches for 188 110 students on the PATH programme. (grades 4 to13 or age 9 to18). Also, NPL delivered 81 444 snacks and 40 994 breakfast solutions to 553 schools daily in 2017/18 (ECI to grade 3 or age eight). Students on the PATH programme received

either cooked lunch or NPL meal items in basic, infant, primary, all-age and secondary schools in Jamaica. Under the Government's social safety net programme, the MoEYI administers the SFP through:

- the School Feeding Unit (SFU) which administers the programme for infant, primary and secondary schools in the public-school system;
- the Early Childhood Commission (ECC), which partners with the SFU to administer the programme to all ECIs; and
- Nutrition Products Limited (NPL), which manufactures and distributes meal items - the pre-packaged Nutribun snacks and breakfast items - to selected schools under the guidance of the SFU.

The document, "The School Feeding Programme" (MoEYI, 2016) provides the following goals of the SFPs:

- encourage greater and more regular school attendance;
- alleviate hunger and enhance the learning capacity of the students;
- serve as a source of income transfer for participating families;
- educate the children on the value of food through nutrition education; and
- encourage the children to grow their own food by establishing and supporting school gardens.

The Nutrition Products Limited (NPL), reported the production performance for the periods 2013/14 until 2016/17 as reported in Table 14.1. Table 14.1 demonstrates a strategic shift in the production pattern, increasing the production of the more expensive breakfast meals from 2 781 284 (12 percent) in 2013 to 2014 to 9 419 220 (38 percent) in 2016 to 2017 and reducing the proportion of lunch snacks, because of "the greater importance attached to breakfast as perhaps the most important meal of the day" (NPL, 2017). In 2016/17, these meals were distributed from the three production plants of the NPL, to 718 schools throughout Jamaica (NPL, 2017).

Based on data provided in its Annual Report 2016/17, approximately 53 percent of the products of the NPL are sold to generate revenue to the NPL (NPL, 2017). Indeed NPL (2017) states that in 2017, sales to schools generated a gross revenue of JMD 26.027 million, compared to JMD 24.552 million in 2016 (NPL, 2017).

Menus and nutrition

The NPL meal items consist of muffins, breads, buns, bullas, porridges, milk and fruit juices. The Nutribun snack consists of a 237 ml flavored drink and one of the following: a 100 g bulla cake, a rock cake, a spiced bun or a cheese bread (MoEYI, 2017).

The NPL breakfast meal includes pre-packaged carrot and banana bread, carrot and banana muffins, sandwiches (chicken, corned beef and cheese), and porridge (cornmeal, cream of wheat and oats) and comprises:

- one 8 ounce cup of porridge and ½ slice of bread or muffin (50 g); or
- one 237ml sachet of juice drink made from local seasonal fruits and a slice of bread or a 50 g muffin; or
- one 237ml sachet of juice drink and a sandwich or wrap with either chicken, cheese, corned beef or vegetables (MoEYI, 2017).

Cooked lunches are offered five days per week using a menu and recipe manual suitable for the relevant age groups in the CLP. Meals served are intended to provide one third of the Recommended Daily Allowance (RDA) and 50 percent of the vitamin C and the iron requirement to address the problem of anemia. Thus, students are

Table 14.1: NPL production performance indicator 2013/14 – 2016/17

Description	2016/17	2015/16	2014/15	2013/14
Breakfast	9 419 220	5 497 774	2 229 341	2 781 284
Lunch	15 379 588	16 549 226	20 721 730	20 206 551
Total	**24 798 808**	**22 047 000**	**22 951 071**	**22 987 835**

Source: (NPL, 2014, 2015, 2016, 2017).

provided with an iron rich food, two to three times per week (MoEYI, 2017). Meal standards for cooked lunches have been established based on the various food groups, along with appropriate weights and measurements for standardized portion size for the various age groups i.e. infant (3 to 6 years), small (7 to 9 years) and large (10 to18 years) (MoEYI, 2017).

In 2016, new menus were developed for the CLP, in collaboration with the Ministry of Health's Nutrition Unit. The menus include a variety of foods from the six Caribbean food groups and special emphasis is placed on the inclusion of foods indigenous to Jamaica and local fruits (MoEYI, 2017). Cooks and assistants in schools received training in meal preparation, portion control, meal service, safety and sanitation, before the implementation of the new menus. There are also two recipe manuals in the SFP, one for the ECC and the ECIs and the other for the other schools. The menus for the CLP are included as appendices in the Operations and Procedures Manual (MoEYI, 2017).

Properly designed SFPs can address nutrition and health problems of school aged children (FAO, *et al.* 2018, p. 25). Towards this end, the MoEYI has developed the draft national school feeding policy, which it intends to incorporate into a national school nutrition policy. This policy will provide guidelines for the implementation of the SFPs (MoEYI, 2015).

The MOH is also active in the area of attaining national nutritional goals. In 2017, the MOH launched the national food industry task force to develop and implement strategies to improve the nutritional status and reduce the economic burden associated with an unhealthy population. The Ministry of Health, in collaboration with the MOE, has also implemented the national health promoting school programme – Healthy youth for positive energy (HYPE) (The Gleaner, 2018).

Pilot project

FAO (2015b) reports that the FAO has supported the Government of Jamaica in the establishment of a sustainable school feeding pilot project. This project aims to show the benefits of an integrated, multidimensional model of school feeding. Rose (2018) reports that the pilot project has the following elements in its work-plan:

- inter-sectoral coordination;
- community involvement;
- food and nutrition education;
- nutrition plans;
- infrastructural improvement; and
- public procurement – linking local farmers to the SFP

Rose (2018) states that it started in 2016 and a cluster of six schools in the parish of Manchester are participating (comprising three primary and three secondary schools). Rose (2018) also reports that the project has brought about the procurement and installation of new equipment in the participating schools as well as enhanced nutrition education.

14.4. Governance of the school feeding programmes

National commitments

Jamaica ratified the International Convention on the Rights of the Child in May 1991, as well as the Convention on the Rights of the Child, demonstrating its commitment to the protection and care of children in accordance with international standards regarding child rights and societal responsibilities. Nationally, these rights are protected in law, largely through the Child Care and Protection Act (2004) and supporting legislation, as well as the National Infant and Young Child Feeding Policy and the Jamaican Food and Nutrition Security Policy. There is currently no school feeding policy to provide the institutional and legal mechanism for the operation of the SFPs in Jamaica, although there was the stated intent to present a draft school nutrition policy to Cabinet for approval in 2018.

The country has achieved universal access at the early childhood, primary, and lower secondary levels of the education system (Planning Institute of Jamaica, 2015). SFPs in public schools are included as an element of the social protection floor for Jamaica (Planning Institute of Jamaica, 2014). The social protection floor gives priority to the most vulnerable groups in the Jamaican society. (Planning Institute of Jamaica, 2014).

Currently, there is no national school feeding management committee involved in the management and implementation of the SFPs in Jamaica. However, in 2016, a multi-sector project steering committee was established by a memorandum of understanding (MOU) to oversee the sustainable school feeding pilot project conducted at six schools in Jamaica. The Ministries signing the MOU were Education, Health, Agriculture and Planning (Rose, 2018).

The school feeding unit (SFU)

The SFPs in Jamaica are managed and administered by the SFU, a unit within the Education Services Division (ESD) of the MoEYI, in partnership with the ECC and the NPL (Figure 14.2). The ESD division is headed by a Deputy Chief Education Officer who reports to the Chief Education Officer. The SFU is staffed by a director, administrator, secretary and three records clerks.

The SFU provides operational and budget support and management oversight to the other two entities within the SFPs and therefore liaises with the ECC and NPL with regard to the administration of the SFPs, in keeping with policy guidelines laid down by the Government of Jamaica (GOJ) and the MoEYI. The SFU also liaises with the Ministry of Labor and Social Services (MLSS) to ensure accuracy of the submitted list of PATH beneficiaries. The SFU also determines how much money each school should receive each term and implements measures for ensuring accountability in the use of funds and adherence by schools to the procedures and mechanisms contained in state policy guidelines.

The SFU also has responsibility for the development and dissemination of standards and menus to ensure the nutritional quality of meals within the SFPs. In collaboration with the Ministry of Health, a four-week cycle menu was established for the SFPs in 2017, as part of the modernization of the SFPs under component four of the Inter-American Development Bank (IDB)'s integrated social protection and labor project.

This SFU has as its main functions:

- the implementation of the management and monitoring information system (MMIS) which is a web-based monitoring system for the SFPs;
- the documentation of all data related to the SFPs, inclusive of the daily requirements for each school on the SSP, served by the NPL as well as food issue and utilization reports for each school on the CLP; and
- compilation of programme historical reports specific to individual schools. These reports contain detailed analyses, which are prepared in-house to assist with programme analysis and evaluation.

The SFU is also responsible for:

- monitoring and reporting on the use of the nutritional subsidy;
- the development and dissemination of standards and menus used to provide meals with high nutritional quality;
- ensuring the uniform adoption of procedures and mechanisms;
- completion of financial forms to ensure accountability of the use of funds by schools;
- the consolidation of receipts and invoices received from schools at the end of each school term; and
- updating the list of PATH beneficiaries at each school.

The SFU has four officers with responsibility for recording the operations at all public schools in the six regions and 14 parishes throughout the island. It was reported that the MoEYI has piloted the MMIS in some schools and provided training to some members of staff with the intention of expanding the number of trained staff.

The Early Childhood Commission

The Early Childhood Commission (ECC) partners with the SFU and the NPL to administer the SFP in all ECIs. An Act of Parliament established the ECC in 2003, to improve the governance and operations of the early childhood sector (ECC, 2017). The Early Childhood Act of 2005 and the Early Childhood Regulations of 2005 govern the functions of the ECC in relation to the development, care and protection of children (ECC, 2017). They also "… describe the requirements that an ECI must meet in order to be registered by the ECC as a legally operating institution. The laws ensure that all ECIs provide the services that children need to grow and develop well" (ECC, 2017). According to the MoEYI (2017), the operations of the SFPs relevant to the ECC fall under the purview of the institutional services unit, within the Finance Department of the ECC.

The ECC provides oversight for the SFPs within the early childhood sector, through such activities as policy planning, the development of standards and the monitoring of these standards. "An ECI is defined as any place that cares for four or more children, under the age of six years, for up to six hours per day. This includes nurseries, day care centers, basic schools, kindergartens, infant schools and infant departments" (ECC, 2017). The ECC states that ECIs "… provide children in their care with nutritious meals and model good nutritional practices for children and families" (ECC, 2017). The ECIs are therefore equipped with kitchen and dining facilities for the preparation and service of a lunch meal to the children.

The breakfast meals are provided by the NPL and hired and trained volunteer staff prepare the cooked lunch meals at the ECIs. Each ECI is required to have a nutrition plan, to follow recipe plans and to provide training for staff in food preparation and service. There is no charge for breakfast or lunch for 70 percent of the cohort of students in the ECIs and this cohort includes all PATH beneficiaries.

Nutrition Products Limited

Nutrition Products Limited (NPL) is a statutory body which operates under the portfolio of the MoEYI. It was established in 1973 and incorporated as a limited liability company in 1974. It is owned by the Accountant General Department of Jamaica (MoEYI, 2017). NPL operates three production plants in Kingston, St. Mary and Westmoreland. The operations undertaken at each location include the production and distribution of meals (breakfast and Nutribun snacks).

The board of directors sets policies for the company and the day-to-day operations are managed by a team headed by a Chief Executive Officer and his or her department managers. It liaises with the SFU and the ECC to obtain a list of daily requirements for each school for the school term, and it produces and distributes snacks to designated schools. It also collects contributions made for the Nutribun snacks from schools, either directly or via bank transfer. A nutritionist from the MOH sits on the board of the NPL to ensure compliance with nutritional standards of meal offerings.

NPL produces various baked products that are fortified with the necessary nutrients and vitamins to meet a third of the recommended daily caloric needs of school-age children. Students are asked to contribute JMD 2 for the Nutribun snacks supplied, but are not denied if they are unable to make that contribution. The actual cost of producing a Nutribun snack inclusive of a drink is approximately JMD 19.75, while the cost of breakfast is JMD 14.48.

Some of the challenges identified by the NPL in the field visit with respect to producing and delivering their breakfast and Nutribun snacks include:

- old machinery at the production facilities, which affects efficiency of production;
- the underutilization of production facilities – more output can be produced if the number of students and schools serviced by the NPL is increased; and
- difficulties associated with the collection of money from schools based on the number of students who pay. Collection often requires the customer service department to interface directly with schools.

14.5. Procurement arrangements

Funding for the school feeding programmes

The MoEYI provides the funding for the CLP and the SSP through budgetary allocations (Ministry of Finance and the Public Service Jamaica, 2017). The SFU of the MoEYI collaborates with the ECC and the NPL with respect to these components. The SFU proposes annual budget estimates for the SFP, through a discussion and feedback process with the NPL and the ECC and submits all documents to the school operations unit of the MoEYI. The documents are then sent to the Finance Division of the MoEYI, from where they are submitted to the Ministry of Finance and the Public Service for approval and dispersal of funds (MoEYI, 2017).

The SFU receives the list of PATH beneficiaries from the Ministry of Labor and Social Security. Upon approval of the budget and the number of beneficiaries, funds are allocated to schools. A formal letter of notification is sent to each participating school, outlining the funds constituting the nutritional subsidy that have been disbursed to the school by direct transfer to the school's account, in commercial banks in the respective parishes, as well as the intended allocation of the funds. These funds provide cooked lunches to students on the PATH Programme, as registered by the Ministry of Labor and Social Security.

These grants are paid termly through a central management system. The responsible officer at the school completes the required forms, which are submitted to the MoEYI for reconciliation, along with payment vouchers and invoices. Contributions collected by schools for the Nutribun snack from the NPL are paid to the NPL.

Funding for the ECIs as part of the SFPs is also provided by the Government of Jamaica through the MoEYI. The ECC prepares the annual budget for the SFPs for the ECIs and submits this budget to the schools operations unit, which further submits same to the Finance Division of the MoEYI. Upon approval of the ECC budget by the Ministry of Finance and the Public Service, a formal letter of notification is sent to all ECIs outlining the amount

of money sent to the ECI's account. The ECC has the responsibility to disburse all payments to ECIs in a timely manner and to consolidate the receipts and invoices from the ECIs at the end of the school term (MoEYI, 2017).

Approximately 80 percent of funds disbursed from the MoEYI through the SFU is used for the provision of cooked lunches for students, while the remaining 20 percent is utilized to provide the NPL's breakfast and lunch snacks.

Procurement by schools for the cooked lunch programme

Schools themselves procure the raw materials or food items used in the preparation of cooked lunches. There is no centralized procurement system or tendering process to facilitate the purchasing process for schools in the CLP. Food items are usually purchased in keeping with the written menu provided to schools by the SFU. The suggested method of purchasing is the open market, which as far as possible should include the local vendors and the local market system (MoEYI, 2017). The Operations and Procedures Manual suggests that schools should request quotations from more than one vendor before goods are purchased, to ensure best quality and price for raw material input into the CLP (MoEYI, 2017).

Schools are also required to keep an inventory of raw materials bought on the records and forms specified for the SFP by the MoEYI. The inventory records detail the stock received and issued, any spoilt or unusable items and provide the stock balance (MoEYI, 2017). Guidelines have been provided for the management of this inventory. They include very detailed guidelines for the receipt and storage of items in the Operations and Procedures Manual (MoEYI, 2017). School employees responsible for receipt and use of stock are required to be trained to accept products that meet the specifications of the SFU.

Procurement by Nutrition Product Limited

The procurement policies and procedures of the Government of Jamaica are used by the NPL to acquire the raw materials necessary for the production of the pre-packaged breakfast and Nutribun snacks provided for the SSP. The procurement and contracts section of the Finance and Procurement Department of the NPL has the responsibility for all purchasing and contractual activities of the company, ensuring that quality goods, services and works are acquired on a timely basis and at the most economical cost (NPL, 2017).

According to the NPL (2017), the firm has introduced "tighter monitoring and sourcing of raw materials in an effort to be more economical in the purchasing of raw materials". The NPL mainly sources major raw materials (flour, sugar, dried skimmed milk) directly from large suppliers at lower prices (or cost) instead of purchasing through third parties. This method of procurement was stated to achieve greater economies of scale. The company has also entered into long-term contracts with suppliers, selected on the basis of quotations, with the objective of holding these suppliers to the initially agreed prices for the raw materials (NPL, 2017).

NPL, as an agency of the MoEYI, receives its funding from the MoEYI in support of the SFP, as well as from contributions from students for the Nutribun snacks. At the beginning of each school year, the MoEYI through its SFU submits to the NPL a listing outlining the daily requirement for each participating school and the number of students to benefit from the programme. NPL goes through a discussion and feedback process with the MoEYI when planning the budget for its operations. The SFU prepares and submits budget estimates on behalf of the NPL.

The Regional Agricultural Development Authority (RADA) has been instrumental in providing support to the NPL to increase the local content of its raw material input (Ministry of Agriculture and Fisheries Jamaica, 2015). As an example, given by Ministry of Agriculture and Fisheries Jamaica (2015), NPL has increased the use of locally produced liquid eggs in the production of its solid offerings since 2013, with local liquid eggs being added to four solid offerings:

- carrot bread
- carrot muffin
- banana bread and
- banana muffin.

According to its 2016/17 annual report, the NPL has sought to improve the "nutritional profile" of the breakfast meals and has increased the quantity of these meals provided, as a result of the expansion of the breakfast programme island-wide (NPL, 2017). The NPL has also sought to incorporate more costly local agricultural products as raw materials into its meals. With this expansion of its programme and in an effort to acquire these local raw materials at lower cost, the company has strengthened its collaboration with local agencies such as RADA and the Banana Board. The local agricultural items being sourced by the NPL include

carrots, bananas, onions, lettuce, tomatoes, ginger powder and mixed spices (NPL, 2017).

14.6. School gardens and aspects of food and nutrition education

The Jamaica 4-H Clubs was established in 1940. In accordance to the 4-H Act in 1966, it is the ministry's youth training arm committed to developing outstanding leaders with marketable skills (Ministry of Agriculture and Fisheries Jamaica, 2019). The 4-H's core function is to provide training in agriculture, home economics, social skills, entrepreneurship, environmental awareness and healthy lifestyles, to persons between the ages of five to 25 years (Ministry of Agriculture and Fisheries Jamaica, 2019).

The national school garden programme is managed by the Jamaica 4-H Clubs, with technical support from RADA, the Jamaica Agricultural Society and community volunteers (Jamaica 4-H Clubs, 2020). The programme teaches clubites agricultural and environmental practices and contributes to the SFPs (Ministry of Agriculture and Fisheries Jamaica, 2019). There are reportedly approximately 465 school gardens in Jamaica, with some schools having extensive crop acreage and livestock, while others with limited space using containers and vertical gardening techniques (Jackson, 2020). Parish and national school garden competitions encourage excellence in agricultural practices among students.

Several national programmes and policies have been developed and initiated to improve nutrition, through food and nutrition education, in Jamaica. These include:

- the National Operational Action Plan for the Prevention and Control of Obesity in Children and Adolescents in Jamaica 2016 to 2020;
- the Draft National School Feeding Policy (2015);
- the Healthy Lifestyle Policy and Strategic Plan (2004 to 2008);
- the National Health Policy 2006 to 2015; and
- the food based dietary guidelines (Ministry of Health Jamaica, 2015).

The MOH delivers school nutrition education, through programmes, strategies and policies, such as the "Jamaica Moves" programme, which targets schools, workplaces and the community, in order to encourage increased physical activity and improved nutritional status. In addition, there was extensive training done in schools with respect to use of menus through: compact discs, brochures, posters and fliers, as well as training of cooks involved in the CLP.

Other initiatives in nutrition education include the following:

- the health and family life (HFLE) draft curriculum, which was revised to include nutrition education;
- a school health enhancement committee and a nutrition sub-committee, which work with the SFU;
- PATH beneficiaries are required to take part in compulsory community training in the area of nutrition;
- activities in schools, which have included poster competitions, advertisement on TV and a well-received YouTube presentation on "Are you drinking yourself sick"; and
- nutrition education at the ECIs, which is done with the assistance of the MOH.

14.7. Quality assurance and monitoring and evaluation

An operational assessment of school feeding carried out in 2012 found that guidelines and standardized procedures were lacking, leading to variations in the administration of the SFPs in schools, absence of enforced nutritional standards, insufficient use of local produce and a lack of fruits and vegetables in meals (Planning Institute of Jamaica, 2017).

In 2015, the "modernization of the SFP" initiative commenced under component four of the Inter-American Development Bank (IDB)'s integrated social protection and labor project. Among its objectives were:

- the improvement of the operations of school feeding through the strengthening of administrative and management systems;
- the development and implementation of a school feeding policy; and
- the creation and distribution of recipe manuals to all public schools.

Outputs from that exercise included an operations and procedures manual for school feeding, a manual of menus and recipes for the CLP, development of a management information system (MIS) for the SFPs, as well as a draft school feeding policy. However, the focus of the MoEYI and the SFU is now on the development

of a national school nutrition policy, with the stated intention of subsuming the draft school feeding policy into one document, called the national school nutrition policy.

According to the operations and procedures manual of the SFPs, the SFU has established a management and monitoring information system (MMIS) website, aimed at supporting the management and monitoring of SFP activities, with special emphasis on tracking and managing the food subsidy provided to schools for students on PATH (MoEYI, 2017). The website is designed to allow the SFU to efficiently exchange information with partner entities, especially schools and the Ministry of Labor and Social Security (MLSS) (MoEYI, 2017). A detailed description of the MMIS is provided in MoEYI (2017).

The NPL has an internal audit department, which conducts monthly audits to test internal control systems. The objectives of this department are to "address the reliability of financial information, the efficiency and effectiveness of operations, and compliance with laws, regulations, and policies". External auditors are used to audit the financial records of the company. In addition, there is regular testing to meet the requirements of the MOH and the MoEYI. The MoEYI also conducts audits of the NPL from time to time.

The school, through its principal, has responsibility and accountability for the MMIS in their school through a mandate from the MoEYI. A trained responsible officer is expected to coordinate the MMIS in the school and capture information on all PATH and non-PATH beneficiaries from the nutritional subsidy received from the MoEYI, to finance the SFPs. The system is intended to capture:

- expenses/finances related to the SFP at the school;
- daily attendance; and
- whether the student received no meal or a fully or partially subsidized meal.

As stated above, the operations and procedures manual provides very detailed instructions for schools on the implementation and operation of the MMIS (MoEYI, 2017). The public health inspectors of the Ministry of Health, routinely conduct visits to the kitchens of school canteens, to ensure that food quality and safety standards are met.

14.8. Annual net benefit analysis of the school feeding programmes

In the case of the SFPs of Jamaica, revised estimates were available for the 2016/17 fiscal year along with other relevant data in the Estimates of Expenditure 2017/18 from the Jamaica Ministry of Finance and the Public Service, (Ministry of Finance and the Public Service Jamaica, 2017). Also, the Annual Report of the NPL for 2016/17 provided detailed accounts for the NPL for this financial year (NPL, 2017). This information was used in the annual net benefit analysis for fiscal year 2016/2017.

A simulation analysis was carried out to determine the sensitivity of the benefit–cost ratio for the SFPs in Jamaica to the number of students in the SFPs. This simulation involved keeping all other data for the analysis the same and varying only the number of students in the SFPs (*ceteris paribus*) and calculating the benefit–cost ratio for each value of the number of students.

In the annual net benefit analysis, the contributions of the four individual benefits of the SFPs are presented in percentage form in Table 14.3. The major contribution to programme total benefit was from increased productivity (41.4 percent) and value transfers (30.4 percent). The other major contributor to the programme total benefit was the benefit of healthier and longer lives of the beneficiary students (27.9 percent). Return on investment made an insignificant contribution to the programme total benefit (0.3 percent).

Table 14.2 presents the total operational cost of the SFPs of Jamaica. Here it is seen that the major operational cost items are the cost of food ingredients provided by funds from the State (74.13 percent) and the payment of wages to the cooks (8.18 percent). As seen in Table 14.3, these operational costs comprise about 78.02 percent of the programme total cost of the SFPs in Jamaica.

The annual net benefit of the SFPs in Jamaica was estimated at approximately '000 JMD 3 366 327 and the benefit–cost ratio of the SFPs was estimated in Table 14.4 as 1.67.

14.9. Overall assessment of the school feeding programmes

The annual net benefit analysis carried out has demonstrated that the SFPs of Jamaica can be justified

from a social welfare perspective with a benefit–cost ratio of 1.67. This high benefit–cost ratio indicates that this SFPs are making a substantial contribution to the economic well-being in Jamaica in terms of the economic benefits that are being derived from them, while the programme costs are being held at justifiable levels. Indeed, the benefit–cost ratio for Jamaica's SFPs is one of the highest recorded for the CARICOM states in this study.

A major feature of the Jamaican SFPs is the sophistication of the monitoring and evaluation platform that is being implemented and its incorporation of advanced on-line record keeping and analysis systems in the form of the MMIS. The SFPs in Jamaica are already practicing the most highly documented and recorded operations in CARICOM and the MMIS will allow the SFU to even more quickly and comprehensively monitor and evaluate the operations of the SFPs, so that changes can be made to improve its efficiency and net benefits to the Jamaican society.

The SFPs in Jamaica are the largest in the English-speaking Caribbean and second only to the SFPs in Haiti in the CARICOM states. The large number of children served by the SFPs is one of the factors determining the high benefit–cost ratio for the SFPs. In the simulation exercise in Table 14.4, if the total number of students in the SFPs is reduced to 202 000 (the number of students often stated to be receiving benefits as part of the PATH program), the benefit–cost ratio reduces to 1.45 as there are less beneficiaries. Increasing the number of students to 300 000 *ceteris paribus* increases the benefit–cost ratio for the SFPs to 1.91. This illustrates that the benefit–cost ratio for the SFPs is sensitive to the size of the SFPs. This suggests that the total number of students benefitting from the SFPs should be accurately tracked including the number of students who may be benefitting from more than one SFP at the same time.

14.10. Specific recommendation

Improved staffing for the school feeding programmes

The national policy on poverty and national poverty reduction programme produced by the PIOJ in 2017 indicated that, an operational assessment of the SFPs in 2012 identified insufficient staff to monitor and manage operations at all levels, as a major constraint facing the SFPs (Planning Institute of Jamaica, 2017, p. 85). This constraint still existed in 2018, with four officers at the SFU required to monitor all public schools throughout Jamaica, that is, a ratio of one officer to more than 200 schools. There is therefore a need to increase the staff of the SFU and to strengthen the operations and procedures at all levels of the SFPs.

Table 14.2: Operational costs of the school feeding programmes '000 JMD

Operational Item	Cost '000 JMD	%
Compensation of employees NPL	174 949	4.43%
Food ingredients paid directly by state	2 926 967	74.13%
Payment for cooks	323 000	8.18%
Infrastructure cost	306 600	7.76%
Distribution of products NPL	163 987	4.15%
Other operational costs	53 050	1.34%
Total operational cost	**3 948 553**	**100.00%**

Table 14.3: Determination of the annual net benefit for the school feeding programmes

Programme element	Element manager	'000 JMD	%
Total operational cost	Min. of Education	3 948 553	78.02%
Administrative costs	Min. of Education and NPL	424 918	8.40%
Paid to state by parents	Schools	423 198	8.36%
Paid to NPL by Parents	NPL	26 027	0.51%
Factory Overhead Cost	NPL	238 474	4.71%
Programme total costs		**5 061 170**	**100.00%**
Benefit sources	**% of total benefits**	**Benefits**	
Value transfer	30.4%	2 560 588	
Return on investment	0.3%	25 268	
Increased productivity	41.4%	3 490 954	
Healthier and longer life	**27.9%**	**2 350 687**	
Programme total benefit	**100.0%**	**8 427 497**	
Annual net benefit		**3 366 327**	
Benefit–cost ratio	**1.67**		

Table 14.4: Simulation analysis for the school feeding programmes

Total number of beneficiary students	Benefit–cost ratio
175 000	1.43
190 000	1.50
202 000	1.55
248 000	1.75
300 000	1.97

15. Saint Kitts and Nevis

15.1. Introduction

Saint Kitts and Nevis is a twin-island nation in the Leeward Islands chain of the Lesser Antilles. It is the smallest sovereign state in the Western Hemisphere, in both area and population. Saint Kitts is the larger of the two islands, with Nevis located across a narrow and shallow channel just two miles southeast. Saint Kitts and Nevis is divided into 14 parishes: nine on Saint Kitts and five on Nevis.

15.2. School feeding in Saint Kitts and Nevis

School feeding differs on the two islands of Saint Kitts and Nevis, largely because of the differences in the state-supported SFPs, termed the school meals programmes (SMPs). As seen in Figure 15.1, school feeding in Saint Kitts is a combination of:

- a state-funded SMP, based on centralized food preparation and distribution via a School Meals Centre (SMC);
- a system of private vendors, who sell in the proximity of the schools; and
- parent supplied meals to students.

In the case of Nevis, as seen in Figure 15.2, school feeding is a combination of:

- a state-community-school based SMP;
- a system of private vendors, who sell in the proximity of the schools; and
- parent supplied meals to students.

15.3. The school meals programmes of Saint Kitts and Nevis

Selection of students for the school meals programmes of Saint Kitts and Nevis

In Saint Kitts, the SMP caters to the needs of all primary school children and disadvantaged students in secondary schools (Crawford, 2018). Approximately 5000 students are served in 18 primary schools and approximately 200 deserving students in six secondary schools. The aim of the programme is to provide top quality balanced meals that promote healthy bodies.

In Nevis, the SMP is open to any child whose parents are willing to contribute XCD 25 per week (as fees) for the meals. The SMP started in the 1980s, feeding a few needy children. However, the percentage of all school children in Nevis, receiving meals in the SMP has risen steadily over the years.

Community participation

The SMP in Nevis is based on a state-community-school linked initiative, in which the community's contribution is substantial. This community includes parents and local and overseas donors. Local and overseas donors make significant contributions to the SMP, estimated to be about five to 10 percent of the cost of the SMP. Contributions come in the form of:

- sponsorship of children in the SMP;
- donations for the construction of shade houses at schools to promote school gardens (The New Zealand High Commission in conjunction with IICA);
- construction of the facilities, such as kitchens and lunchrooms;
- acquisition of large and small equipment, utensils and tools;
- provision of furniture at the schools; and
- donations of locally grown foods, such as root crops (ground provisions), vegetables and fruits from the farming community.

The highly centralized SMP of Saint Kitts offers less opportunity for community participation, which is minimal for this SMP. However, the local community provides the staff for the SMC.

Operations at the school level

For the SMP in Saint Kitts, the food from the SMC is delivered to the schools, in bulk holding containers. At the schools, a pantry or holding area is designated for holding, plating and service of meals to the children. Meals are consumed in lunchrooms, or in classrooms, as all schools do not have designated lunchrooms.

For the SMP of Nevis, hot lunch meals are prepared and served on site at each school and each primary school is outfitted with a clean and spacious lunchroom for eating. Parents contribute XCD 100 per month or XCD 25 per week per child for the purchase of food and non-food supplies at the schools. Strict record keeping is maintained at each school. Bank accounts are used for the deposit of funds.

In Nevis, school principals play an important role in the management and operation of the SMP at their schools. They are responsible for:

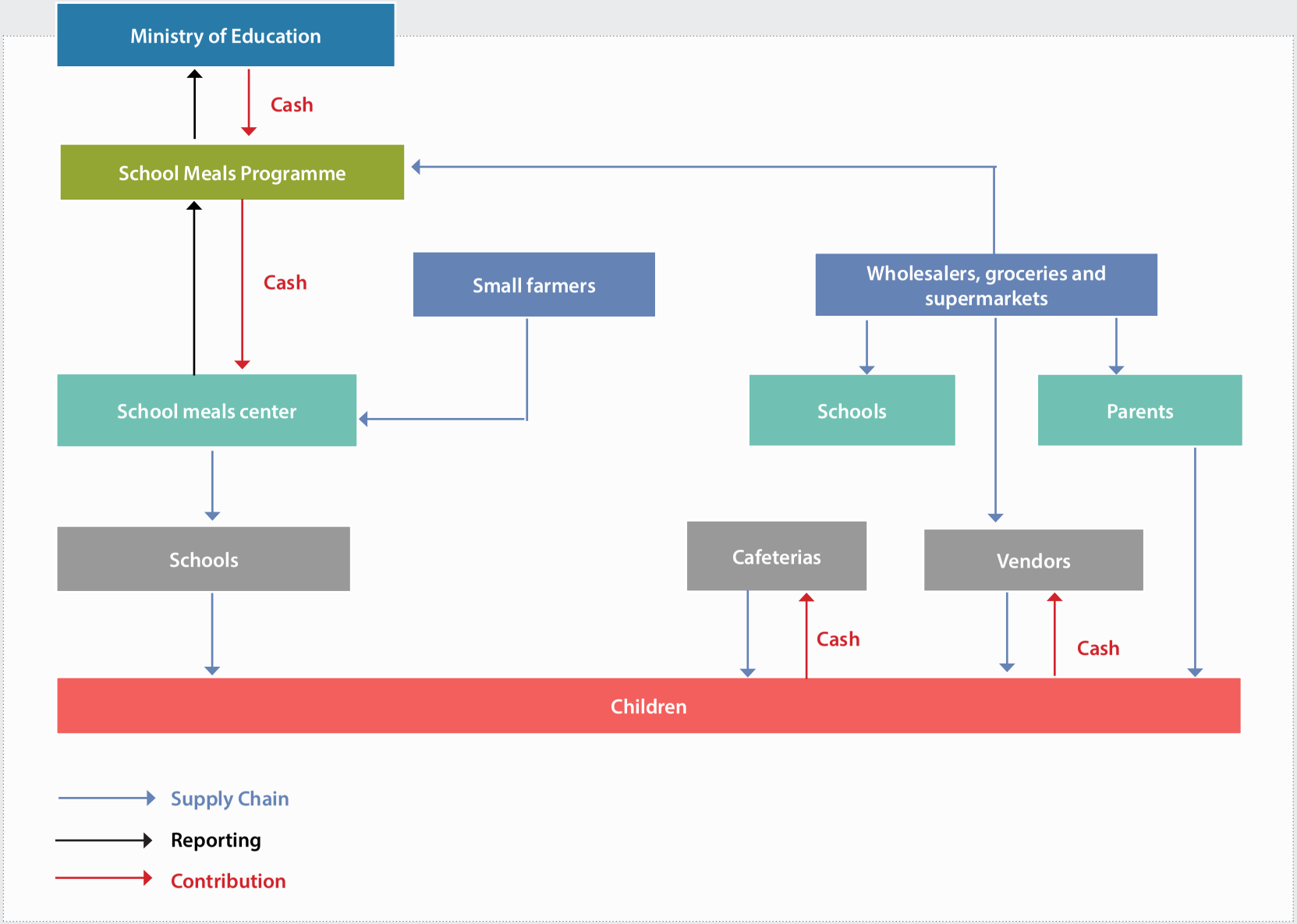

Figure 15.1: Operating model of school feeding in Saint Kitts

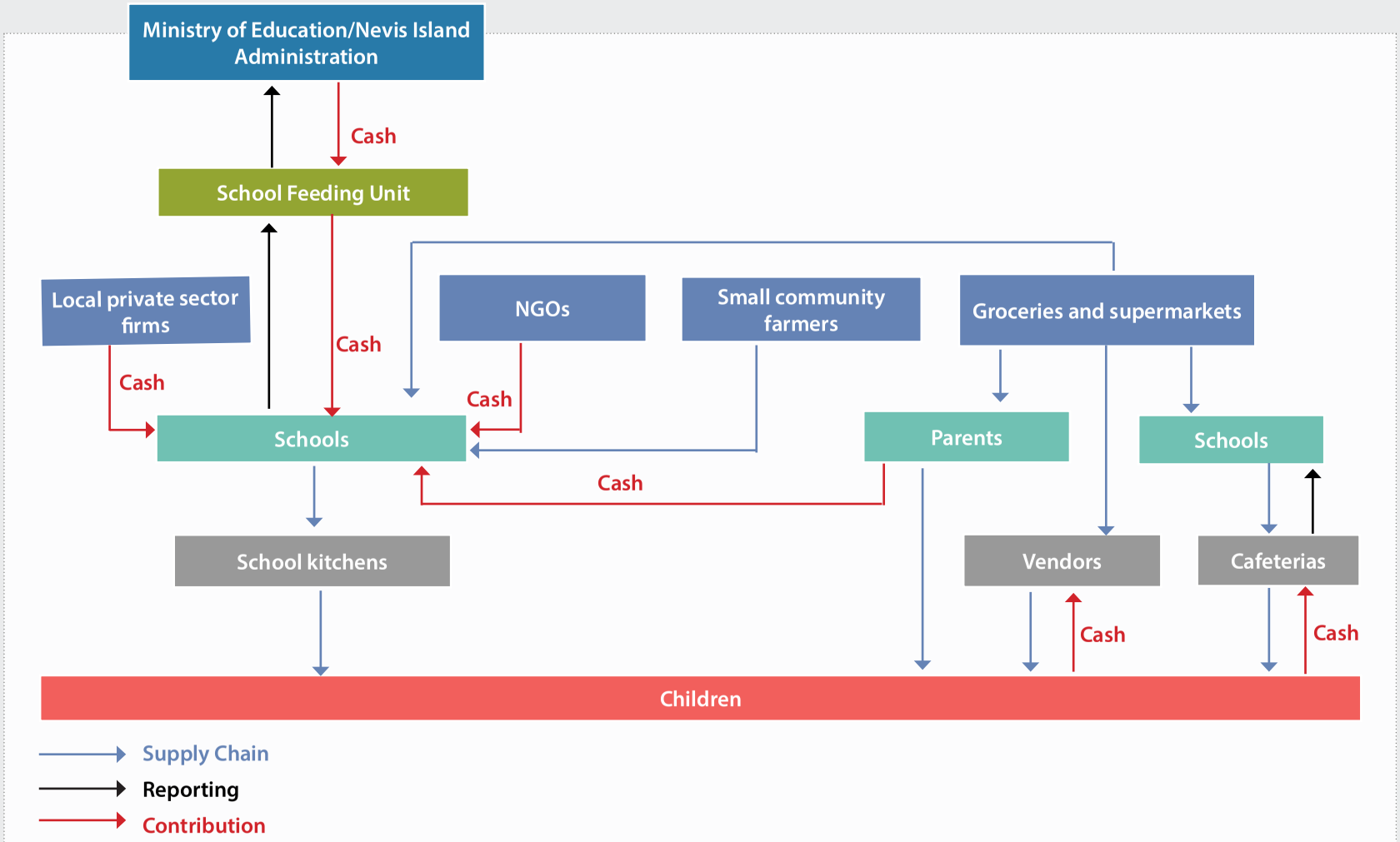

Figure 15.2: Operating model of school feeding in Nevis

- the collection of lunch fees;
- purchasing of food and non-food supplies weekly (fresh vegetables, fruits, fish and or meat) or monthly (dry goods, other consumables and non-food supplies) from designated suppliers in the community;
- planning the menus;
- supervision of cooks in meal preparation and food service; and
- preparation of reports to the Ministry of Education.

Operations at the national level

The SMP in Saint Kitts commenced in the early 1980s, with financial support from the WFP providing a hot lunch for primary school children. The support from the WFP ended around 1982. Since then, the SMP has been funded entirely by Government of Saint Kitts and Nevis. The SMP is managed and coordinated by the Ministry of Education and the operations are located in the School Meals Centre (SMC) at Needmust Estate (Ministry of Education Saint Kitts and Nevis, 2020). The Ministry provides to the SMP:

- all food supplies;
- large and small equipment and tools;
- hot holding and serving utensils;
- funds for the payment of salaries of all staff;
- vehicles for transporting the prepared meals; and
- funds for the maintenance and repairs to the SMC's infrastructure.

In line with the CSF model, the SMP in Saint Kitts prepares all meals in the MPC at the SMC. The meals are distributed by two designated vans to the schools. The food production system is conventional, in that all foods are prepared from their raw or natural state, with very few processed food items being used.

The SMP is state-sponsored by the Ministry of Education of the Nevis Island Administration. The model of the SFP is different from that of Saint Kitts and is the DSK model. Thus, the SMP is a decentralized, participatory school feeding model that is coordinated and managed by the Ministry of Education, with input from the Ministry of Health. This SMP seeks to:

- alleviate short term hunger;
- improve school enrolment and attendance;
- reduce dropout rates;
- improve students' learning and academic performance;
- provide a vehicle for micro-nutrient supplementation;
- contribute to the students' psychological wellbeing; and
- alleviate some of the costs of schooling for parents and guardians.
- provide meals to 100 percent of the school population.

The Ministry of Education in Nevis is identifying a site for the construction of a facility for the SMP. The performs the following functions for the SMP:

- oversees the operations, through the director of the school meals programme (SMD);
- pays the staff and the cooks who prepare the meals at the schools; and
- funds maintenance and repairs to the cooking facilities at the schools.

Principals may delegate some or all of these responsibilities to designated teachers. There are seven primary schools in Nevis, with a school population of 1 050. Approximately 740 children (70 percent of the total school population) daily, consumed the meals of the SMP in 2017. In 2016, approximately 60 percent of the children consumed meals, and in 2015 the percentage was between 50 percent and 60 percent.

Menus and nutrition

A one-week menu plan is utilized for the meals served by the SMP in Saint Kitts. This menu plan is developed in conjunction with the nutrition staff of the Ministry of Health.

In the more decentralized SMP in Nevis the executive chef of the Ministry of Health provides guidance to the schools, in menu planning. School cooks incorporate many local foods into the meals including meat from the island's abattoir and many locally grown fruits and vegetables.

In a study conducted in 2013, Besso (2014) analyzed the average food waste in all the "intervention" schools for each meal served among 60 children in Saint Kitts. She found a higher acceptance on the intervention menu and more than half of the students (37 out of 60) consumed 76 to 100 percent of their meals, on average. In addition, eight out of 60 students did not receive a serving and

seven out of 60 consumed zero to 25 percent of their meals. The other eight were found in the categories of those who consumed 26 to 75 percent of their meals.

15.4. Governance of the school meal programmes

The human right to food is acknowledged by the Ministry of Education of the Government of Saint Kitts and Nevis and it is reflected in the SMPs, where school children may receive meals financed by a distinct budgetary allocation by the State. However, in Nevis, the state-supported school feeding model adopted, also engages directly, the financial and material support of parents and the wider community.

School feeding in Saint Kitts and Nevis is informed by several national documents including the Poverty Reduction Strategy Paper 2013-2016, The Ministry of Education Policy Review. Final Report, and the Education Sector Plan 2017 – 2021 (Ministry of Education Saint Kitts and Nevis, 2017), the Situation Analysis of Children in Saint Kitts and Nevis (UNICEF, 2017) and the Food and Nutrition Security Policy for Saint Kitts and Nevis which speak *inter alia* to the specific objectives of improving the nutritional status of school children and the establishment of school and backyard gardens. The role and importance of school feeding is therefore well articulated in the national development agenda of Saint Kitts and Nevis.

The governance arrangements for the SMPs in Saint Kitts and Nevis are shown in Figure 15.1 and Figure 15.2, The SMPs fall under the remit of the Ministries of Education. The administrative functions of the SMP are carried out through a coordinator, schools meals under the SMC in Saint Kitts, and by a director of the school meals programme in Nevis. The staff complement at the SMP in Saint Kitts is 85 and in Nevis, it is 21. Presently, there is no multi-sectoral committee that coordinates the implementation of the SMPs.

15.5. Procurement arrangements

Saint Kitts

As in a centralized SFP, the SMC requires a large quantity of food items on a weekly basis to ensure effective operations. As a result, the SMP has built a trading relationship with the major wholesale stores in Saint Kitts. The procurement unit at the Ministry of Education, Saint Kitts, under the remit of the Permanent Secretary is the unit which has responsibility for sourcing the bulk rations for the SMP. The unit selects the suppliers and makes the contractual arrangements. After contracts are finalized, correspondence is sent to the successful suppliers, with respect to purchase orders for the specified items.

At the beginning of each week, a requisition of the food items for the SMC, from the wholesale stores is presented to the Ministry of Education. Financial officers of the Ministry review, approve or deny the requests and prepare purchase orders for the purchasing of these food items from the wholesalers. Food supplies (dry and fresh produce) are delivered weekly. Payments to suppliers and farmers are made by the Ministry of Education monthly. The SFD liaises directly with the approved suppliers and farmers should any issues arise.

Receipt of goods is carried out by the school feeding coordinator or a senior cook at the SMC's facility. Items are checked upon receipt against the invoice and purchase order. A first-in-first-out system of inventory is utilized. The senior staff-cook assigned to the storeroom is responsible for recording all supplies received and used on a daily basis. All records (receipts and invoices) are submitted to the assistant secretary for verification, and are then submitted to the Permanent Secretary, Ministry of Education to authorize payment to the suppliers.

For the purchasing of fresh, local fruits and vegetables, a selection process is carried out weekly. During this process, farmers are contacted via telephone, to ensure the availability of the fruits and vegetables. The coordinator provides the farmers with a list of the items and quantities the SMP requires and there are negotiations to obtain the best prices. Farmers inform the SMC, when their produce are available to the SMP and they deliver the fresh produce weekly. Upon delivery of the fruits and vegetables, the items are weighed to ensure the weights correspond to the bills that are presented. The weights of the fruits and vegetables are then logged, along with the farmers' names, invoice numbers and costs. Bills are then submitted by the SMC to the financial officers of the Ministry of Education, who review the bills before payments are made.

Nevis

The procurement unit at the Ministry of Education, Nevis, under the remit of the Permanent Secretary, works closely with the school principals, who play a pivotal role in the management of the SMP in Nevis. Lunch fees are collected at the schools, weekly or monthly. These funds are used to purchase food, fuel and conduct minor

maintenance. The procurement of food and non-food supplies is done by the principals or designated teachers. Teachers or head cooks communicate to principals, the food supplies that are required. Most of the dry food items are purchased from supermarkets. Schools have also established relationships with farmers and local delivery of fresh fruits and vegetables and meat is common.

Principals are required to keep accurate records of lunch fees received and expenditure. Most transactions are done using checks. Records are presented monthly to the school meals coordinator. The schools have commercial bank accounts to deposit fees and donations. Credit lines have also been established with reputable supermarkets and farmers on the island. Items that cannot be sourced on the island are obtained from Saint Kitts.

Purchasing is carried out on a weekly basis for most items, except for the dry bulk items such as rice, flour, sugar, milk etc. Meals prepared for students may also include fresh produce (for example tomatoes, spinach, sweet peppers, broccoli and seasonings) from school gardens and shade houses. Local food supplies, for example fresh vegetables and provisions, meats and fish contribute approximately 80 percent of the ingredients used in meals served in the SMP in Nevis.

15.6. School gardens and aspects of food and nutrition education

School gardens play a prominent role in the SMP in Nevis and schools in Nevis were reported to have functioning school gardens. As just stated, fresh produce such as tomatoes, spinach, sweet peppers, broccoli and seasonings from school gardens are utilized in the school kitchens to prepare the school meals. The purposes of these gardens have been stated to include:

- to provide organically grown vegetables and fruits for the SMP in such quantities so as to minimize or eliminate the need to acquire the same items from other sources;
- to educate children in the propagation of healthy crops from germination to harvest, including soil cultivation, fertility, hydration and pest and weed management as an outdoor active classroom; and
- to encourage a lifelong interest in agriculture (Gaskell, 2017).

School gardens are also found in primary schools in Saint Kitts, though in this case they make minimal contribution to the supply of food to the SMC (St Paul's Primary, 2014).

The Ministry of Agriculture has recently developed a curriculum to introduce agriculture at the primary school level and to promote school gardening among primary school children. Extension Officers of the Ministry of Agriculture will work with the schools to oversee the implementation of this project, which aims to improve the supply of fresh vegetables to the SMP, as well as to promote healthy eating among students.

15.7. Quality assurance and monitoring and evaluation

In Nevis, the executive chef of the Ministry of Health provides guidance in menu planning, food preparation, training of cooks and the monitoring and evaluation of the meal service for wholesomeness and quality. Public Health Officers of that Ministry inspect the meals and facilities (kitchens) to ensure that safety and sanitation standards are maintained.

The Assistant Secretary of Education (Saint Kitts) is responsible for monitoring and supervising all educational activities within the respective education departments. In Saint Kitts, at the end of each school term, a status report is prepared by the SMC that documents the number of students who received meals, the successes and challenges the SMP experienced during the school term and the recommendations for the way forward. The report is submitted to the Assistant Secretary of Education and the Permanent Secretary, Ministry of Education. At the end of each school term, all records of the number of students who received meals, statement of income and expenditure, together with receipts, invoices, bank balances etc. are prepared by schools and submitted to the Ministry of Education for processing.

For the SMP of Saint Kitts, the Ministry of Education along with the Ministry of Health, through its nutrition unit, assists the SMP with menu planning, and training for the SMP staff in food preparation, food safety and sanitation (Crawford, 2018). Annually, the Ministry of Health through the public health inspectors or environmental staff:

- verify and issue the annual food handler certification or food badge to the SMP staff at the SMC facility; and

- conduct routine inspection of the meals and the SMC facility to ensure safety and sanitation practices are maintained.

In Nevis, the school meals coordinator visits all school kitchens daily to monitor the activities and suggest the necessary changes, as needed.

There appears to be however, no formal and documented monitoring and evaluation plan for the SMPs in Saint Kitts and Nevis.

15.8. Annual net benefit analysis of the school meals programmes

Annual net benefit analysis was applied to the SMPs of Saint Kitts and of Nevis. Since as described above, the SMPs on the two islands bear essential differences, separate annual net benefit analyses were conducted for the two islands. Data was available for the 2016/17 school year, as well as the 2017 Budget Estimates Volumes 1 and 2 (Ministry of Finance Saint Kitts and Nevis, 2016a, 2016b). Further estimations were based on these data to provide the comprehensive analyses.

Saint Kitts and Nevis has not only the highest minimum wage in the OECS, but also one of the highest minimum wages in the world. Despite the high level of the minimum wage in Saint Kitts and Nevis, there is continual pressure on the state to raise this wage, which is XCD 360 per week (Times Caribbean, 2019).

The annual net benefit analysis for this study requires the use of the "basic wage" of the country to value, especially, the increase in productivity that can arise from better health and educational or academic performance, because of the SFP. The minimum wage is used as this "basic wage". A simulation exercise was carried out for Saint Kitts and Nevis to vary this "basic wage" to determine the effect on the benefit–cost ratio. This simulation exercise was carried out by using different values of the "basic wage", holding all other values and calculations for the benefit–cost ratio the same (in other words, *ceteris paribus*) and calculating the benefit–cost ratio. The simulation exercise, therefore, determined the partial effect of variations in the basic wage on this ratio.

Saint Kitts

The contributions of the four individual benefits of the SMP are presented in percentage form in Table 15.2. Here it is seen that the major contribution to programme total benefit was from increased productivity (41.0 percent) and value transfer (29.7 percent). The other major contributor to the programme total benefit was healthier and longer lives of the beneficiary students (28.6 percent). Return on investment made an insignificant contribution to the programme total benefits (0.6 percent).

Table 15.1 presents the total operational cost of the SMP of Saint Kitts. Here it seen that the major operational cost items are the purchase of food ingredients (63.24 percent) and the payment of wages to the cooks (25.79 percent). As seen in Table 15.2, these operational costs comprise about 79.61 percent of the total cost of the SMP in Saint Kitts.

The annual net benefit of the SMP in Saint Kitts was estimated in Table 15.2 at approximately XCD 4 181 832 and the benefit–cost ratio of the SMP was estimated in as 1.76.

Nevis

The contributions of the four individual benefits of the SMP are presented in percentage form in Table 15.4. Here it is seen that the major contribution to programme total benefit was from increased productivity (40.6 percent) and value transfers (29.2 percent). The other major contributor to the programme total benefit was the benefit of healthier and longer lives of the beneficiary students (28.3 percent). Return on investment made an insignificant contribution to the programme total benefit (1.9 percent).

Table 15.3 presents the total operational cost of the SMP in Nevis. Here it seen that the major operational cost items are the purchase of food ingredients (38.21 percent) and the payment of wages to the cooks (57.5 percent). In Table 15.4, these operational costs total about 58.3 percent of the programme total cost of the SMP in Nevis.

In Table 15.4, the annual net benefit of the SMP was estimated at XCD 395 776 with a benefit–cost ratio of the 1.39.

Simulation analysis with respect to the basic wage of Saint Kitts and Nevis

As indicated earlier, a simulation exercise was carried out for Saint Kitts and Nevis to vary the "basic wage", to determine the effect of this wage on the benefit–cost ratio. As seen in Table 15.5, the basic wage was increased from a low value of XCD 3 439 to the current minimum wage in Saint Kitts and Nevis of XCD 18 720 per annum.

Table 15.1: Operational costs of the school meals programme of Saint Kitts

Operational Item	Cost XCD	%
Purchase of all food ingredients	2 753 613	63.24%
Payment for cooks	1 123 200	25.79%
Transportation of meals	88 640	2.04%
Purchasing of utensils and equipment	50 000	1.15%
Repairs to kitchen and servicing of equipment	339 012	7.79%
Total operational cost	**4 354 465**	**100.00%**

Table 15.2: Determination of the annual net benefit for the school meals programme of Saint Kitts

Programme element	Element manager	XCD	%
Total operational cost	Min. of Education	4 354 465	79.61%
Administrative costs	Min. of Education	1 115 088	20.39%
Paid to school by parents	Schools	0	0.00%
Programme total costs		**5 469 553**	**100.00%**
Benefit sources	**% of total benefits**	**Benefits**	
Value transfer	29.7%	2 868 630	
Return on investment	0.6%	61 911	
Increased productivity	41.0%	3 957 595	
Healthier and longer life	28.6%	2 763 249	
Programme total benefits	100.0%	9 651 385	
Annual net benefit		**4 181 832**	
Benefit–cost ratio	**1.76**		

Table 15.3: Operational costs of the school meals programme of Nevis

Operational Item	Cost XCD	%
Purchase of food ingredients	347 460	38.21%
Payment for cooks	522 960	57.50%
Cooking fuel	17 814	1.96%
Purchasing of utensils and equipment	1 688	0.19%
Repairs to kitchen and servicing of equipment	19 536	2.15%
Total operational cost	**909 458**	**100.00%**

Table 15.4: Determination of the annual net benefit for the school meals programme of Nevis

Programme element	Element manager	XCD	%
Total operational cost	Min. of Education	909 458	89.90%
Administrative costs	Min. of Education	55 200	5.46%
Paid by community	Schools	47 000	4.65%
Programme total cost		**1 011 658**	**100.00%**
Benefit sources	**% of total benefits**	**Benefits**	
Value transfer	29.2%	411 050	
Return on investment	1.9%	26 977	
Increased productivity	40.6%	570 838	
Healthier and longer life	28.3%	398 567	
Programme total benefit	100.0%	1 407 432	
Annual net benefit		**395 776**	
Benefit–cost ratio	**1.39**		

Table 15.5: Results of simulation analysis with respect to the basic wage per annum – Saint Kitts and Nevis

Basic wage XCD	Benefit–cost ratio: Saint Kitts	Benefit– cost ratio: Nevis
3 439	0.92	0.61
5 400	1.03	0.71
8 100	1.18	0.85
13 500	1.48	1.12
18 720	1.76	1.39
20 000	1.84	1.46

The results of this simulation exercise are also given in Table 15.5. Here it is seen that the benefit–cost ratio was found to be very sensitive to the value of the basic wage, especially in the case of Saint Kitts. The benefit–cost ratio increased from 0.92 to 1.84 with the increase in the "basic wage", in the case of Saint Kitts, while in the case of Nevis the benefit–cost ratio went from 0.61 to 1.46.

15.9. Overall assessment of the school meals programmes in Saint Kitts and Nevis

The benefit–cost analysis carried out has demonstrated that the SMP of Saint Kitts can be justified from a social welfare perspective with a benefit–cost ratio of 1.76.

This is one of the highest values of the benefit–cost ratio calculated for the 14 countries of CARICOM in this study. This very high value for the benefit–cost ratio shows that the SFP in Saint Kitts has the highest levels of social desirability in CARICOM. As demonstrated in the simulation analysis, this very high benefit–cost ratio partly results from the very high minimum wage in Saint Kitts and Nevis and the sensitivity of the benefit–cost ratio to the value of basic wage. However, it is also clear that the SFP in Saint Kitts has been able to benefit from scale economies because of the relatively large number of students, who are being fed, as well as the centralized nature and obvious cost efficiency in the operations of the SMC.

However, this programme faces challenges with respect to:

- meal distribution;
- meal quality and food waste;
- limited availability of some food supplies;
- limited availability of appropriate and functional equipment; and
- external vending.

These challenges are now discussed.

In an effort to achieve a timely and efficient delivery meal distribution service to schools especially in the rural areas, the current fleet of vehicles (two vans) has proven to be inadequate and as a result (the speed at which the vehicle travels) food spillage often occurs during the distribution of meals from the SMC's facility to the schools.

Food quality was a major concern expressed by school personnel, who highlighted the high level of food waste that occurred daily at their schools. Seasonality of local food crops and lack of available food supplies result in frequent substitution and menu changes that impact the menu cycle. For example, local fruits and vegetables are only served based on their availability and seasonality.

Another concern that impacts meal quality and service at the SMC's facility is the limited availability of functional equipment and tools for the preparation and distribution of meals. Because of limited equipment and tools, many methods of food preparation cannot be used. Thus, menu options and meal variety are limited. For example, the limited number of insulated food totes used by the SMP to transport food to the schools results in one pot (rice, peas and chicken or turkey) or two pots (rice and peas, and stewed chicken or turkey) meals being prepared frequently and there is the limited use of vegetables.

Private vending outside the school compounds also poses a major challenge for the SMP. Concerns were raised with respect to the nutritional content and quality of the food items sold and consumed by children. Also, the consumption of food and snacks from vendors by students impacts their meal time, resulting in refusal of the meals of the SMP and food waste. Finally, the lack of formal collaboration among the Ministries of Education, Health and Agriculture with regards to the SMP results in difficulties in decision making and operational efficiency.

The annual net benefit analysis carried out has demonstrated that the SMP of Nevis can be justified from a social welfare perspective with a benefit–cost ratio of 1.39. However, the sustainability of the SMP in Nevis must be a matter of concern. Any reductions in the budgetary allocations to this programme would jeopardize its existence. The programme total cost per student per year of the SMP in Nevis was estimated to be approximately XCD1 443.16 as opposed to XCD 1 125.42 in Saint Kitts. Hence, attention has to be placed on the reduction of the cost of the Nevisian SMP.

One major constraint highlighted for the SMP on Nevis was the non-payment of fees by some parents, which impacts the ability of the school principals to acquire adequate supplies of vegetables and other food supplies. This limits the variety in the meals that are offered to the students.

The costs of food supplies in Nevis are higher than in Saint Kitts, as many of the food ingredients are supplied from Saint Kitts. The high costs of food supplies also result in limited food and menu options. Vendors selling outside the schools also pose a major challenge for the SMP. There are concerns related to the nutritional content and quality of the food items bought and consumed by students. The time taken to purchase the items sold by vendors also impacts on the amount of time available for the consumption of the meals of the SMP, resulting in refusals of these meals and food waste.

In Nevis, due to limited nutrition personnel on the island, the nutrition education programme offered is minimal. In an attempt to bridge this gap, the school meals coordinator shares her nutrition knowledge with the students, but she suggests that more is needed to bring about changes in the eating habits of the students.

15.10. Specific recommendations

Increased level of food production in Saint Kitts and Nevis.

To meet the needs of the SFP, the Ministry of Agriculture should introduce a programme to encourage higher levels of local food production, with an emphasis on fruits and vegetables and livestock production. In addition, the menus of the SMP should include a higher input of local produce, thus strengthening the linkages with local farmers, who would view the SMP as another market for their local produce.

Improvement in the operations of the school meals programmes in Saint Kitts and Nevis

The following is recommended for the SMPs on both islands:

- strengthen the monitoring and evaluation procedures for the SMPs including the strengthening of the reporting mechanism and documentation of activities between the schools, the SMPs and the Ministry of Education;
- develop operations and procedures manuals; and
- implement continuous in-service training in areas of meal preparation, recipe development and standardization, portion control, hazard analysis critical control points (HACCP), Servsafe principles and equipment care and use.

It is recommended that the SMP in Saint Kitts be improved in the following ways:

- The number of transport vehicles should be increased by two to improve meal distribution to the rural areas in Saint Kitts. The vehicles should be insulated for the transport of safe and wholesome meals.
- The MPC of the SMC needs to be HACCP certified.

Greater community involvement in the school meals programmes especially in Saint Kitts

At the community level, school feeding committees can be established in all 14 parishes that could involve parents, teachers and members of the community. The parish committees could assist in:

- monitoring of the SMP at schools;
- advising on appropriate utilization of the food ingredients at schools in Nevis;
- organizing activities around the "healthy school environment" initiative;
- improving the communication between the SMP and parents and the wider community; and
- promoting community participation and engagement in school feeding.

In Saint Kitts, the SMP is funded 100 percent by the Government with little input from the community. Consideration should be given to engaging parents, private stakeholders and the wider community to support this SMP, and so increase its sustainability.

16. Saint Lucia

16.1. Introduction

Saint Lucia is a small island state with a land area of 617 sq km. Tourism is Saint Lucia's main source of jobs and income – accounting for 65 percent of GDP – and the island's main source of foreign exchange earnings. Most of the population is found on the periphery of the island, with a large concentration in the north around the capital of Castries. Bananas are still exported, but Saint Lucia's dominant banana industry has suffered from the near collapse of the Windward Island banana trade to the United Kingdom.

16.2. School feeding in Saint Lucia

Figure 16.1 illustrates school feeding in Saint Lucia. Meals are provided for students from the following sources:

- government sponsored meals, from the SFP of the Ministry of Education (MOE) (Government of Saint Lucia (undated). This SFP follows the DSK model;
- vendors, who sell snacks on the school compound;
- parents, who prepare meals for their children; and
- school cafeterias.

In addition, two pilot projects have been in operation recently, one of which is the only SFP for secondary school students in the country. The state-wide SFP is available to all students attending infant and primary schools, in all eight education districts of Saint Lucia.

Many infants and primary schools have school cafeterias, which provide mainly snack items, which can be purchased by the students. These school cafeterias do not generally provide lunch for sale to students, so that there is no direct competition between the meals provided by the SFP and offerings from the school cafeterias. However, concerns were raised by some school teachers and administrators that students make the choice to purchase items from the school cafeterias, rather than use the money to buy a healthy meal for XCD 1. Some of the school cafeterias are managed by the schools themselves as a means of raising funds.

Vendors can also be found outside schools, but school administrators are of the general view that these vendors fall outside of their remit.

16.3. The school feeding programme

Overview

The SFP in Saint Lucia is a social assistance programme, which started in 1983 with external funding, through the WFP, with the stated goals of:

- relieving hunger among primary school children;
- increasing their nutritional intake; and
- encouraging children to attend school.

Students were provided with a milk and sandwich snack during the recess break. Later under the STABEX fund with the WFP, the mid-day lunch was introduced and the milk and sandwich snack was discontinued. The Government of Saint Lucia assumed responsibility for the SFP in 2000.

The Education Statistical Digest 2015 of Saint Lucia shows that the total population of students in public infant, primary and secondary school was 28 660, of which 15 799 attend 76 infant and primary schools and 12 861 attend 23 secondary schools (Government of Saint Lucia 2016). Approximately 5 100 students in 79 schools – infant, primary, special education and two adolescent training centers are served daily in the SFP.

Selection of students for the school feeding programme

According to the Government of Saint Lucia (undated) for a student to receive meals on the SFP:

- The parent is required to make a verbal request to the principal or teacher in charge of the SFP.
- The child is then placed on the SFP and remains there until the end of the child's attendance at the school, or as long as the parent wants the child to remain on the SFP.
- The child should be a student at the school.
- The SFP is conducted on school premises.
- The child should be attending an infant or primary schools.

Community participation

Communities across the island provide cooks for the SFP, as the DSK model adopted in the SFP requires meals to be prepared in school kitchens, located in the schools in the local communities.

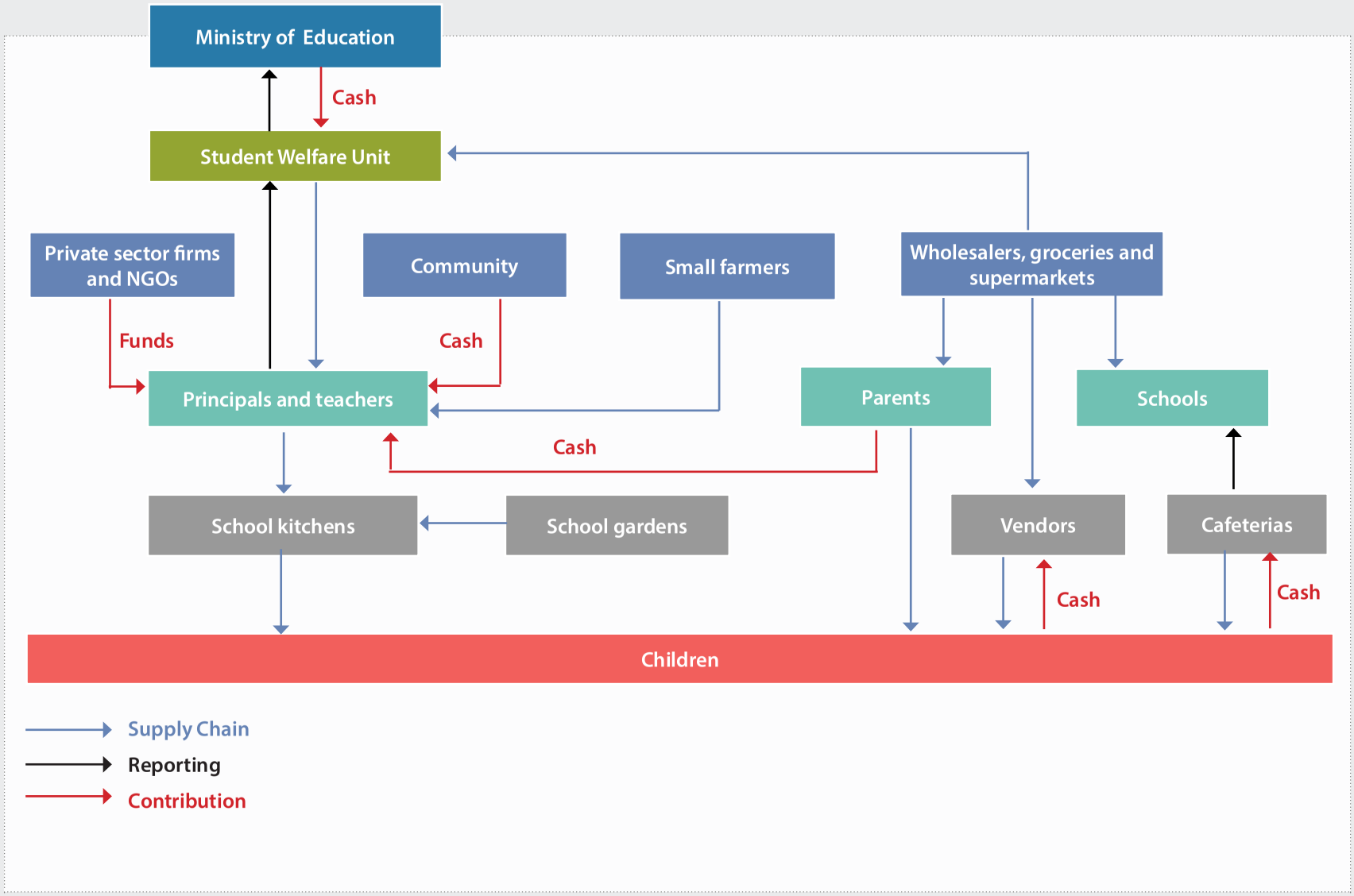

Figure 16.1: Operating model of school feeding in Saint Lucia

Many private sector organizations volunteer assistance to schools in:

- the construction of kitchens;
- providing kitchen equipment;
- the establishment or expansion of school gardens, especially in greenhouses; and
- sponsoring needy children, who cannot afford to pay for the lunch (Joseph, 2015).

School principals may also approach the private sector for assistance. This contribution of the private sector has been reported to be significant in Saint Lucia.

Operations at the school level

Each school day, the number of students requesting lunch is sent to the cooks, who together with the teacher responsible for school feeding utilize the food ingredients needed, to prepare the required number of meals. A list is then compiled of the names of students who obtained lunch, how many paid and how many were unable to pay. Teachers send this list to the school principal. These records are summarized and presented to the School Welfare Unit (SWU) of the MOE each month.

Approximately 106 cooks serve in the SFP (Government of Saint Lucia, 2018). Cooks prepare meals in the school kitchens. The kitchens vary in size, with the kitchen and equipment varying from very new and modern (provided by the private sector in some cases, for example, Vieux-Fort Primary School) to older kitchens with equipment in need of repair or replacement.

The hot meal is served at the lunch hour. Dining areas were observed in some primary schools, where students sat and ate their meals. The infants were often provided with their meals first, then the other students were provided with their meals.

From the XCD 1 daily per meal, XCD 0.50 (50 percent) goes to the school to fund expenses related to:

- the acquisition of fuel; and
- the purchase of food ingredients not provided by the MOE, such as seasonings, local fruits, vegetables, and ground provisions.

The other 50 percent of the contributions is deposited monthly by the school to the state, through the Accountant General's account at the Bank.

Operations at the national Level

The SFP is viewed as an important social support service, as many parents tend to keep their children at home, if they do not have anything to give the children to eat, while they are at school. The percentage of students who are unable to make the XCD 1 contribution towards the daily meal is estimated at 20 percent of the children receiving meals.

The MOE purchases and distributes – with the aid of a driver and handymen – a standard list of items comprising dry goods (provided once per term) and frozen meats (provided once per month) to all schools providing meals under the SFP.

Menus and nutrition

The school welfare coordinator (SWC) liaises with the chief nutritionist at the Ministry of Health to develop the menus used in the SFP and these menus are then passed on to the cooks. However, based on the food items available at the school, menus may be changed as a result of consultation between cooks and principals or teachers in charge of the SFP at the school, to make use of the available items. The meal composition is standardized for all schools in the SFP with respect to meat protein, carbohydrates, legumes, and vegetables as follows:

- meat protein - 57 g (two ounces)
- carbohydrate - 85 g (three ounces)
- legumes - 28 g to 57 g (one to two ounces)
- vegetables - 28 g (one ounce).

These meals provide approximately one-third of the recommended dietary daily requirement for children.

Pilot project 1

The "Strengthening school feeding programmes in the framework of the hunger free Latin America and the Caribbean 2025 initiative" based on the "National school feeding programme of Brazil", was piloted in four primary schools in Saint Lucia in 2013 (FAO, 2015b). With the assistance of the private sector, this number grew to 20 primary schools by 2017. This pilot project, based on the Brazilian model, focused on strengthening and coordinating school feeding policies with the support and participation of government, community, school administrators, parents, and other stakeholders.

Schools which participated in the pilot project were provided with school gardens, including irrigated green houses, which provided food items such as seasonings, tomatoes, cucumbers, and lettuce for the schools for example, the LUCELEC Trust contributed financially to the establishment of the school garden and construction of a new kitchen at the Vieux Fort Primary School (Joseph, 2015). Any funds raised through the sale of excess produce from school gardens or green houses are also ploughed back into the school kitchens.

A committee consisting of technical officers from the Ministries of Education, Agriculture, Health, and Social Transformation, together with members of the private sector, and chaired by the Chief Agricultural Planning Officer, was constituted to oversee school feeding under this pilot project. This committee reported to a Ministerial sub-committee in the Cabinet made up of the Ministers of Education, Agriculture, and Health.

Pilot project 2

A second pilot project to provide 50 lunches per day to students in four secondary schools started in February 2017. Caterers using guidelines provided by the MOE, provide 50 lunches per day, and are paid XCD 8 per meal by the MOE. The school prepares the list of selected students. The caterer submits a claim form, through the school's bursar, to the SWU and payment is deposited into the account of the caterer by the MOE. This programme was not included in the analysis for the SFP in Saint Lucia.

16.4. Governance of the school feeding programme

The legal framework for the right to food in Saint Lucia is seen in its constitution of 1978, which implicitly recognizes, in the context of broader rights, the right to food. The constitution of Saint Lucia does not explicitly guarantee the right to adequate food and Saint Lucia is not yet a state party to the International Covenant on Economic, Social and Cultural Rights (FAO, 2018).

The governance structure for the SFP in Saint Lucia is illustrated in Figure 16.1. The MOE is the responsible, as well as the executing organization, for the SFP. The student welfare unit (SWU) (which functions as the school feeding unit, with additional responsibilities), falls under the student support services unit of the Ministry of Education and is headed by the coordinator, student welfare (SWC), who has as one of her responsibilities, the coordination of the SFP. The SWU is a small unit with other staff including one secretary, one storekeeper, two handymen, one driver and 106 cooks (Government of Saint Lucia, 2018).

The SWC has overall responsibility for:

- site visits and monitoring of the SFP throughout the island;
- procurement of food supplies, equipment, and utensils;
- the upgrade of school kitchens;
- arranging training for cooks; and
- liaising with public health officials for assistance with school health supervision.

School principals play an important role at the local or school level in the management of the SFP. Principals are responsible for the receipt of staples from the SWU, as well as ensuring the inclusion of fresh fruits and vegetables in the school lunch menu. They also issue supplies to the cooks, based on the number of students to be fed daily. They keep records of:

- the supplies issued to the school for the SFP;
- the money collected from the students for the lunches;
- the deposits of money collected for lunches into the Accountant General's account at the Bank of Saint Lucia; and
- the purchases of items not supplied by the MOE through the SWU.

The school principals or teachers in charge of school feeding also keep inventories of equipment and utensils. Storage arrangements for supplies issued to the school for the SFP range from boxes in the principal's office, to locked cupboards in the school kitchen, to offsite storage facilities.

There are eight districts in Saint Lucia and eight district bursars, who tally and reconcile the money collected by the schools on behalf of the MOE. One constraint identified by the SWC was the need for better management of monetary contributions, which are due to the MOE, especially the tardy monthly financial deposits by schools.

16.5. Procurement arrangements

The SWU through the MOE provides all bulk dry goods and frozen meats for the SFP in Saint Lucia. Dry goods provided include flour, rice, sugar, peas, chowmein, pasta, salt, oil, glow spread, oats, corn meal and canned

tuna fish. The frozen food is made up of lamb neck, local chicken, turkey wings, cheese, mixed vegetables, corn, and Irish potatoes.

Goods are purchased by the SWU three times per term, with collection being done at different locations (Castries and Gros Islet) prior to delivery to the different school districts. The storekeeper attached to the SWU sources the food items. Quotations are obtained for goods from three to four suppliers. Selection of the supplier is often based on the best price being offered. A requisition is then made by the store keeper and sent to the SWC for signature. This is then sent to the procurement section of the MOE and then to the Permanent Secretary of the Ministry for final approval.

Purchase orders are done for business places, which provide invoices for goods received. Invoices then go to the Accounts Section of the Ministry of Finance to process payment. The goods are then collected and packaged for schools by two handymen and transported to schools by the SWU's driver. One challenge identified by the SWC was the difficulty associated with the efficient and timely delivery of food items by the single driver to the 79 schools in the SFP, throughout the island.

Principals are responsible for the receipt and storage of goods supplied by the SWU. At the end of every term an inventory is conducted with respect to school food supplies. Any left-over food supplied to schools is carried over into the next school term.

There is a mechanism in place for the purchase of locally grown produce from farmers. Principals are authorized to purchase ground provision, seasonings and fruits and vegetables from small farmers in the community and they encourage the production and purchase of these local foods. However, this supply is inconsistent.

16.6. School gardens and aspects of food and nutrition education

School gardens, many in the form of greenhouses or shadehouses have been established in many primary schools to encourage the teaching and learning of agriculture and to supplement the food supply to the SFP. Many of these initiatives have been supported by the members of local communities (The Saint Lucia Star, 2014).

Several measures have been taken to promote good diets and healthy eating habits, through improved food and nutrition education in Saint Lucia, such as:

- a nutrition campaign at the secondary school level in Saint Lucia to encourage the development of a slogan, to increase the adoption of low-sugar foods;
- establishment of school gardens with irrigation systems to provide inputs to the SFP under the pilot project "Strengthening school feeding programmes in the framework of the hunger free Latin America and the Caribbean 2025 initiative";
- the use of school gardens as a pedagogical tool, that links classroom learning with active participation; and
- the inclusion of food and nutrition education in the primary school curriculum under the "health and family life education" programme.

16.7. Quality assurance and monitoring and evaluation

The SWC has overall responsibility for monitoring of the SFP, essentially through site visits to all schools in the SFP. The difficulty associated with the monitoring of all schools by the one SWC means that site visits are not made as often as may be necessary. The principal and the teacher in charge of school feeding monitor the SFP at each school. The school principals then provide feedback reports to the SWC.

The Saint Lucia Bureau of Standards develops and enforces standards to govern food quality and environmental health and these standards are expected to be used by schools, to maintain sanitary conditions in school kitchens.

The 2009 social safety net assessment, which included the SFP, found that the capacity for monitoring and evaluating the SFP needed to be strengthened (Blank, 2009). The monitoring system for the SFP is not entirely computerized and consists essentially of a list of beneficiaries, together with completed forms documenting school visits by the SWC, with little other information on beneficiary characteristics. There is no evidence of any recent evaluation being done on the SFP in Saint Lucia.

16.8. Annual net benefit analysis of the school feeding programme

In the case of the SFP in Saint Lucia, the annual net benefit analysis was conducted for fiscal year 2016/17. The contributions of the four individual benefits to the

SFP are presented in percentage form in Table 16.2. Here it is seen that the major contributions to programme total benefit were from value transfers (51.9 percent) and increased productivity (27.2 percent). The other major contributor to the programme total benefit was the benefit of healthier and longer lives of the beneficiary students (18.4 percent). Return on investment made an insignificant contribution to the programme total benefit (2.6 percent).

The total costs associated with the SFP of Saint Lucia are given in Table 16.1. Here it is seen that the greatest costs (78.21 percent) are the total operational costs paid directly by the MOE. The details of these total operational cost are provided in Table 16.2, where it is seen that the largest percentage contribution to these costs (58.38 percent) is the payments to the cooks, who prepare the meals in the schools. The other major operational cost item was the cost of food ingredients at about 36.36 percent of the total operational cost.

The contributions by parents and the community that are used to pay for items in the SFP were estimated to be about 17 percent of the programme total cost. The other major item of the programme total cost was the cost of administering the programme by the MOE, which was estimated as 5.26 percent of the programme total cost.

Table 16.1 shows that the annual net benefit of the SFP was XCD -249 662 and the benefit–cost ratio was 0.92, which indicate that the programme total cost of the SFP exceed the programme total benefit and therefore, this analysis does not provide an economic justification for the SFP of Saint Lucia, as presently structured and operated.

16.9. Overall assessment of the school feeding programme

The net benefit analysis carried out has demonstrated that the SFP in Saint Lucia cannot be justified on purely economic grounds, with a benefit–cost ratio of 0.92. However, it was found in this study, that the benefit–cost ratio of the SFP is very sensitive to the value of the basic wage used in the calculation of the ratio, which is assumed in the study to be the minimum wage of the country. The minimum wage for Saint Lucia is a low value of USD 1 274 (XCD 3 439). In a simulation exercise, if the minimum wage of St. Vincent and the Grenadines (USD 2 667.67 or XCD 7 200), is used as the basic wage, the benefit–cost ratio for the SFP in Saint Lucia rises to 1.38.

Recommended areas for the improvement of the SFP will be detailed in the next section. However, a major issue is the sustainability of the SFP. The MOE may wish to consider ways by which the costs of the SFP may be reduced so as to increase the likelihood of sustainability. The Government should also consider the important role of the SFP in providing a safety net for the lowest income segment of its population.

Table 16.1: Determination of the annual net benefit for the school feeding programme

Programme element	Element manager	XCD	%
Operational cost of meals	Min. of Education	2 392 450	78.21%
Administrative costs	Min. of Education	160 854	5.26%
Paid to school by parents and community	Min. of Education	505 698	16.53%
Programme total cost		**3 059 002**	**100.00%**
Benefit sources	**% of total benefits**	**Benefits**	
Value transfer	51.9%	1 456 770	
Return on investment	2.6%	73 892	
Increased productivity	27.2%	763 120	
Healthier and longer life	18.4%	515 558	
Programme total benefit	**100.0%**	**2 809 340**	
Annual net benefit		**-249 662**	
Benefit–cost ratio	**0.92**		

Table 16.2: Details of the total operational costs of the school feeding programme

Operation	Cost XCD	%
Purchase of food ingredients	869 936	36.36%
Payment for cooks	1 396 714	58.38%
Purchasing of utensils and equipment	94 612	3.95%
Repairs to kitchen and servicing of equipment	31 188	1.30%
Total operational cost	**2 392 450**	**100.00%**

Simulation analyses suggest that a reduction of the number of cooks to 76 (approximately one cook per school) and the appropriate reduction in costs will increase the benefit–cost ratio to 1.05 (all other things remaining the same) and a reduction of the number of cooks to 50 will increase the benefit–cost ratio to 1.19. Thus, serious consideration can be given to a reduction in the number of cooks in the SFP, as a straightforward way of increasing its sustainability and the annual net benefit to the Saint Lucian society.

16.10. Specific recommendations

Evaluation of the school feeding programme

A critical analysis of the SFP in Saint Lucia and its outcomes is crucial to ensure that the investments being made are yielding the desired results. Without an effective monitoring system in place, it is virtually impossible to determine whether the SFP is creating value for the education system by achieving the intended outcomes. Effective monitoring requires a clear set of performance measures and indicators linked to the objectives of the programme and an efficient data collection system that will assist in measuring its progress, using key performance indicators. The 2009 Social Safety Net Assessment, which included the SFP, found that there were less than adequate evaluations of programmes, leading to difficulties in carrying out evidenced based programme planning. It recommended the development and strengthening of monitoring and evaluation systems to improve decision making (Blank, 2009).

An evaluation of the effectiveness of programme processes and a measurement of programme performance is recommended for the SFP. It is also further recommended that a database system be established to be used to monitor and evaluate the impact of the SFP, as well as track students' academic and anthropometric progress.

Reduction of costs and expansion of the school feeding program

As stated earlier, serious consideration can be given to a reduction in the costs of the SFP to increase its sustainability. Reduction in the number of cooks in the SFP suggests itself as a straightforward way of increasing the sustainability of the SFP and the annual net benefit to the Saint Lucian society, but the operational issues involved in such a reduction will have to be carefully examined.

The SFP could also be expanded to a larger cohort of students. More attractive meals and a reduction in the competition from vendors may be useful in this context. Reduction of vending around school compounds could also reduce the quantities of unhealthy meals and snacks consumed by students, which will contribute to a healthy eating initiative in Saint Lucia. The expansion of the SFP would lower the average cost per meal and per child for the SFP. Currently only 30 percent of the nursery and primary school student population is covered by the SFP.

Establish effective financial record keeping procedures

The collection and depositing of funds collected for meals by school principals should be overseen by district bursars to ensure timely payments, and for proper supervision and accountability for all funds. This will also promote transparency and improved financial accountability. Proper procedures should also be established for the disposal of excess food stock provided to schools by the MOE. There is also the need to establish effective record keeping procedures at schools to ensure greater accountability for school feeding supplies by

principals and cooks. Computerized record keeping can also contribute to effective monitoring of activities and processes associated with the SFP in Saint Lucia.

Construction of proper storage facilities

Construction of proper storage facilities for dry and frozen goods to allow for easy and more efficient movement of foodstuff to schools is recommended. The mandatory distribution of goods to school three times per term should be replaced by a system which allows for the submission of requests for stocks by schools one week before they are to be used, which would also reduce the need to store school food items provided by the state, at facilities that are not on the school premises.

17. Saint Vincent and the Grenadines

17.1. Introduction

Saint Vincent and the Grenadines is a sovereign state in the Lesser Antilles located in the southern Windward Islands, which lie at the south-eastern end of the Caribbean Sea. Saint Vincent and the Grenadines together comprise a land mass of 389 sq km, with the largest island, Saint Vincent, accounting for 344 sq km and the Grenadines, accounting for 45 sq km. The Grenadines include seven inhabited islands namely, Young Island, Bequia, Mustique, Canouan, Union Island, Mayreau, Petit Saint Vincent and Palm Island, and 23 uninhabited cays and islets.

17.2. School feeding in Saint Vincent and the Grenadines

As seen in Figure 17.1, school feeding in Saint Vincent and the Grenadines is a combination of:

- a state-sponsored school feeding programme (SFP);
- local and external private donors who *inter alia* sponsor meals;
- tuck-shops and canteens,
- parent provided meals; and also
- vendors outside the school compounds.

Food vending takes place outside of the perimeter of the schools in some areas, especially in Kingstown, the capital of the state. This vending continues to be a major concern, as the nutritional content of the meals served may often be of questionable quality. Also, students may buy meals from vendors and refuse the meals provided by the SFP.

17.3. The school feeding programme

Overview

According to the Ministry of Education and National Reconciliation (2020), the SFP in Saint Vincent and the Grenadines became operational on the 1st February 1984. During the period 1984 to 1996, the programme was fully funded by the WFP. The WFP funding ended on the 31 December 1996 and from that date, the SFP has been established in the MOE and has been mainly state-funded.

The objectives of the SFP are:

- To provide a nutritional supplement to children attending primary and pre-primary schools.
- To prevent malnutrition in children of disadvantaged or indigent parents enrolled in a primary school or pre-primary school (Ministry of Education and National Reconciliation, 2020).

Currently the SFP caters to approximately:

- 2 478 beneficiaries in 68 pre-primary schools;
- 7 500 beneficiaries in 61 primary schools; and
- 23 beneficiaries in three multi-purpose centers (Ministry of Education and National Reconciliation, 2020).

This study is focused on the state-funded SFP in the primary schools, which provides lunch meals, following the DSK model.

Community participation

Women from the community are trained and hired as cooks and kitchen assistants to prepare and serve the lunch meals in the decentralized SFP in the primary schools. Parents and the farming community also donate local food items to the schools, especially on the island of Saint Vincent. Private cash donations are often deposited directly to the respective school accounts, at the commercial banks.

There are many cases of support to school feeding in Saint Vincent and the Grenadines by private donors both local and overseas. Key local donors include churches and Tus–T Water. Support is in the form of:

- sponsorship of children on the SFP;
- funding of infrastructural works; and
- the provision of equipment at selected schools.

Zero Hunger/Dubai Cares, an overseas donor, provides financial assistance to twelve schools. It has also provided coconut water, new appliances (such as refrigerator, deep freezer, stove, kettle, blender), eating utensils (plates, cups, bowls, cutlery) and refurbished kitchens.

With respect to local sponsorship, in the school year 2015/16, "Start Bright – A Tus-T Water school breakfast

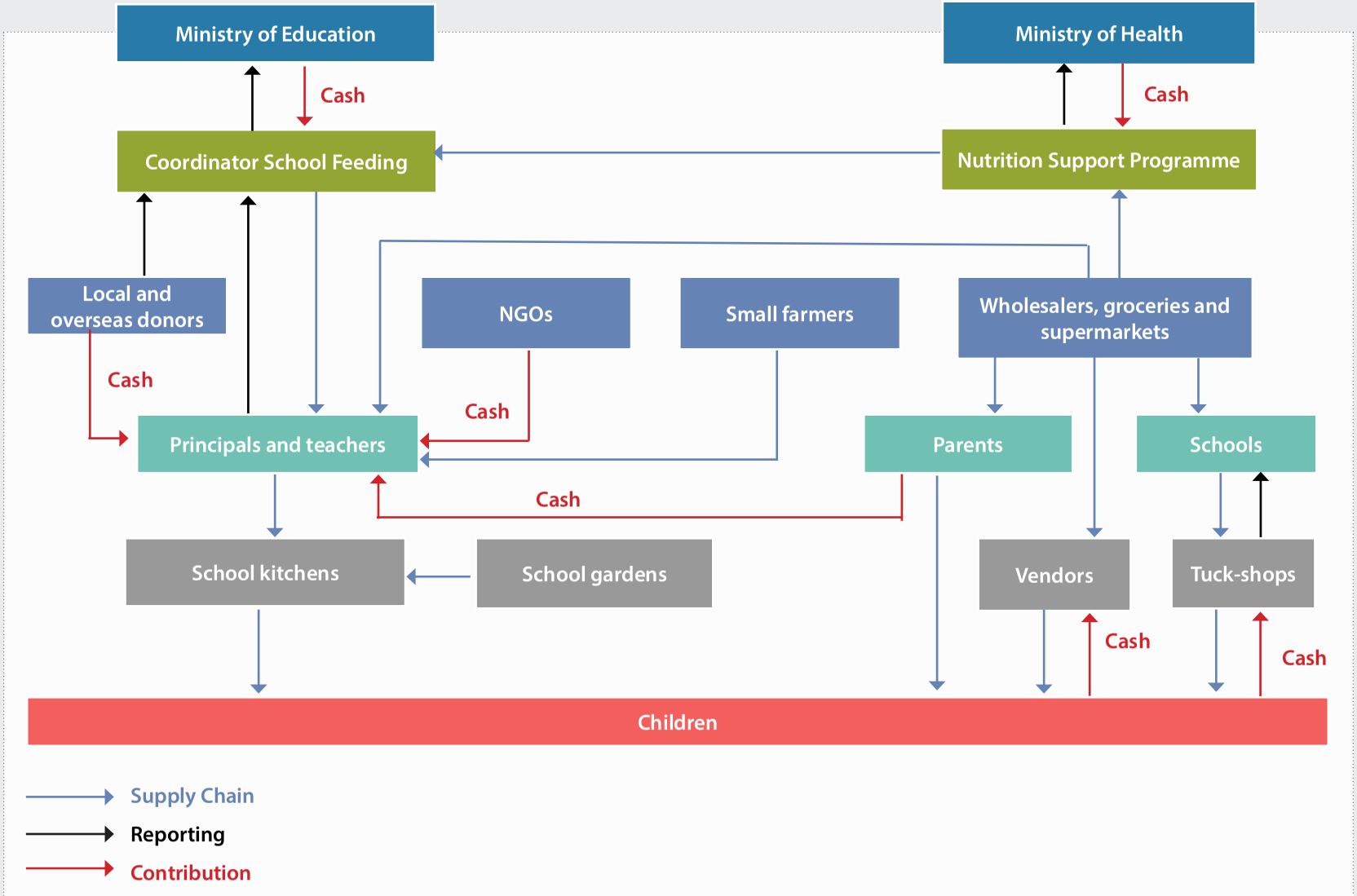

Figure 17.1: Operating model of school feeding in Saint Vincent and the Grenadines

initiative" was piloted. In that year, 4 330 meals were served to 60 students at 12 schools in six districts. In the following school year, more primary and secondary schools were added to the initiative and the number of breakfasts served was 47 400. By 2017/18, a total of over 100 000 meals had been served in the three years of the initiative (Tus-T Water, 2017). The initiative includes funding the stipends paid to the cooks, for the preparation and service of the breakfast meals.

The Zero Hunger Trust Fund Programme of the Ministry of Economic Planning commenced in 2016. This programme was designed to assist children from communities with the highest levels of poverty in Saint Vincent and the Grenadines. Children were provided with meals and other basic necessities to ensure that they attend school regularly. The first phase of the programme targeted 195 kindergarten children from seven primary schools, (namely Chateaubelair, Barouallie Anglican, Barouallie Government, Fair Hall Primary School, Sandy Bay Government, Fancy Government School, Mayreau Primary school) to receive a hot lunch meal. In 2017, five additional kindergarten classes were added to the sponsorship. These were Rose Hall Primary School, Clare Valley Government School, Calliaqua Anglican School, Lauders Primary School, Gomea Government School. The annual value of the support to each child is approximately XCD 1 500. There is a state tax on every call from the service providers, Digicel and Flow, which goes to the Zero Hunger Trust Fund.

One local donor, the Basic Needs Trust Fund sponsored a new kitchen, including a pantry and lunchroom to the Diamonds Government School.

Selection of students for the school feeding programme

Initially the SFP targeted needy students and in particular, those of a low socio-economic background and those who were nutritionally vulnerable. Those children were identified by the school teachers. However, presently any student can be enrolled in the SFP.

Operations at the school level

School principals play an important role in the SFP in the primary schools. In the decentralized foodservice model that has been adopted, food preparation and service take place on site, at each school, with a conventional meal production system, where the meals are prepared from scratch with the minimal use of processed foods. With this model, school principals have the responsibility for the coordination and management of the programme in their respective schools and are responsible for:

- maintaining a register of all children on the SFP, at their schools;
- the collection of fees and donations;
- daily record keeping of student attendance and fees to the SFP;
- receipt of bulk food items;
- implementation of accounting and banking procedures for funds received;
- purchasing of vegetables, condiments, seasonings, ground provisions and other local produce, to complement the bulk rations received from the Nutrition Support Programme (NSP);
- the preparation and service of meals to the children;
- the supervision of the meal preparation staff;
- reporting malfunctioning equipment; and
- the preparation of reports to the MOE.

At some schools, a teacher is assigned by the school principal to coordinate and supervise the meal preparation and delivery. All schools are equipped with kitchens and at most schools, lunchrooms are attached to the kitchens, especially in the newly built schools. At schools without a lunchroom, the children consume their meals in their respective classrooms.

During the lunch period, students assemble in the lunchroom to collect their meals. The younger students for example grades 1 and 2 are served before the older children. Age-appropriate food portions are served. However, if students request a second offering, they are not denied. The meal time is supervised by the designated teacher and the food preparation staff. If a primary school has a pre-school section, the primary and pre-primary sections have separate meal preparation facilities (or kitchens).

Bulk supplies of food items termed "food baskets" are delivered to schools at the beginning of each school term. If additional supplies are needed during the school term, requests are made by the school principal or designate, to the NSP. School principals are required to manage their supplies prudently.

A contribution or fee payment of XCD 0.50 per meal is made by parents to the SFP. However, where no contribution is made, the child is not deprived of a meal. The money is collected by the class teachers daily, weekly and or on a monthly basis. This contribution goes toward

Table 17.1: Status of beneficiaries of the school feeding programme in primary schools with respect to payment for meals -term three 2016/17 school year

Status	Full paying	Partial paying	Non-paying	Total
Number	3 630	1 393	1 074	6 097
%	59.5%	22.8%	17.6%	100.0%

the purchase of vegetables, condiments, seasonings etc. for the lunch meals. Untimely contributions of the funds by parents is a growing concern among the school administrators, as it impacts the quality of the meals provided by the SFP.

The distribution of primary school students with respect to their fee payment status for meals for term three of the 2016/17 school year, is given in Table 17.1. Here it is seen that about 60 percent of the students fully paid for their meals and approximately 18 percent made no payments at all.

Operations at the national level

The SFP is coordinated and managed by the MOE via a SFP coordinator (SFC), with substantial contributions from local and overseas donors, and parents, as noted earlier.

For primary schools in the SFP, the MOE provides:

- the relevant infrastructure (such as kitchens and lunchrooms);
- a supply of basic food items as a "food basket";
- large and small equipment (for example, deep-freezers, cookers, refrigerators and blenders) and it maintains this equipment;
- a supply of kitchen tools, utensils and cutlery;
- salaries for the cooks; and
- monitoring and evaluation services.

The food basket is provided under the NSP of the Ministry of Health, in collaboration with the MOE.

The SFP in Bequia mirrors the SFP on the main island of Saint Vincent. There are five schools (three primary and two secondary) in Bequia. Approximately 125 primary school children receive a hot lunch meal daily in Bequia, as part of the SFP. The schools are outfitted with kitchens and lunchrooms, where the children consume their lunches.

Food supplies to the SFP in Bequia are transported from the island of Saint Vincent. There is a very limited food supply (about two percent of the total supply) from local farmers to the SFP in Bequia. This situation has arisen because of the low level of food production in Bequia, as well as the high prices of this limited supply. In addition, donations from parents and the farming community are not as forthcoming in Bequia, as on the island of Saint Vincent, as there are fewer farmers on this island, to contribute to the schools.

Menus and nutrition

The meals prepared in the SFP are based on a planned menu cycle. However, changes are made based on the availability of food items. Examples of meals served include:

- rice and peas with stewed chicken;
- beans soup with chicken, pumpkin, provision and dumpling; and
- macaroni and cheese with stewed chicken served with water.

These meals are designed to supply approximately one-third of the students' recommended dietary allowance (RDA) (Ministry of Education and National Reconciliation, 2020).

The Saint Vincent and the Grenadines Food and Nutrition Security Action Plan (Government of Saint Vincent and the Grenadines, 2014) provides the framework to strengthen the link between nutrition, agriculture and the SFP. The Government has set out a programme to implement the priority actions necessary to enhance food production, which will contribute to household food and nutrition security in Saint Vincent and the Grenadines and local food supply to the SFP.

Local food items make up about ten percent of the total food items utilized in the SFP in Saint Vincent and the Grenadines. Local food items include: seasonings, yam,

green banana, dasheen, sweet potato, eddoes, pumpkin, spinach and tomatoes.

Efforts are being made to introduce more healthy eating into the SFP, through initiatives, such as the introduction of a water day and a fruit day and the use of more locally produced food items in the meals. In some districts, schools link with farmers to purchase their produce. Also, through the Zero Hunger/ Dubai project, contracts are signed with small farmers to provide coconut water and other fruits and vegetables. However, despite these initiatives, there are concerns with the availability of local food items, their cost and seasonality.

Pilot project

In 2016, a two-year pilot project titled "Sustainable School Feeding Pilot Project", was implemented by the Ministry of Agriculture, through funding from FAO and the Brazilian Government. The project was implemented at three primary schools. As part of this project, a cabinet committee was established in 2016, with members representing five core ministries: Agriculture, Economic Planning, Education, Health and National Mobilization. The committee's responsibility was to oversee the implementation and ongoing activities of the project.

To assist with the school gardening activities in the project, extension officers from the Ministry of Agriculture worked with schools upon request. In keeping with the project's focus to improve the quality of the meals of the SFP, new menus were developed. Prior to this project there was little or no involvement of the Ministry of Agriculture with the SFP.

17.4. Governance of the school feeding programme

School feeding in Saint Vincent and the Grenadines is informed by several national policies, including the Saint Vincent and the Grenadines Interim Poverty Reduction Strategy Paper (The Poverty Reduction Task Force of the National Economic and Social Development Council, 2003). The 2018 Budget Speech also states that "…the Government expects to expand and deepen the impact of the Zero Hunger Trust Fund, as it is in the process of improving and upgrading the SFP nationwide, through improvements to food, nutrition and equipment." (Ministry of Finance Saint Vincent and the Grenadines, 2018). The role and importance of school feeding is therefore articulated in the national development agenda of Saint Vincent and the Grenadines.

The general governance arrangements for the SFP in Saint Vincent and the Grenadines are illustrated in Figure 17.1. The SFP in Saint Vincent and the Grenadines, falls under the remit of the Ministry of Education. The administrative functions are carried out through the SFC, who is responsible for monitoring and supervising the SFP at all pre-primary schools and primary schools. The SFC liaises with the NSP, regarding the procurement of bulk food items for the SFP. The school principals play a key role in the management, coordination and supervision of the SFP at the schools. The contribution of parents of XCD 0.50 per meal greatly assists in the provision of the meals. School feeding on the smaller islands such Mustique are managed by private entities.

Private donors - local and overseas make substantial contributions to the SFP, as discussed above. The relationships between the administration of the SFP, schools and private donors vary, in that for some donors, a formal relationship has been established with the MOE and for others the donors only interact with the schools and the principals. Thus, information on donors may not be communicated on a timely basis to the MOE.

The statements of accounts from schools are submitted by the first week of each month to the SFC, including contributions to the SFP. Receipts of purchase, invoices, financial and baseline reports, and bank balances are prepared and submitted to the MOE at the end of each school term for processing, verification and approval.

17.5. Procurement arrangements

The SFC is responsible for sourcing appliances and utensils for schools in the SFP. Requests for funds for the purchases are handled by the Accounts Department of the MOE.

Procurement of bulk food items for the food baskets of the schools is carried out by the manager of the NSP, Ministry of Health. The food basket for primary schools and multi-purpose centers comprises: full cream milk, juice, margarine, corned beef, hotdogs, cheese, macaroni, chicken, flour, rice and lentils. The food basket for pre-primary schools comprises full cream milk, semolina, biscuits and sugar (Ministry of Education and National Reconciliation, 2020).

The SFC submits information on the number of beneficiaries for each school to the manager of the NSP. The manager then decides on the quantity of food supplies for the food basket for each school, based on

the number of its beneficiaries. Requests for additional supplies during the school term are often facilitated, once supplies are available.

Procurement for the non-bulk food items, such as vegetables, ground provisions, seasonings and condiments takes place at the school level. Principals have established credit lines with reputable supermarkets and farmers for the purchase of these items weekly, using the fee contributions from the students. Inadequate contributions or payments result in fewer purchases. The unavailability of some items (especially vegetables) has been described by the principals as a challenge, because substitutions of items on the menu would be required and few alternatives may be available.

17.6. School gardens and aspects of food and nutrition education

School gardens are part of the school landscape in Saint Vincent and the Grenadines. However, while some may have been dormant, recent support from FAO, via the Ministry of Agriculture has led to the revival of school gardening at some primary schools. Of the five schools visited, only one had an operational school garden, while the others either had an area dedicated to this activity or the school was preparing land space for such activity. It may be noted that the school with the garden sold most of the produce to staff and nearby residents, as a means of raising funds for continued operations of the school garden and only a few items, such as seasonings were utilized in the SFP in the school.

17.7. Quality assurance and monitoring and evaluation

The Nutrition Unit at the Ministry of Health:

- assists with the planning and development of the school menus;
- monitors the meal quality and service at the schools; and
- participates in the training of the SFP personnel.

The public health inspectors of the Ministry of Health monitor the SFP facilities at the schools, to ensure food safety practices and sanitation are maintained, and certify the food handlers employed at the schools.

Prior to the implementation of the Sustainable School Feeding Pilot project in 2016, there was no formal monitoring and evaluation plan or committee to oversee the implementation and monitoring of the SFP in Saint Vincent and the Grenadines. A cabinet inter-ministerial committee was established in 2016 to support the successful implementation and monitoring of the project. The committee comprised representatives from five Ministries: Agriculture, Economic Planning, Education, Health and National Mobilization.

Monitoring and evaluation of the SFP is carried out by the MOE:

- through a report registry (maintained at each school); and
- occasional visits to the schools and telephone conversations by the SFC, to investigate problems and constraints encountered by the school principals.

17.8. Annual net benefit analysis of the school feeding programme

Annual net benefit analysis was conducted for the SFP of primary schools in Saint Vincent and the Grenadines for the school year 2016/17.

The contributions of the four individual benefits to the SFP are presented in percentage form in Table 17.3. The major contributions to programme total benefit were from value transfer (42.2 percent), increased productivity (33.6 percent), followed by healthier and longer lives of the beneficiary students (23.5 percent). The contribution of return on investment was not significant (0.7 percent), when compared to the other benefits.

The estimated total operational cost for the SFP was XCD 2.04 million (Table 17.2). This expenditure feeds approximately 7 493 children or 60.3 percent of the school population at the primary level. More than half of this cost was incurred for the central purchase of food ingredients (55.31 percent) and 37.5 percent was paid to cooks and kitchen assistants, who prepared the meals in the schools.

As seen in Table 17.3, the estimated total economic costs of the programme (programme total cost) were estimated at XCD 4 365 035, with the major element of programme total cost being the total operational cost, which comprises 46.71 percent of the programme total cost. Payments by parents to the school comprised 12.8 percent of programme total cost. The other major item in the programme total costs of the SFP was the contributions by the community to the meals, which

Table 17.2 : Total operational costs of the school feeding programme

Operational Item	Cost XCD	%
Central purchase of food ingredients	1 127 709	55.31%
Payment for cooks	765 300	37.53%
Purchasing of utensils and equipment	109 816	5.39%
Repairs to kitchen and servicing of equipment	36 200	1.78%
Total operational cost	**2 039 025**	**100.00%**

Table 17.3: Determination of the annual net benefit analysis for the school feeding programme

Programme element	Element manager	XCD	%
Total operational cost	Min. of Education	2 039 025	46.71%
Administrative costs	Min. of Education	337 196	7.72%
Paid to state by community	Min. of Education	1 430 100	32.76%
Paid to school by parents	Schools	558 714	12.80%
Programme total cost		**4 365 035**	**100.00%**
Benefit sources	**% of total benefits**	**Benefits**	
Value transfer	42.2%	2 943 287	
Return on investment	0.7%	45 854	
Increased productivity	33.6%	2 346 808	
Healthier and longer life	23.5%	1 642 591	
Programme total benefit	**100.0%**	**6 978 540**	
Annual net benefit		**2 613 504**	
Benefit–cost ratio	**1.60**		

were estimated at 32.76 percent of the programme total costs. Some of these funds were used to purchase food ingredients by the schools and also for the purchase and repairs of appliances and equipment.

As seen in Table 17.3, the programme total cost of the SFP was XCD 4 365 035, but the programme total benefit of XCD 6 978 540 far outweighs the programme total cost, with an annual net benefit estimated at XCD 2 613 504 and a benefit–cost ratio of 1.60.

17.9. Overall assessment of the school feeding programme

The annual net benefit analysis carried out has demonstrated that the SFP for primary schools in Saint Vincent and the Grenadines can be justified from a social welfare perspective, with a benefit–cost ratio of 1.60. This is a high value for the benefit–cost ratio and it shows that this SFP has one of the highest levels of social desirability in CARICOM. Simulation analysis carried out has demonstrated that the benefit–cost ratio is sensitive to the number of beneficiaries in this SFP. For example, if the number of beneficiaries is restricted to 6 097 students, the benefit–cost ratio falls to 1.46 and if the number of beneficiaries is further reduced to 5 000, the benefit–cost ratio falls to 1.34.

This SFP is therefore demonstrating a high degree of social value. The SFP is also commendable for:

- the tight monitoring of food supplies by school principals;

- the decentralized nature of the food preparation in the schools themselves, which allows for the inclusion of local food items in the menus; and
- the use of cooks from the communities where the schools are located, which has meant that there seems to be a high degree of acceptability of the food by students, with a low level of food waste and the receipt of adequate portion sizes by the students.

However, this programme faces challenges namely:

- the limited use of standardized menus, which guarantee the nutritional quality of meals served;
- the limited availability of local food items, which restricts the use of fresh fruit and vegetables in the meals; and
- vending in close proximity to the school compounds which poses a major challenge for the SFP, with respect to the nutritional content and quality of the food items sold and consumed by children.

17.10. Specific recommendation

Improved operational efficiency

The following areas have been identified to improve the operational efficiency of the SFP in Saint Vincent and the Grenadines:

- establish a framework for the coordination and collaboration between the MOE and private donors;
- strengthen the reporting mechanisms and documentation of the schools;
- establish a monitoring and evaluation plan for the SFP; and
- develop an "operations and procedures manual" for the SFP.

18. Suriname

18.1. Introduction

The Republic of Suriname (Suriname) is located on the South American continent. It is bordered by Guyana to the west, French Guiana to the east, Brazil to the south and the Atlantic Ocean to the north. Suriname gained its independence from the Netherlands on 25 November 1975.

The capital of Suriname is Paramaribo which is located on the Suriname River. The country's total land area is 163 820 sq km. It is one of the smallest countries in South America. Most of its population (about 66 percent) reside in the urban areas (Menke, 2019). Suriname is divided into ten districts, each with a district commissioner. Each district is further divided into resorts, of which there are 62 in total. (World Bank, 2016).

Dutch is the official language of Suriname, however, many other languages are spoken by the different ethnic groups (Menke, 2019). Suriname became a member of CARICOM on 4 July 1995 (CARICOM, 2016b).

The Ministry of Education, Science and Culture (MINOWC) serves the ten districts of the country. In Suriname, education is compulsory between ages 7 to 12. The primary school population is the largest group consisting of approximately 50 percent of the school population. Enrolment drops at the secondary level, especially among boys. (World Bank, 2016).

18.2. School feeding in Suriname

The general structure of school feeding in Suriname is depicted in Figure 18.1 and meals are provided to students through:

- School arrangements: Schools have various types of arrangements for the provision of meals to students:
    - private vendors: In some schools, vendors are allowed on the school premises. There are also cases, where vendors rent the school canteen and pay the school a small fee. In general, these vendors provide lunches for the children, but the menus and the offerings are not regulated nor monitored. Meals provided by these vendors are sold between SRD 5 to SRD 10 depending on portion sizes and menu.
    - canteens: Some schools have canteens or cafeterias, where snacks are sold to the students. A department or office of the state attempts to ensure that food quality and food safety standards are maintained at school canteens.
    - NGOs: Several NGOs are involved in providing meals at schools. These NGOs include churches and other religious organizations and they generally provide light meals to students, such as porridge.
- Private firms: Some schools reported that private food handlers, distributors and other businesses served meals to their students. The meals served varied and consist of packaged meals or take-home snacks.
- The Government of Suriname: The Government of Suriname provided meals to students under the Extra Curricular Care and Support Project for the period 2012 to 2014. Initiatives are now being planned for new school feeding pilot projects, especially the SFP in the Koewarasan District of Wanica, called the Brazil-Suriname (ABC) pilot project. Figure 18.1 includes probable governance and supply arrangements for this ABC pilot SFP, as well as the possible contributions of parents, the community and the foreign funding agency.
- Parents: Many parents supply meals to their children, which the students bring to school and consume on the school premises.

Parents currently supply about 35 percent of the meals eaten by students. The other major supplier of meals are private vendors, who supply about 35 percent of the meals. Canteens and other school operated outlets supply about ten percent of the meals consumed by students, while also providing light snacks, such as sweets and drinks. It is estimated that private firms and NGOs supply about five percent of the meals. The remaining 15 percent of the students may eat nothing at school.

18.3. School gardens and aspects of food and nutrition education

The Government of Suriname is committed to promote healthy eating habits in schools and communities through the preparation of food based dietary guidelines and the dissemination of information on improved local diets (FAO, 2015c).

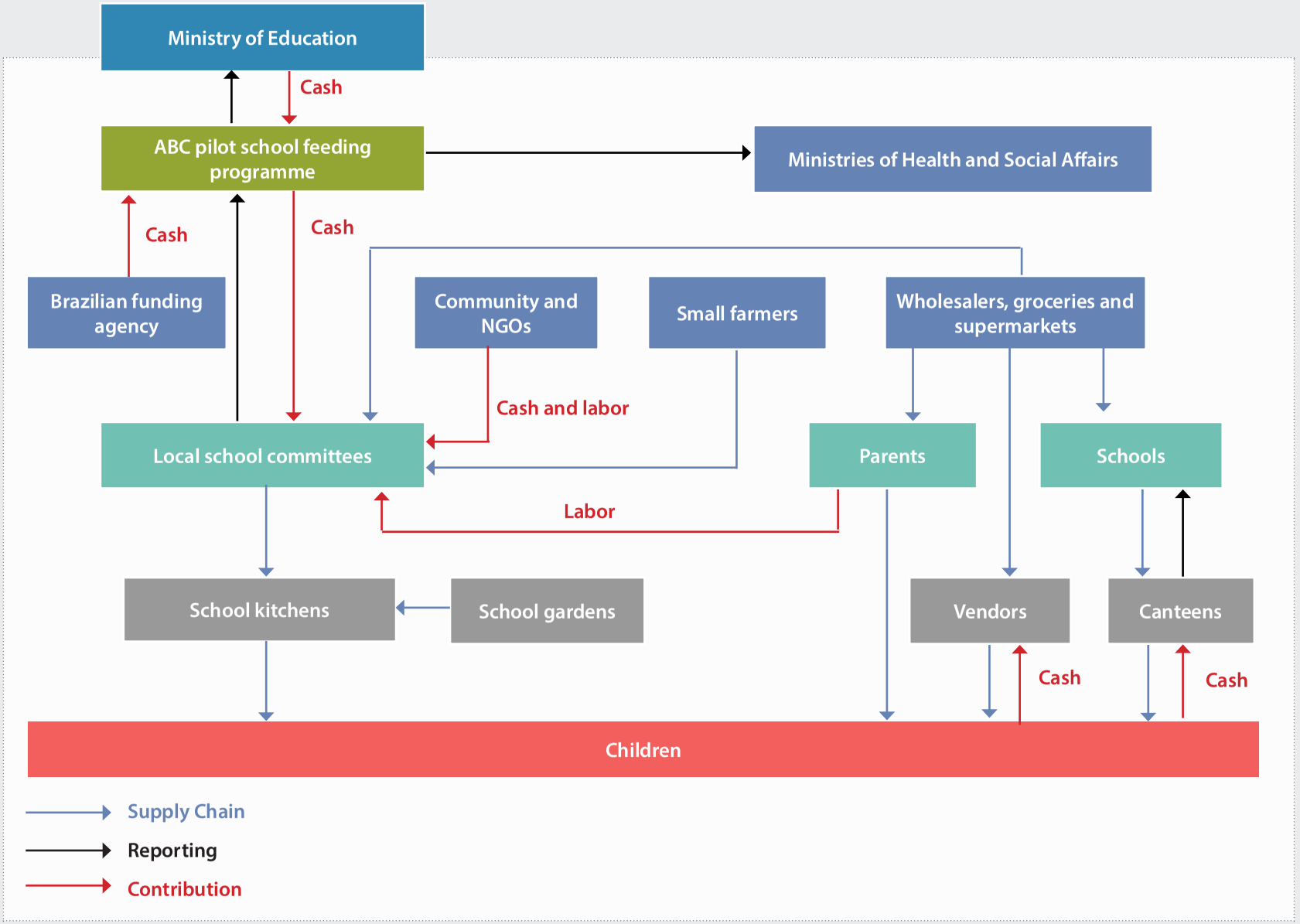

Figure 18.1: Operating model of school feeding in Suriname

School gardens are a regular feature of schools in Suriname. Several projects have also promoted school gardens, such as the one through the SUWAMA foundation, which has established organic school gardens and aquaponics systems at primary schools in different districts in Suriname (SUWAMA, 2018). This project has been financed by the 'Japan's Grant Assistance for Grassroots Human Security Projects (GGP)'. The objectives of this project are to introduce children to:

- a safe and environmentally friendly way of growing food;
- the concept of a healthier lifestyle;
- producing their own healthy food;
- farming as a vehicle to develop other competencies, such as cooperation, arithmetic and reading (SUWAMA, 2018).

18.4. The after school child care project

The Ministry of Education and Community Development (MECD) (2014) reporting on the period 2010-2013, stated that the After-School Child Care (ASCC) project was launched in 2012 at several schools. Activities included :

- a SFP which provided a hot meal;
- recreational activities;
- assistance in doing homework; and
- other extra-curricular activities to support and guide children after school (MEDC, 2014).

By 2013 or within Phase 3, the number of participating schools had grown to 200 nationwide.

An evaluation of the ASCC project was carried out by a Working Group (Ministerie Van Onderwijs Werenschappen En Cultuur (Ministry of Education, Science and Culture), 2015). The Report states that the project was carried out in four phases:

Phase 1: Pilot Project: August to May 2012;
Phase 2: First countrywide expansion: October 2012 to October 2013;
Phase 3: ASCC "New Style" project: October 2013 to May 2014;
Phase 4: Institutionalizing the ASCC programme: May 2014 to August 2015.

Schools in Suriname end the school day at 1.00 p.m. and teachers were paid overtime to participate in the project after school hours. A total of 250 schools, 144 kitchen owners or caterers, 28 suppliers, 65 transporters and 2 183 teachers participated in this project. The total project cost was SRD 162 million as of August 2015. Of this total, SRD 15 million was paid to teachers and coordinators and the remainder, SRD 147 million, was spent on food. Thus, food costs were approximately 91 percent of the total costs.

The SFP was implemented through the caterers, who had kitchens in the different areas. For example, one kitchen was assigned to prepare meals for almost 1 000 children distributed among four schools. Caterers were paid SRD 2 per meal. The caterers also received food ingredients that were delivered through and paid for by the Government.

The Working Group Report presented a SWOT Analysis of the project. The strengths identified for the project included:

- availability of nutritious food for the students through the SFP;
- the promotion of public-private partnerships;
- the countrywide scale of the project, since 73 percent of the primary schools in Suriname took part in this project; and
- the increase in the success rate of participating students.

The weaknesses associated with the project included:

- there was neither a written plan nor a feasibility study for the project;
- there were no guides, instructions, responsible persons (managers and auditors etc.) nor controlling bodies with respect to financial accounting in the project;
- the MECD was inadequately equipped to carry out the preparation, implementation, monitoring and evaluation of a nationwide project; and
- late payments to the caterers, so that some were not paid until December 2018.

18.5. School feeding programme in Koewarasan district of Wanica - The Brazil-Suriname (ABC) project

The Government of the Republic of Suriname and the Brazilian Cooperation Agency (ABC) have arrived at a Technical Cooperation Agreement on a SFP in Koewarasan, district of Wanica. This SFP is referred to in this document as the ABC SFP (or the ABC pilot SFP). Annual net benefit analysis is presented on this SFP in a later section of this report, as a simulation exercise that will be aimed at determining several parameters, which if they are adopted will increase the likelihood

of success of the SFP. The MINOWC, the Ministry of Health and the Ministry of Social Affairs and Housing are collaborating in the implementation of this SFP.

Resort Koewarasan in the district of Wanica was chosen for the ABC pilot SFP, for several reasons:

- The resort or area has a majority of highly vulnerable children, from the lower social and economic levels, and a high incidence of one-parent households.
- Most of the families in this area may not be aware of healthy lifestyles, including healthy eating.
- Most of the children in the area attend school without having proper breakfast or lunch.
- The schools in this area cannot provide healthy food for these children.
- The children in this area suffer from:
  - high school drop-out rates;
  - absenteeism due to illness and headaches;
  - sleeping in class;
  - low concentration spans; and
  - weak academic performance.

The objectives of the SFP are therefore to:

- utilize an integrated approach of the collaboration of Ministries, to increase the level of healthy nutrition and lifestyle for pre-school, elementary and junior high school pupils;
- nurture well-motivated children, who concentrate optimally at school;
- foster improved school results;
- increase the chance for children in this area to grow into competent adults who participate adequately in the society of Suriname;
- improve food security at family levels; and
- develop awareness of healthy eating among parents, caregivers, service providers, teachers and students.

The SFP aims to provide each pupil with two meals: breakfast and lunch. The project document argues that breakfast is needed in order to get the students motivated to produce better results. The lunch is needed after dismissal of school at 1.00 p.m., because the parents are often not at home to provide the pupils with proper healthy meals after school.

The ABC project emphasizes proper training of project staff. Towards this end, several project staff have already benefited from visits to Brazil, to observe the school feeding in that country. The trained staff are then expected to be trainers of other persons in the project. Training is proposed for the following groups in the stated areas:

- professionals of the collaborating Ministries in the Brazilian experience in school feeding;
- nutritionists and health technicians in the preparation of school menus and procedures for the procurement of foodstuffs for schools; and
- teachers and school principals in the management of a SFP and school gardens.

It is also proposed in the ABC project that two Brazilian experts would visit Suriname to discuss and give support to the preparation of draft legislation, to provide the legal status for the SFP.

The following activities are also planned for implementation, while the training of project staff is taking place:

- The necessary physical infrastructure for the SFP will be put in place in the schools, including storage areas, kitchens and eating areas.
- The necessary equipment will be acquired and distributed to schools, including kitchen utensils, cooking stoves and refrigeration facilities.
- Budgets will be prepared to have the pilot project financed.

Once the physical infrastructure, the equipment and the financial arrangements are in place, the project proposes to organize meetings in the communities of the SFP, to inform the communities about the voluntary activities that must be performed by members of the community for the SFP to be successful. The following activities are then projected to take place:

- selection and training of volunteers to provide their specific skills to the SFP;
- preparation of weekly schedules for all the volunteers; and
- preparation of documents for reporting the performance of activities under the SFP.

The ABC project document does not set out important details of the SFP, including:

- the proposed arrangements for the procurement of the food ingredients and other supplies such as cooking fuel; and
- the governance of the SFP at the community level.

18.6. Annual net benefit analysis of the ABC school feeding programme in Koewarasan district of Wanica

Approach

Annual net benefit analysis was undertaken to determine and propose the parameters that would increase the likelihood of success of the ABC pilot SFP. In this simulation exercise, all the relevant variables from the project document were utilized, including the number of students receiving meals and the projected training costs. Other parameters are assumed (such as the nutritional contribution of the two proposed meals). The simulation then estimated the annual net benefit and the benefit–cost ratio of the SFP, for different values of the simulation variables, with an emphasis on the wages of cooks, the number of children participating in the SFP and the cost per meal for the SFP.

The simulation exercise assumed that local committees for each school would procure the food ingredients from the local communities and prepare and serve the meals at the schools. These committees would be paid for meals prepared and served on a per meal basis (for example USD 1 for a breakfast meal and USD 2 for a lunch meal etc.) This approach is suggested as an alternative to the procurement system of the After School Child Care project, where the state purchased the food ingredients and supplied them to the caterers, which turned out to be a very inefficient and financially risky arrangement.

Assumptions of the initial simulation

An initial simulation was carried out to determine the likely annual net benefit and the benefit–cost ratio of the ABC pilot SFP. Since information was not available on the actual operations of the SFP, a number of assumptions had to be made to be able to carry out the simulation. These assumptions and initial values are now detailed and the variables that were simulated are identified:

- The administrative costs were assumed at ten percent of the total operational cost. These administrative costs were for the staff that are employed in the various Ministries to manage the SFP including clerical staff and staff in nutrition, accounts, etc. *(Simulated variable)*
- The implementation costs of the SFP were estimated at five percent of the total operational cost and are associated with the purchase of cooking utensils, stoves, cooking fuel etc. and the infrastructural alterations, mainly to buildings, to facilitate the cooking of meals at schools.
- Cooks are paid at the rate of SRD 52 485 per cook per year. *(Simulated variable)*
- One cook is hired for every 100 students for a total of 25 cooks in the four schools of the pilot project.
- Other operational level staff, largely associated with the purchase and delivery of the produce, (for example from farmers to schools) volunteer their services.
- Students receive meals for 180 days of the school year.
- The meals constitute breakfast costing USD 1 and lunch costing USD 2 for a total meal cost per student per day of USD 3 or SRD 22.50. The school committees are then paid at the rate of SRD 22.50 per student per day for each student, for whom meals are provided. *(Simulated variable)*
- 100 percent of the total meal cost is used for the food ingredients, which are transferred to the benefit of the students; *(Simulated variable)*
- The meals provide 30 percent of the required daily allowance of nutrients for the students; *(Simulated variable)*
- The school committees do their own procurement of food ingredients using the assistance of community volunteers.
- Proper accounting and monitoring take place to prevent the risk of fraud and wastage.
- The number of student beneficiaries in the ABC pilot SFP is 2 147.

The initial values were changed in subsequent simulations as given in Table 18.3.

Results of the initial simulation

For the initial simulation, the contributions of the four individual benefits of the SFP are presented in percentage form in Table 18.2. Here it is seen that the major contribution to programme total benefit is from value transfers (51.7 percent) and increased productivity (28.8 percent). The other major contributor to the programme total benefit is the benefit of healthier and longer lives of the beneficiary students (19.1 percent). Return on investment makes an insignificant contribution to the programme total benefit (0.4 percent).

Table 18.1 presents the analysis of the operational costs of the ABC pilot SFP. Here it is seen that the major element of the operational cost (88.41 percent) is the purchase of food ingredients for the meals. The other major operational cost item is the wages of cooks which is approximately 12 percent of the total operational cost.

As seen in Table 18.2, the administrative costs are 8.5 percent of the programme total cost; also total operational cost comprise 84.84 percent of the programme total cost.

The annual net benefit of the SFP was estimated at over SRD 6.26 million and the benefit–cost ratio of the SFP is estimated in Table 18.2 as 1.47.

Results of the simulation exercise

In the simulation exercise, the values of each variable in Table 18.3 (for example the "cost of daily meals" or "percent daily nutritional requirement contributed by meals" were changed as indicated in the table and all other variables remained at the values in the initial simulation (in other words, the simulation was carried out under *ceteris paribus* conditions or under partial analysis). The variable whose value was being changed can be referred to as the "simulated variable". Then, for each value of the simulated variable, the benefit–cost ratio was calculated to provide an indication of the social desirability of the ABC pilot SFP, if it is carried out using

Table 18.1: Estimated operational cost of ABC pilot school feeding programme

Operational Item	Cost SRD	%
Food ingredients for meals	10 007 550	88.41%
Payment to cooks	1 312 125	11.59%
Total operational cost	**11 319 675**	**100.00%**

Table 18.2: Determination of the annual net benefit for the ABC pilot school feeding programme

Programme element	Element manager	SRD	%
Total operational cost	Min. of Education	11 319 674	84.84%
Administrative costs	Min. of Education	1 131 968	8.48%
Implementation costs	Min. of Education	565 984	4.24%
Project Initiation cost	Min. of Education	324 480	2.43%
Programme total cost		**13 342 106**	**100.00%**
Benefit sources	**% of total benefits**	**Benefits**	
Value transfer	51.7%	10 136 287	
Return on investment	0.4%	72 043	
Increased productivity	28.8%	5 641 534	
Healthier and longer life	19.1%	3 754 003	
Programme total benefit	**100.0%**	**19 603 867**	
Annual net benefit		**6 261 761**	
Benefit–cost ratio	**1.47**		

Table 18.3: Results of the simulation exercise

Administrative cost as % of operational cost	Benefit–cost ratio	Wage of cook per month	Benefit–cost ratio	Meal cost/ student / day	Benefit–cost ratio
3	1.56	500	1.63	15.00	1.72
5	1.53	2 000	1.56	20.00	1.54
10	1.47	3 000	1.52	22.50	1.47
15	1.41	4 373	1.47	25.00	1.42
18	1.38	5 000	1.45	30.00	1.34
% of Meal payment for food	**Benefit–cost ratio**	**% nutritional requirement of meals**	**Benefit–cost ratio**		
75	1.29	25	1.46		
80	1.32	30	1.47		
85	1.36	40	1.47		
90	1.40	50	1.48		
100	1.47	75	1.50		

that value of the simulated variable, along with the other variables and assumptions at their initial values. The ranges chosen for the variables were considered to be values that the variables could reasonably be expected to take, or in other words, the ranges that appear to have the highest probability of occurrence.

Table 18.3 presents the results of this simulation exercise. Here it is seen that the benefit–cost ratio or the social desirability of the ABC pilot SFP is most sensitive to the "meal cost per student per day" for which the benefit–cost ratio had a range of 0.38. For the other variables the ranges were all equal to 0.18 except the "percent daily nutritional requirement contributed by meals" where the range was 0.04.

The sensitivity of the results to the cost of the meals is consistent with Table 18.1, where these meal costs represent 88.41percent of the total operational cost. The results show that the benefit–cost ratio is not affected as much by the wage rate paid to the cooks, although the benefit–cost ratio does fall as the wage rate increases. This would suggest that the cooks should be properly trained and should be paid at the minimum wage for the country, rather than having them volunteer their services. This payment would enhance their professionalism, including the maintenance of a high standard of service.

The benefit–cost ratio was highly insensitive to the "percent daily nutritional requirement contributed by meals". However, this variable greatly affects the quality of the SFP. Hence, the ABC pilot SFP should maintain the highest possible value for this variable, while ensuring that the meals are as healthy as possible, in terms of their utilization of fresh fruit, vegetables and root crops and the minimal use of unhealthy and highly processed foods, like sugar.

18.7. Overall assessment of the school feeding system in Suriname

The annual net benefit analysis, including the simulation analysis, of the ABC pilot SFP has demonstrated that this SFP has a high likelihood of success and it should be able to justify its existence from a social welfare perspective. However, this SFP is limited in its coverage of Suriname and in the number of students it caters for (about 3.56 percent of the primary school population and 1.77 percent of the total school student population).

There is an obvious need for a SFP in Suriname, to provide meals for a significant percentage of the student population. Suriname is the only CARICOM member state, of the 14 studied, that does not have, at this time, a country wide SFP. The percentage of children under five years of age suffering from stunting is approximately nine percent. If this is taken as an indicator of the level of under-nutrition in school aged children in Suriname,

then it would indicate that at least 13 000 students in schools could benefit from a SFP.

Approximately 15 percent of the students go to school without meals and cannot afford to buy anything in school, which suggests a nation-wide SFP in Suriname could cater to up to 21 000 students at both primary and secondary levels. This would mean expanding the SFP of the ABC pilot project about ten times.

18.8. Specific recommendations

Expansion of the ABC pilot school feeding programme

Arising from this study are recommendations for the improvement of school feeding in Suriname, based on a scaling up of the ABC pilot SFP. The ABC pilot SFP, once validated should be expanded to cover at least 15 percent of the total school population. As stated previously, about 15 percent of the students go to school without meals and cannot afford to buy anything in school. They should be the target of the expanded SFP at all levels of the school system.

A means test should be applied and only those students who cannot afford to buy meals should be supplied with free meals. To improve the sustainability of this SFP, meals can be sold to other students at prices that will yield the school committees a small profit, to help to defray the expenses of the SFP.

Establishment of a school feeding unit

Consideration should be given to the establishment of a school feeding unit as the agency to coordinate school feeding in Suriname. This unit can begin by implementing the ABC pilot SFP. The unit will have to be provided with the necessary nutrition, logistics, administrative and statistical staff. The main tasks of this unit should be to:

- implement the ABC pilot SFP;
- monitor the performance of school feeding in Suriname; and
- ensure that international standards and procedures with respect to food quality and safety are being met in school feeding throughout the country, including the foods and snacks that are sold by vendors and canteens.

Promotion of food and nutrition education

There is a clear need for the improvement in food and nutrition education for all stakeholders in school feeding, including vendors, principals, teachers, cooks, students and their parents. This can be achieved by the inclusion of food and nutrition concepts in various areas of the school curriculum, as well as by having special training sessions in healthy eating for all stakeholders in school feeding.

School gardens have proven to be very useful contributors to food and nutrition education at schools. Hence, school gardens should be promoted for all schools in Suriname, utilizing the various technologies, given the land space available to the school. The school gardens should as far as possible supply food items for the school kitchens, to demonstrate to students the "farm to fork" concept of local food supply and healthy eating and to promote HGSF.

19. Trinidad and Tobago

19.1. Introduction

The twin island state of Trinidad and Tobago is the most southerly island state in the Caribbean, merely 11.2 km northeast of Venezuela. The economy depends heavily on natural gas and oil, which account for approximately 40 percent of GDP and 80 percent of exports.

Archie (2016) presents a brief overview of the history of the island of Tobago. She reports that Tobago remained part of the unitary state of Trinidad and Tobago in 1962, when the country became independent. On 30 September 1963, Hurricane Flora struck Tobago, with winds estimated at 120 mph. The hurricane caused catastrophic damage to houses, roads, utilities and cocoa and coconut estates. The Government mounted a re-construction programme and within two to three years, most of the infrastructure was restored, but the agricultural sector never rebounded from this disaster.

On 24 November 1980, the Tobago House of Assembly (THA) held its first election. Since then there have been repeated attempts to consider increased autonomy for Tobago. However, the THA does continue to administer most of the governmental activity in Tobago, but it still lacks major income generating and taxation powers.

19.2. School feeding in Trinidad and Tobago

History

In the case of Trinidad, according to Pemberton *et al.*, (2018, p. 192), the first SFP was organized in 1926, by the Coterie of Social Workers, created by Audrey Jeffers. This SFP provided free lunches for children in a building in Newtown, Port of Spain popularly known as "the Breakfast Shed". By 1934, other "breakfast sheds" had been established in another location in Port of Spain, Barataria, San Fernando, Siparia and Tobago (Pemberton *et al.*, 2018).

According to Buckmire-Joseph *et al.,* (2012) state sponsored school feeding in Trinidad (and Tobago) can be traced back to the 1940s, with the implementation of a programme by the World Health Organization, that provided needy children in primary schools with a meal of milk and biscuits, in order to improve student enrollment and encourage regular attendance. In 1977, a school task force was convened to formulate proposals for the implementation of a SFP. However, the programme did not start until May 1979.

The School Nutrition Company was established in 1980 and was responsible for the preparation and distribution of school lunches and milk drinks to children in primary schools throughout Trinidad. The company owned and managed 13 kitchens and supervised the operations of 54 contracted caterers. This SFP was stopped in 1986 and later restarted in 1989 as the "Restructured" SFP). In 1993, pre-schools were integrated into the SFP. Then, in 1994, with funds provided by a loan from an international lending agency, secondary schools were included in the SFP.

In 1996 the name of the SFP was changed to the School Nutrition Programme (SNP). In 2002, the National Schools Dietary Services Ltd. was incorporated as a limited liability company by the state to manage the SNP on behalf of the Ministry of Education (MOE). (Parliament of the Republic of Trinidad and Tobago, 2012).

With respect to Tobago, as a result of a renewed focus on the health of Tobago's children and the quality of their meals, in the early 1980s, the THA decided to initiate its own SFP and in 1984, successfully created the School Feeding Unit (SFU). Three meal preparation units or kitchens were built to facilitate the distribution of lunch meals to schools throughout Tobago. These units were located at: Charlotteville in the east, Mason Hall in the north and Bon Accord in the west. Initially, 9 000 meals were prepared per day. The meals were served three days per week: Monday, Wednesday and Friday to primary schools.

The THA eventually found that the operations of the three meal preparation units were not viable and the workers of the units formed a cooperative to take over the operations as a business entity. This cooperative the Tobago Nutrition Co-operative Society (the Coop.) then received a contract from the THA to cook and serve meals to the entire island, using the three kitchens. The Coop. created substantial employment within the island's communities.

In 1998, the THA hired five new caterers through advertisement. The SFP was expanded to include secondary schools on Tuesdays and Thursdays of each week. Then early childhood care and education (ECCE) centers were added to the SFP. In 2001, the THA increased the number of caterers and all schools and ECCE centers were provided with lunch meals for the five days of the school week.

The breakfast SFP in Tobago had its origin in 2001, when a couple from the Buccoo community started serving breakfast to students at Buccoo Government School. Because of the success of this community effort, other schools requested similar service from the THA. The THA approved a pilot project and advertised for breakfast caterers. This SFP has been in operation for 17 years but remains a pilot project.

Structure

Figure 19.1 gives the structure of the school feeding in Trinidad and Tobago, which is a combination of:

- the state-funded SNP in Trinidad and the SFP in Tobago. Both the SNP and the SFP follow the caterer-based (CB) model;
- tuck-shops and cafeterias operated by the schools;
- vendors; and
- parent supplied meals to students.

Outside of the state funded SFPs, schools have in place various types of arrangements for the provision of meals to students. In some schools, vendors are allowed on the school premises to provide lunches and snacks for the students. One school in Tobago had three such vendors, who were allowed on the school compound, so that their operations could be closely monitored. However generally, a proliferation of vendors stay outside of the school premises and sell their goods mainly snacks, before and especially, after school to the students. Most of these snacks may be of an unhealthy nature.

Most schools have canteens or cafeterias, (or tuck-shops), where food is sold to the students. In many cases, these are operated by the schools as revenue generating business units, with parent, teacher or student help. In other cases, the canteen facility may be rented to and operated by private vendors. These businesses usually concentrate on the selling of snacks, drinks and light meals, like pizzas and French fries. The MOE has issued a directive to ban the selling of SSBs from these facilities.

Many parents supply meals to their children, which they bring to school and consume on the school premises. In a growing trend, such meals may in fact consist of fast food offerings from commercial outlets, some of which may be delivered to the school premises.

19.3. The school feeding programmes of Trinidad and Tobago

The School Nutrition Programme of Trinidad

As noted above, the NSDSL manages the SNP of Trinidad. The overview of the SNP is based on a similarly named document of the NSDSL, which is one of the best, concise descriptions of a SFP and its economic and social benefits in the developing world (NSDSL, 2018).

The NSDSL is a special purpose limited liability state company established to implement the SNP. The NSDSL is mandated to:

- develop a strategic direction for the SNP and to oversee its implementation;
- develop policy guidelines for the management and operation of the SNP in respect of meals to be served, to ensure that the meals cater for the nutritional needs and dietary differences of students;
- establish criteria for the selection of caterers for the SNP;
- develop quality control mechanisms to ensure the maintenance of the highest standards of food quality and safety and to facilitate monitoring enforcement; and to
- plan new initiatives (NSDSL, 2018).

The main objectives of the SNP are:

1. to provide, as a weekly average, approximately one-quarter (1/4) and one-third (1/3) of the recommended dietary allowance (RDAs) of nutrients for the child through breakfast and lunch respectively;
2. to contribute to the improvement of the nutritional status of the students and to enhance their learning abilities; and
3. to further stimulate the agricultural sector by utilizing local produce wherever possible in the meal plan.

The strategic direction of the NSDSL is embodied in its vision, mission and motto:

Vision: To become the region's lead provider of the highest quality nutritious meals, engaging research and resources in food science and technology.

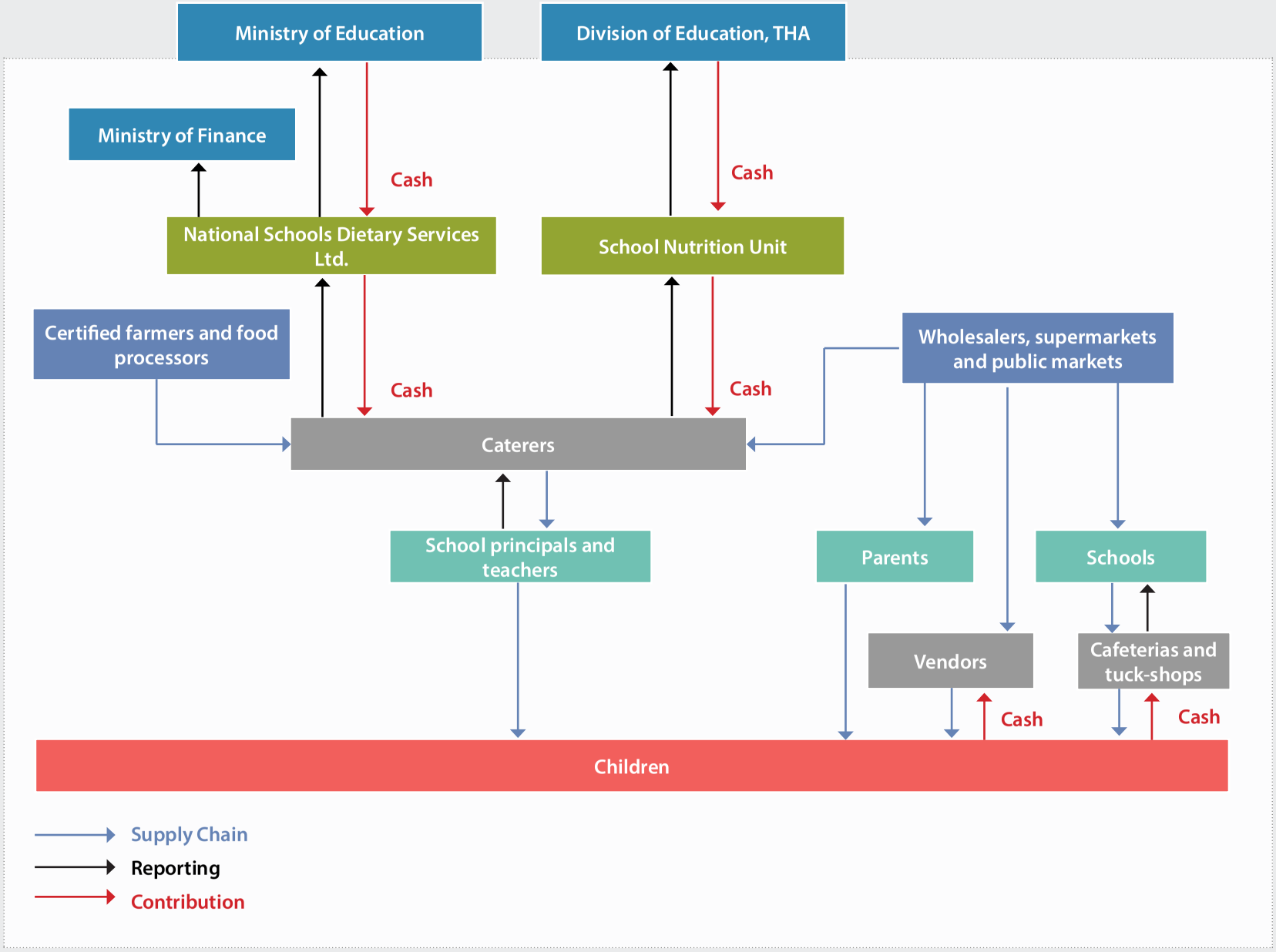

Figure 19.1: Operating model of school feeding in Trinidad and Tobago

Mission: To give every child access to well-balanced nutritious meals through the effective and efficient delivery of the Schools Nutrition Programme (SNP).

- Motto: Improving the quality of life with nutrition. (NSDSL, 2018).

Recent details of the number of meals provided by the SNP in Trinidad are provided in Table 19.1. There it is seen that the number of meals has been decreasing and that lunches make up approximately 60 percent of the meals produced. The figures also indicate that the SNP produces approximately 25 million meals annually. These meals are provided to 218 pre-schools which receive lunches only, 455 primary schools and 138 secondary schools and also to 43 vocational or technical and special schools, where breakfast and lunch are provided to special needy students.

The school feeding programme of Tobago

The SFP of Tobago (its official name according to THA (2018) although it is also referred to as the SNP) is administered directly by the Division of Education Innovation and Energy (DOE) of the THA through its School Nutrition Unit (SNU). The SFP was reported to have the following vision, mission and objectives:

Vision: To be a complete provider of nutritional services to all school aged children"

Mission statement: To aspire to have a positive and enduring impact on the nation by providing nutritious meals of the highest quality to all school children, while seeking to promote healthy meal choices and lifestyles through nutrition education, thus stimulating local economic activity and growth in the agricultural sector.

The objectives of the SFP are essentially similar to those of the SNP just stated above.

Selection of students for the school feeding programmes

School principals are responsible for selecting the students for the SNP in Trinidad and the SFP programme in Tobago. Parents may approach principals to have their children included and also, once a child is interested and obtains permission from the parent or guardian, that child can inform the class teacher, who then passes the request onto the principal. In addition, principals can seek permission of parents to have their children become beneficiaries. Schools report that children of families who receive social assistance are generally selected.

In Trinidad, principals then apply to the MOE to have the selected students included in the SNP. The MOE gives the final approval.

Beneficiaries of the SNP and the SFP may be students of ECCE centers (pre-schools), primary schools, secondary schools, vocational or technical schools and special schools. All meals are provided free of cost to the beneficiaries. For pre-schools and primary schools in lower socio-economic, rural areas, where the school population may be below 100 and the students are from the same catchment area, all students may be beneficiaries.

Community participation

As expected in the CB model adopted by the SFPs in Trinidad and Tobago, there is limited direct community participation in these two SFPs. The major community participation in the SFPs is in terms of the operations of the caterers. The caterers are generally selected from the regions or districts in which the schools they serve are located. Hence these caterers provide employment for some residents in these communities (especially women), in small scale food processing and meal preparation. Tobago has a large number of caterers for the size of its

Table 19.1: Production of meals by the School Nutrition Company Trinidad

Academic year	Breakfast	Lunch	Number serving days
2015	59 329	96 276	164
2016	58 324	88 341	167
2017	57 902	86 714	164

Source: NSDSL

SFP and many of these caterers are community groups and church organizations.

There is minimal direct contribution of small farmers in the rural communities to the SFPs, even where the caterers may be operating from within the rural communities. There are however efforts being made to increase the participation of farmers and farmers groups and association in the SFPs. There is also minimal community participation in the governance of the SFPs. Usually, community members participate by giving comments and suggestions to the caterers and the principals, on the meals served and food wastage in the SFPs, at PTA and other school meetings.

Operations at the school level

Breakfast meals are usually delivered to schools from as early as 7.00 a.m. and lunch from around 11.00 a.m., in special containers to keep them at the required temperature. The meals are delivered in individual boxes and these boxes are served to children in their classrooms, especially in pre-schools and primary schools, or given out to students at convenient locations, such as the offices of the schools, especially in secondary schools. In some pre-schools in Tobago, the meals are delivered in bulk and the teachers serve the children in plates, to develop their etiquette and also to provide the children with their desired portion sizes. Samples of the meals are provided for the principal or vice-principal of each school.

Principals often designate specific teachers to be in charge of school feeding in their schools. The designated teacher (or principal) in each school notes the number of meals delivered each day by the caterers and is thus able to certify the caterer's record of the number of meals supplied. The caterer presents a log book or sheet of the meals delivered weekly or monthly, to be signed off and stamped by the principal. The caterer then makes out the claims to the NSDSL, in the case of Trinidad and the SNU in the case of Tobago.

Meals are generally served for 165 days of the school term which may extend for another 10 days. On the days when no meals are received from the SFPs, schools may make internal arrangements to provide meals for the neediest children.

Operations at the national level

The SNU in Tobago has a very small staff complement and therefore very small administrative costs as presented in the Draft Estimates - Details of Recurrent Expenditure 2019 (THA, 2018).

The SFP provides over 12 000 lunches and 2 500 breakfasts on a daily basis to students across the island of Tobago. As in Trinidad, there is an emphasis on the provision of lunch meals.

There are 17 "lunch caterers" who serve lunch meals to 110 schools at all levels, from pre-school to secondary schools in Tobago. These are the larger caterers in the SFP. In addition, there are 38 caterers who supply (except in one case) meals to only one school. In the exceptional case, the caterer serves three schools.

The Coop. is an interesting feature of the SFP in Tobago. It is the largest caterer and it operates a very modern facility. The Coop. currently has 73 members. It hires 60 workers and serves 27 schools. In addition to the Coop., as stated above, there are several community groups and church organizations who serve as caterers. Also 15 schools are listed as caterers to their own students.

The NSDSL provides its meals through a network of approximately 75 contracted caterers throughout Trinidad. The SNP has established zonal boundaries for caterers in Trinidad. There are 20 caterers in the North zone, 17 in Central, 20 in the East and 18 in the South zone. The boundaries for the zones were established on the basis of the population distribution of the country and the location of schools. The North zone includes the densely populated, capital city of Port of Spain. The East zone is the largest by area, and it contains some rural areas of the sparsest population density. Both the Central and South zones have approximately the same area and population. However, accessibility in the Central zone is easier than in the South zone, where more rural communities exist. Each zone has a zonal manager who manages caterers in the zone.

Caterers are first selected by a tendering process. Before they are contracted, they go through a rigorous screening process that focuses *inter alia* on

- their experience in catering;
- their financial capability;
- the design and layout of their food preparation facility; and
- the type and size of their production equipment.

The caterers' contract contains two schedules:

- schedule (i) details the nutritional requirements of the meals; and

- schedule (ii) provides details on food safety.

Other parts of the contract provide mandatory requirements, such as the public health certification of the premises and the staff.

Table 19.1 shows that the number of meals per day served by the SNP has been declining. Table 19.1 also shows that currently approximately 69 percent of the lunch meals are served each day to primary school students and approximately 21 percent to secondary school students. It is estimated in Table 19.1 that the beneficiaries of free lunch meals in the SNP are as follows:

- 80 percent of the pre-school student population;
- 25 percent of the primary school population; and
- 15 percent of the secondary school population.

The MOE pays caterers TTD 6.63 for each breakfast meal, TTD 8.28 for each pre-school lunch and TTD 9.00 for each regular lunch provided to primary and secondary school students. Funding for the NSDSL is provided by the MOE. The SNP is responsible for the supply of disposables, such as sporks, spoons, napkins, boxes, and garbage bags, to the schools.

Menus and nutrition

School nutrition programme in Trinidad

The survey of caterers and suppliers of raw food items to caterers carried out as part of this study, provided interesting results, in terms of the opinion of these caterers and suppliers, with respect to the meals that are more popular among students. These meals included:

- pizza
- chicken and pigeon peas pelau with vegetable medley
- chicken with callaloo and steamed rice
- channa, potato, green paw-paw, pumpkin, mango amchar and paratha
- mac (macaroni) and cheese.

In the opinion of these caterers and suppliers, some of the least accepted meals served to students included:

- saltfish buljol with bake or whole wheat hops
- most non-chicken or non-meat meals
- whole wheat and white bread, peanut butter and jelly sandwich
- cassava, pumpkin muffins.

It is interesting that some of the reported popular meals included some traditional home prepared meal items or dishes like callaloo, pelau and paratha.

However, the SNP in Trinidad has been criticized often (and perhaps unfairly branded), because of the supposedly high food waste, caused by students refusing and disposing of meals, for example, Ottley (2014). NSDSL (2018) reported on the measures that have been taken by the company to deal with this situation. In the first instance, surveys were conducted over the period 2012 to 2015, involving more than 5 000 students, across the SNP, to ascertain, especially for the primary school population:

- the levels at which different meals were being consumed;
- the items that were being poorly consumed;
- the reasons for the poor consumption; and
- possible solutions to minimize these outcomes.

Poor consumption was defined as "any edible portion of a food item or meal that was consumed less than 75 percent, after it was presented to a child."

The surveys found that:

- Generally, meal consumption was influenced by age group, with the level of consumption increasing with age group for most meal items and wastage of staple items like rice, cassava and paratha, occurred mainly among the younger age group.
- Among all meal items, "vegetables" had the lowest consumption levels.
- Students were generally satisfied with the taste of most meals.
- There was a preference for "fast food" type menus, when compared to local traditional dishes as usually prepared at homes in Trinidad and Tobago.
- Students reported that they also purchased and consumed other meal items at school, including snacks that were high in sugar, salt and fat.

Based on the results of these surveys, the NSDSL has taken *inter alia* the following remedial measures:

- continuous monitoring and adjustment of menus;
- tailoring portion sizes to appetite and needs; and
- recipe testing and development.

These measures are now briefly summarized, as they elaborate the approach to menus and nutrition in the SNP (NSDSL, 2018).

1. Continuous Monitoring and Adjustment of Menus

The quality assurance officers (QAOs) continuously monitor meal consumption and provide information that is used to adjust menu combinations. Menus in the SNP are adjusted each term, as necessary, for better meal consumption by students. However, all menus are planned by the nutrition professionals to meet the internationally-benchmarked nutrient goal of a weekly average of one quarter to one third of the recommended dietary allowance (RDAs) of nutrients for the child through breakfast and lunch respectfully. The menus are presented to caterers in a 20-day 4-week cycle. These menus emphasize the use of local produce including fruits and vegetables. The ethnic and religious diversity of the student population is also taken into consideration. The Nutrition Department also completes computer-based analyses of the menus, to estimate the nutrient content of the meals.

2. Tailoring Portion Sizes to Appetite and Needs

The consumption surveys determined that one of the reasons for the low consumption levels of younger children (ages five to seven years) was that the serving sizes of the staples were too large. The remedial action taken was to reduce the serving sizes of staples for this age group from 227 g (eight ounces) to 170 g (six ounces).

3. Recipe Testing and Development

As stated above, in the consumption surveys, there was a preference among students for "fast food" type menus, when compared to local traditional dishes, as usually prepared at home. Therefore, the four chefs in the recipe testing and development department have been developing new recipes to utilize local agricultural products (NSDSL, 2018). These new recipes are expected to deliver new meals that enhance the taste, flavor and presentation of the local products. The new meals are being sensory evaluated by the students in sample schools. This department also provides training for caterers in quantity food production of the improved meals.

The school feeding programme of Tobago

The SNU prepares a "notice" for its contracted caterers, providing a "five day week lunch menu" for the different weeks of the school term. This meal plan is approved and signed by the Administrator of the DOE and is sent out as a directive of the DOE. The notice in addition states that no item on the menu must be changed or substituted without the approval by the DOE. Compliance with this notice or menu plan is monitored by the nutrition officers of the DOE.

It would appear also that certain caterers, perhaps because of religious or other particularities may be allowed to produce their own meal plan. For example, a different "three weeks cycle menu" was observed from the school feeding department of a "mission" of a religious group (Seventh Day Adventist), which is a caterer in the SFP.

Sugar sweetened beverages

Surveys confirmed that in 2007, 51.6 percent of students usually drank sugar sweetened carbonated soft drinks two or three times per day and by 2011, 74.6 percent of students drank sugar sweetened carbonated beverages "within the past 30 days" (Ministry of Health Trinidad and Tobago, 2017). In response to this high consumption of sugar sweetened beverages (SSBs) and the data on child obesity, the Ministry of Health introduced the "Nutrition Standards for Food Offered for Sale in Schools in Trinidad and Tobago", which took effect in September 2017. This policy states that not permitted for sale in schools are foods that contain added sugars, which make up more than eight percent of the total calories. Among the SSBs banned are soft drinks, juice drinks, flavored water, sports and energy drinks and milk-based drinks with added sugars. Only water, 100 percent juices, low-fat milk and blended vegetable or fruit drinks should now be sold in schools in Trinidad and Tobago.

19.4. Governance of the school nutrition programme of Trinidad and the school feeding programme of Tobago

The school nutrition programme in Trinidad

The governance structure of the SNP is presented in Figure 19.1. As stated previously, the NSDSL was set up as a limited liability company to manage the SNP on behalf of the MOE in Trinidad. Oversight and strategic directing of the NSDSL is provided by a board of directors (NSDSL, 2018). The company is also staffed by a "cadre of skilled employees with the expertise and professional qualifications in a variety of disciplines relevant to school

meal service." (NSDSL, 2018). The upper management consists of a chief executive officer and three programme managers in the following functional areas:

- Operations - with direct responsibility for the 32 quality assurance officers (QAOs), who oversee the operations of the 75 caterers in the SNP.
- Nutrition services - with oversight for all departments that support the operations of the SNP which are:
  - nutrition
  - agriculture
  - information technology
  - recipe testing and development
  - research
  - training.
- Accounts – with responsibility for the accounts department.

The NSDSL is funded through the MOE, but the company is responsible to this Ministry, as well as Ministry of Finance (Parliament of the Republic of Trinidad and Tobago, 2012, p. 22).

The school feeding programme in Tobago

The governance structure of the SFP is also presented in Figure 19.1. As outlined above, the SFP in Tobago is governed directly by the DOE of the THA. The DOE has a small SNU with a staff of 11 consisting of two nutrition officers, eight food service officers and a secretary. This Unit is directed by the administrator of the DOE, with advice from a coordinator in the DOE.

Funding for the SFP is provided by the DOE as line items in its recurrent expenditure as presented in the Draft Estimates - Details of Recurrent Expenditure 2019 (THA, 2018). Food service officers function in a similar manner to the QAOs of the SNP in Trinidad, visiting caterers to ensure that their operations are in line with the policies and guidelines established by the DOE. They are supervised by the nutrition officers, who also give advice on menus and monitor compliance with these menus.

There is no school feeding management committee that involves parents, teachers and the local community in the management and implementation of the school feeding programmes in Trinidad and Tobago.

19.5. Procurement arrangements

Procurement for the school nutrition programme in Trinidad

For the SNP, raw food items or ingredients are procured by the caterers, who purchase these food items directly from suppliers approved by the NSDSL and listed in the suppliers directory. The NSDSL has approximately 65 approved suppliers (including farmers), who employ at least 6 000 persons (NSDSL, 2018).

Caterers are free to choose from any of the listed suppliers, who are located throughout the island. Three QAOs have the responsibility for visiting all the suppliers throughout the island. Visits are conducted at least three times per school term. These QAOs also ensure that caterers purchase supplies only from the listed suppliers.

Both local and imported foods are purchased by caterers. However, "local produce always takes precedence over imported produce, in line with the objective of the SNP" (NSDSL, 2018). An Agriculture Department was set up by the NSDSL in 2013. Its mandate is to increase both the amount of local produce used in the SNP, and the quantities directly purchased from farmers. This department liaises with the Ministry of Agriculture Land and Fisheries (MALF) and agricultural organizations such as the National Agricultural Marketing and Development Corporation (NAMDEVCO) to source for the SNP, farmers and agro-processors, who adhere to good agricultural and food safety practices (NSDSL, 2018).

Listed farmers and agro-processors are provided with termly projected needs for agricultural produce by the SNP. The NSDSL's Agriculture Department also assists in connecting farmers to agro-processors. The department also collates information on the level of local produce used in the SNP. For example, data collected for the period September 2017 to June 2018 indicate that over 1.5 million pounds of local produce were used in the SNP, valued at approximately TTD 10 million, which is approximately 12 percent of the total value of raw food items purchased for the SNP. Purchases of local produce represent a significant contribution of the SNP to the agricultural sector in Trinidad and Tobago. Local produce is sourced from small-scale farmers, farmer groups or associations, community groups and small agro-processors.

An MOU exists between the NSDSL and the NAMDEVCO towards increased cassava production for use in the SNP. Caterers of the SNP are major clients of the NAMDEVCO packing house. Major challenges reported by the packing house in its business relationship with the caterers of the SNP included:

- receiving funds and payments in a timely manner; and
- lack of consistent demand for commodities.

Procurement for the school feeding programme in Tobago

As in the case of Trinidad, caterers in Tobago do their own procurement of raw food items for the meals they prepare. In the case of Tobago, there is no list of approved suppliers (as in the case of Trinidad) and most of the food items for the meals are sourced through wholesalers in Trinidad. This pertains particularly to chicken, rice, other meats, cassava and white potato. The main food items obtained from sources in Tobago are lettuce, pak choi and seasonings. Even when fish is used by caterers, it was reported that it tends to be white fish sourced from Trinidad, though the fish itself is imported from foreign sources. Fish from Tobago was reported to be too expensive for the budgeted cost of a school meal.

One of the major concerns about procurement of food commodities for Tobago is the reliability of transportation between the two islands, Trinidad and Tobago. Caterers complained that there were frequent breakdowns and other factors affecting the vessels doing the transportation and hence there were very many cancellations of sailings. Shortages therefore occurred for some food items, causing the caterers to pay higher prices for these food items, especially if they have to be sourced from supermarkets in Tobago. Shortages of food items in Tobago also meant that meal plans have to be changed to utilize available food items, which results in the inability of the caterers to follow the meal plans directed by the DOE.

19.6. School gardens and aspects of food and nutrition education

The Nutrition and Metabolism Division of the Ministry of Health (MOH) conducts visits to schools and provides lectures, food demonstrations and displays, geared towards encouraging healthy eating habits and lifestyles. These activities reflect the view that schools should play an integral part in educating students about healthy eating, making good food choices, as well as the long-term consequences of bad food choices. Through the MOH also, there is the national primary school nutrition quiz and the school health education programme, "Healthy Me" (Ministry of Health Trinidad and Tobago, 2017).

The nutrition education component of the NSDSL is executed by the Nutrition Department and it is targeted at schools "… where meal consumption is a challenge" (NSDSL, 2018). The sessions are held for students, school personnel and parents and the content covered is consistent with the MOE's Health and Family Life Education (HFLE) curriculum. HFLE is the major food and nutrition education curriculum for primary schools (usually from first to fifth standard) and secondary schools (forms one to three) (Ministry of Education Trinidad and Tobago, 2006, 2009). HFLE incorporates a theme on "eating and fitness".

The NSDSL's Nutrition Department also partners with the Health Education Unit of the MOH in health promotion activities, such as the National Primary School Nutrition Quiz (NSDSL, 2018). The NSDSL also conducts nutrition education for students through planned activities, such as school health fairs and workshops. These activities can be requested by schools or by quality assurance officers or zonal managers of the NSDSL, especially where the consumption of meals presents challenges, that are being focused on by the NSDSL.

School gardens in Trinidad and Tobago are largely associated with the requirements for the Caribbean Examination Council (CXC) CSEC Agricultural Science curriculum. Secondary schools with students taking this subject, usually have fully functional farms, with both crop and livestock enterprises. However, most of the produce from these farms is sold to teachers and parents, to help to finance the operations of the farms, with little or no contribution to the meals served in the schools. 4-H clubs may assist in the operations of these farms, with their emphasis on developing skills in farming and agribusiness entrepreneurship.

A relatively much smaller proportion of primary schools have functional school gardens as compared to secondary schools and most of these schools are in the rural areas. Depending on the space available, these school gardens range from farms with crop and livestock enterprises to plantings in containers and troughs (Government of the Republic of Trinidad and Tobago, 2018). An Agricultural Science subject area is included

in the national curriculum of primary schools (Ministry of Education Trinidad and Tobago, 2013). However, since this subject is not included in the Secondary Entrance Assessment (SEA) examination for placement of students in secondary schools, this subject area is usually neglected in primary schools, with an emphasis on the subject areas of Mathematics and English Language.

19.7. Quality assurance and monitoring and evaluation

The NSDSL is a core member of the Technical Working Committee responsible for developing nutrition standards for foods offered in schools. This multi-sectoral committee which is chaired by the MOH also has representatives from the MOE, MALF the Trinidad and Tobago Association of Nutritionists and Dietitians, the National Parent Teachers Association (NPTA) and multinational institutions e.g., FAO.

Detailed evaluations of the performance of the SNP in Trinidad are provided in the Report of the Auditor General on a special audit in Ottley (2014) and the Parliament of the Republic of Trinidad and Tobago (2012).

The MOE is responsible for the national policy on school nutrition and therefore has responsibility for evaluating and enhancing the overall performance of the SNP. The NSDSL therefore works closely with the office of the Chief Education Officer (CEO), who monitors the SNP on behalf of the MOE. Further monitoring is carried out at the level of the seven education districts in Trinidad by the district school supervisors who are in regular contact with the schools. Schools provide information on the quality of the service received, to the MOE. Any issues to be addressed are forwarded to the NSDSL. Similar monitoring of the SFP in Tobago is carried out by the SNU with the Administrator of the DOE having the general responsibility for the SFP in Tobago.

QAOs of the NSDSL and staff of the SNU in Tobago monitor the daily operations and the facilities of caterers to ensure that caterers are in compliance with the terms of their contracts and in particular, that they provide the meals that have been directed on the menus from the NSDSL in Trinidad and the SNU in Tobago. They also visit schools to monitor the acceptance of meals by students. Efforts by the NSDSL to improve this acceptance and the levels of consumption of food items have already been described above.

In Trinidad, caterers must also abide by the rules and regulations outlined in the caterer's manual supplied by the NSDSL. Reports are written daily by the QAOs and reviewed weekly by zonal managers. Written evaluations of kitchens are provided each term. Details of the monitoring system are provided by NSDSL (2018). The NSDSL also monitors the listed suppliers for the caterers in the SNP. This monitoring provides the NSDSL with the assurance that the products and raw materials that caterers use for meals are of the highest food safety and sanitation standards (NSDSL, 2018). Recommendations are given to suppliers and caterers to remedy any defects or deficiencies. Failure to adhere or implement recommended corrective actions can result in the suspension of the caterer or the supplier.

The Public Health Department of the MOH is the regulatory body with respect to the safety of uncooked or cooked food offered for sale and therefore the NSDSL and the SNU work closely with this Department in their monitoring of the premises of caterers and suppliers. Joint visits are often undertaken and any corrective action recommended by the Public Health Department is monitored by the NSDSL and the SNU. The basic public health requirements for caterers and suppliers include the public health premises certificate and food badges for all staff.

As part of its monitoring procedures, meals prepared by the SNP and the SFP are sent for periodic, independent microbiological testing by approved laboratories. To assist in this process and as a precaution to allay any false claims, caterers are required to keep at least one sample box of each type of meal prepared each day, frozen for a period of at least 72 hours, for the purpose of (in most cases) random microbial testing.

Training of technical staff of the NSDSL, as well as caterers takes place on a regular basis in areas such as food safety and sanitation. The nature of the training for technical staff includes:

- ServSafe certification
- ISO 22 000 auditor course
- a food safety and food microbiology course.

Training for the caterers includes the following areas:

- food safety
- mastering cooking skills
- GROEN foodservice equipment
- management for caterers
- establishing quality assurance systems
- gas safety.

19.8. Annual net benefit analyses of the school feeding programmes in Trinidad and Tobago

Approach to the annual net benefit analysis

The annual net benefit analysis utilized information for the SNP from the NSDSL and information for the SFP from the Draft Estimates of Expenditure (THA, 2018). As well, the number of students receiving meals in Tobago had to be estimated from the available information. For both SFPs, since they were based on caterers supplying meals and the caterers are paid on a per meal basis, the percentage of the total payments to the caterers that is a direct transfer in terms of food to the beneficiaries of the SFP had to be estimated. This percentage is termed "the value of the food" percentage. In the case of the annual net benefit analysis for the SNP, "the value of the food" percentage initially was assumed to be 75 percent. For the SFP of Tobago the "value of the food" percentage was initially assumed to be 40 percent.

Two sets of simulation analyses were carried out. The first was determine the sensitivity of the benefit–cost ratio for the SNP and the SFP to the "value of the food" percentage. The second simulation determined the sensitivity of the benefit–cost ratio of the SFP of Tobago, to the number of students receiving meals in the SFP. These simulations involved keeping all other data for the analyses the same and:

- varying only the number of students in the programme (*ceteris paribus*) in the case of the SFP in Tobago, keeping the "value of food" percentage constant at 40 percent and calculating the benefit–cost ratio for each value of the number of students; and
- varying only the "value of the food" percentage for the SNP in Trinidad and the SFP in Tobago (*ceteris paribus*) keeping the number of beneficiary students in Tobago constant at 18 145 and then calculating the benefit–cost ratios for each value of this percentage for the two SFPs.

The annual net benefit analyses were undertaken for the year 2017.

Annual net benefit analysis for the SNP of Trinidad

The contributions of the four individual benefits of the SNP are presented in percentage form in Table 19.3. Here it is seen that the major contribution to programme total benefit is from value transfers (49.2 percent) and increased productivity (29.9 percent). The other major contributor to the programme total benefit is the benefit of healthier and longer lives of the beneficiary students (20.0 percent). Return on investment makes an insignificant contribution to the programme total benefit (0.9 percent).

Table 19.2 presents the operational costs of the SNP. Here it is seen that the major element of the operational cost (94.02 percent) is the payment to the caterers. As noted earlier, the caterers are then responsible for purchasing their food items, from which they prepare the meals and the cost of transporting the meals to the schools. In the initial analysis, it was assumed that the "value of the food" percentage (as the percentage of the total payments to the caterers, that was transferred to the beneficiaries as food) was 75 percent. Simulation analysis was then carried out, as described above, to vary this percentage, to gauge the sensitivity of the benefit–cost ratio to changes in this variable. The other major operational cost item was for the acquisition of "Eating and cooking utensils" (5.9 percent). Noteworthy also is the expenditure on the "microbial testing of meals".

As seen in Table 19.3, the administrative costs of the SNP project are 5.69 percent of the programme total cost. Total operational cost comprises 94.31 percent of the programme total cost.

Table 19.2: Operational costs of school nutrition programme of Trinidad

Operational item	Cost TTD	%
Payment to caterers	207 861 993	94.02%
Microbiological testing of meals	166 840	0.08%
Eating and cooking utensils	13 045 452	5.90%
Total Operational Cost	**221 074 285**	**100.00%**

Table 19.3 : Determination of the annual net benefit for the school nutrition programme of Trinidad

Programme element	Element manager	TTD	%
Total operational cost	Min. of Education	221 074 285	94.31
Administrative costs	Min. of Education	13 336 209	5.69
Paid to school by community	Schools	0	0.00
Paid to school by parents	Schools	0	0.00
Programme total cost		**234 410 494**	**100.00**
Benefit sources	**% of total benefits**	**Benefits**	
Value transfer	49.2%	163 165 130	
Return on investment	0.9%	2 961 707	
Increased productivity	29.9%	99 248 530	
Healthier and longer life	20.0%	66 312 962	
Programme total benefit	**100.0%**	**331 688 329**	
Annual net benefit		**97 277 835**	
Benefit–cost ratio	**1.41**		

In Table 19.3, the annual net benefit of the SNP was estimated at over TTD 97 million and the benefit–cost ratio was estimated as 1.41. It is noteworthy in Table 19.3, that no payments are made by parents or the community to support the SNP in Trinidad or indeed to support the SFP in Tobago.

Annual net benefit analysis for the SFP of Tobago

In this analysis, based on information given by caterers, the initial assumption was that the "value of the food" percentage was 40 percent. The lower percentage figure for Tobago was suggested because of the higher wage rates, transportation costs and smaller scale of operations. As noted also in the case of the SNP of Trinidad, the caterers are responsible for purchasing their food items from which they prepare the meals and the cost of transporting the meals to the schools. In the initial analysis, it was assumed that 40 percent of this payment to the caterers was used to purchase food items to prepare the meals. Simulation analysis was then carried out, as described above, to vary this percentage to gauge the sensitivity of the results to changes in this variable.

In the case of the SFP of Tobago, the contributions of the four individual benefits of the SFP are presented in percentage form in Table 19.4. Here it is seen that the major contribution to programme total benefit is from increased productivity (38.9 percent). The other major contributors to the programme total benefit are the benefits of value transfers (32.7 percent) and healthier and longer lives of the beneficiary students (26.0 percent). Return on investment makes an insignificant contribution to the programme total benefit (2.4 percent).

In Table 19.4, the annual net benefit of the SNP was estimated at over TTD 13 million and the benefit–cost ratio was estimated as 1.33. It is noteworthy in Table 19.4, that no payments are made by parents or the community to support the SFP in Tobago.

19.9. Overall assessment of the school feeding programmes in Trinidad and Tobago

The annual net benefit analyses carried out have demonstrated that both the SNP in Trinidad and the SFP in Tobago can justify their existence from a social welfare perspective with benefit–cost ratios of 1.33 in the case of the SFP in Tobago and 1.41 in the case of the SNP in Trinidad.

Based on the estimated number of beneficiaries (18 145 for Tobago and 86 714 for Trinidad), the programme in Tobago was more cost effective in 2017, at an average cost per student of TTD 2 216.89, compared to TTD 2 703.26 for Trinidad. One major contributor to the higher average cost in Trinidad was the much higher

Table 19.4: Determination of the annual net benefit for the school feeding programme of Tobago

Programme element	Element manager	TTD	%
Total operational cost	THA	39 857 805	99.09%
Administrative costs	THA	367 700	0.91%
Paid to school by community	Schools	0	0.00%
Paid to school by parents	Schools	0	0.00%
Programme total cost		**40 225 505**	**100.00%**
Benefit sources	**% of total benefits**	**Benefits**	
Value transfer	32.7%	17 464 092	
Return on investment	2.4%	1 271 783	
Increased productivity	38.9%	20 767 864	
Healthier and longer life	26.0%	13 876 060	
Programme total benefit	**100.0%**	**53 379 799**	
Annual net benefit		**13 154 294**	
Benefit–cost ratio	**1.33**		

administrative cost, which could be attributed to much more comprehensive monitoring and evaluation systems of the NSDSL in Trinidad.

The lower benefit–cost ratio obtained for Tobago's SFP (1.33) was obtained because it was assumed that the "value of the food" percentage was 40 percent. In the simulation exercise in Table 19.5, if this percentage was raised to 75 percent, as in the initial case of Trinidad, the benefit–cost ratio of the Tobago's SFP rises to 1.66, much higher than the equivalent figure for Trinidad. In general, therefore, the benefit–cost ratios of the state-funded SFPs in Trinidad and Tobago are very sensitive to the "value of the food" percentage.

The benefit–cost ratio of the SFP of Tobago is sensitive to the number of students who benefit from the programme, as seen in Table 19.5. The benefit–cost ratio increases with the increasing number of beneficiary students, holding all other factors fixed. This simulation analysis was conducted with the "value of the food" percentage held at 40 percent.

Despite the positive performances of the SNP and the SFP in Trinidad and Tobago, there are areas for their improvement. The first area is increasing the contribution of the SFPs to the reduction of overweight and obesity and the promotion of healthy eating lifestyles in Trinidad and Tobago. The second area is the sustainability of these two programmes, in view of the slower rates of economic growth in Trinidad and Tobago. Any reductions in the budgetary allocations to these programmes would jeopardize the viability of caterers, especially those in Trinidad, who depend on large scale operations to overcome their low percentage profit margins. Thus, the first specific recommendation in the next section focuses on ways to improve the operations and sustainability of the SFP and the SNP.

19.10. Specific recommendations

Improvement of the operations and sustainability of the school feeding programmes

The measures that have been adopted by the NSDSL to increase the percentage of the meals actually consumed by the students in the SNP have been noted above. However, efforts must continue to increase these actual meal consumption percentages, because of the negative perceptions engendered by food wastage. This is a complex problem because the caterers:

- have definite budget limits for each meal;
- have to maintain nutritional standards; and
- have to follow set meal plans.

Caterers easily identified the meals that are favored by the students and those that they can expect lower actual

Table 19.5: Simulation analyses for the "value of food" percentage for the school nutrition programme of Trinidad and the school feeding programme of Tobago and simulation analysis for the number of beneficiary students in the school feeding programme of Tobago

"Value of the food" %	Benefit–cost ratio Trinidad	Benefit–cost ratio Tobago	Number of beneficiary students Tobago	Benefit–cost ratio Tobago
40	1.12	1.33	16 000	1.22
60	1.29	1.52	17 000	1.27
75	1.41	1.66	18 145	1.33
80	1.46	1.70	19 000	1.37
85	1.50	1.75	20 000	1.42

meal consumption. Therefore, the NSDSL and the SNU in Tobago should continue their efforts in:

- improving the standard of meal preparation and presentation of caterers; and
- responding to the food preferences of students.

Caterers also suggested that there was the need to increase the awareness and education of both students and their parents on the various aspects of the state-funded SFPs and the conditions and constraints under which caterers operate, so that students could have a greater appreciation for the meals being served and reduce wastage.

Other recommendations to improve the operations of the SFP in Tobago are:

- There is the need to strengthen the SNU in Tobago to enhance its monitoring capabilities.
- There is the obvious need for greater collaboration and coordination between the SFP in Tobago and the SNP in Trinidad.

Promotion of the benefits to society of the state-funded school feeding programmes

There is the need for greater promotion of the benefits of the state-funded SFPs in Trinidad and Tobago, among the general population of the country. As stated above, the NSDL's publication, "Overview of the NSDSL" is an excellent promotional tool (NSDSL, 2018). The recommendation is that it should be given wide circulation among the population.

It has already been noted that there is little that has been published on any aspect of school feeding in Tobago. This situation should be immediately remedied and a similar promotional publication as the NSDSL's "Overview" should be prepared and published for the SFP in Tobago.

Promotion of food and nutrition education and school gardens

There is need to strengthen food and nutrition education in schools in Trinidad and Tobago. As argued in Chapter 4, school gardens are an excellent tool in this regard. School gardens and 4-H clubs should therefore be promoted in schools in Trinidad and Tobago. There should also be greater implementation of the Agricultural Science subject area in primary schools, with perhaps elements of this subject being included in the SEA examination, to emphasize the importance of local food and agriculture to healthy eating and to national and household food and nutrition security.

Bibliography

ACT Government. 2017. *Physical Education and Sport Policy* [online]. [Cited 29 October 2019]. https://www.education.act.gov.au/publications_and_policies/School-and-Corporate-Policies/school-activities/physical-education,-sport-and-outdoor-activities/physical-education-and-sport-policy

American Heart Association. 2018. *Added sugars* [online]. [Cited 29 October 2019]. https://www.heart.org/en/healthy-living/healthy-eating/eat-smart/sugar/added-sugars

Archie, M. 2016. *History of Tobago, the island of Tobago* [online]. [Cited 25 July 2019]. https://www.visittobago.gov.tt/ index.php/island-resources/resources-government-) contacts/history-of-tobago

Assessment Capacities Project (ACAPS). 2018. Dominica: the impact of Hurricane Maria. Disaster profile - January 2018. In: *ReliefWeb* [online]. [Cited 21 November 2019]. https://reliefweb.int/report/dominica/dominica-impact-hurricane-maria-disaster-profile-january-2018

Ayoya, M.A., Heidkamp, R., Ngnie-Teta, I., Pierre, J.M. & Stoltzfus, R.J. 2013. Child malnutrition in Haiti: progress despite disasters. *Global Health: Science and Practice*, 1(3): 389–396. https://doi.org/10.9745/GHSP-D-13-00069

Bahamasgeotourism. 2013. About the region. In: *Bahamasgeotourism* [online]. [Cited 26 November 2019]. http://www.bahamasgeotourism.com/about.php

Ballini, F., Betti, G., Carrette, S. & Neri, L. 2009. Poverty and inequality mapping in the Commonwealth of Dominica. *Estudios Economicos*, 1(2). (also available at https://www.researchgate.net/publication/28312670_Poverty_and_inequality_mapping_in_the_Commonwealth_of_Dominica).

Banks DIH Ltd. 2018. About us. In: *Banks DIH Ltd.* [online]. [Cited 20 October 2020]. https://www.banksdih.com/?q=about-us

Barefoot Services. 2017. The roads in Belize. In: *Barefoot Services* [online]. [Cited 29 November 2019]. https://barefootservicesbelize.com/the-roads-and-highways-in-belize/

Barnes. 2018. School lunch standards in Bahamian schools. Presentation presented at the Healthy Caribbean Coalition aBarnes. 2018. School lunch standards in Bahamian schools. Presentation presented at the Healthy Caribbean Coalition and the Heart and Stroke Foundation . Nassau. https://www.healthycaribbean.org/wp-content/uploads/2018/11/HCC-HSFB-BEYOND-CTA-NOVEMBER-20-2018-C-BARNES-TOWARDS-SCHOOL-LUNCH-POLICY.pdf

Bates, S. 2017. Closer monitoring of school vendors needed. *Guyana Times*, 6 March 2017. (also available at https://guyanatimesgy.com/closer-monitoring-of-school-vendors-needed/).

Beach, M. 2018. Bermuda healthy school policies Beyond. PowerPoint presented at the Healthy Caribbean Coalition and the Heart and Stroke Foundation of Barbados workshop "Beyond the Call to Action Event: Towards School Policies in Support of Childhood Obesity Prevention",. Barbados. [Cited 10 October 2020]. https://www.healthycaribbean.org/wp-content/uploads/2018/11/HCC-HSFB-BEYOND-CTA-NOVEMBER-20-2018-M-BEACHE-BERMUDA-SCHOOL-POLICIES.pdf

Belfort, F. 2018. Back to school: The PNCS intends to accompany school children with a hot meal. *Presslakay*, 31 August 2018. (also available at https://presslakay.net/rentree-scolaire-le-pncs-entend-accompagner-les-ecoliers-avec-un-plat-chaud/).

Belize Chamber of Commerce and Industry. 2021. Labor force. In: *Belize Chamber of Commerce & Industry* [online]. [Cited 12 April 2021]. https://www.belize.org/labor-force/

Besso, A. 2014. *Process evaluation of the school meals programme as part of the farm to fork project in St. Kitts*. McGill University. (also available at http://digitool.library.mcgill.ca/webclient/StreamGate?folder_id=0&dvs=1572869143454~730).

Blank, L. 2009. St. Lucia social safety net assessment. https://www.unicef.org/St__Lucia_SSNA_Report.pdf

Boger, R. & Perdikaris, S. 2019. After Irma,disaster capitalism threatens cultural heritage in Barbuda. In: *North American Congress on Latin America (NACLA)* [online]. [Cited 9 December 2019]. https://nacla.org/news/2019/02/12/after-irma-disaster-capitalism-threatens-cultural-heritage-barbuda

Breaking Belize News. 2015. Ebenezer Methodist Primary School receives donation from SMART. *Breaking Belize News*, 15 June 2015. (also available at https://www.breakingbelizenews.com/2015/06/15/

ebenezer-methodist-primary-school-receives-donation-smart/).

Buckmire-Joseph, G., Huggins-Langtan, A., Smith-Seifert, J. & Thomas, N. 2012. *School feeding programme in Trinidad and Tobago then and now* [online]. [Cited 5 October 2019]. https://www.curriculumhistory.org/Subjects_in_Trinidad_and_Tobagos_History_of_Education_files/Gail Buckmire-Joseph, Alicia Huggins-Langtan, Jacqueline Smith-Seifert, and Nisha Thomas.pdf

Bundy, D., Burbano, C., Grosh, M., Gelli, A., Jukes, M. & Drake, L. 2009. *Rethinking school feeding: social safety nets, child development, and the education sector*. Washington, D.C., World Bank. (also available at https://openknowledge.worldbank.org/bitstream/handle/10986/2634/48742.pdf?sequence=1&isAllowed=y).

Bureau de Nutrition et Développement (BND) (Office of Nutrition and Development). 2007. Programmes. In: *BND* [online]. [Cited 19 November 2019]. http://bndhaiti.org/programsf.html

Bureau of Statistics Guyana. 2017. Population & housing census: final 2012 census compendium 4. In: *Bureau of Statistics* [online]. [Cited 26 August 2019]. https://statisticsguyana.gov.gy/publications/#cen2012

Campbell, C. 2018. Aquaponics project: major boost for woburn methodist school feeding programme. *NOW Grenada*, 12 January 2018. (also available at https://www.nowgrenada.com/2018/01/aquaponics-project-major-boost-for-woburn-methodist-school-feeding-programme/).

CARE. 2015. Kore lavi: a new way to do food aid. In: *CARE* [online]. [Cited 8 October 2019]. https://www.care.org/wp-content/uploads/2020/05/Kore-Lavi-Brief.pdf

CARICOM. 2010. *CARICOM Regional food and nutrition security policy* [online]. [Cited 5 September 2020]. http://www.fao.org/fileadmin/templates/righttofood/documents/project_m/caricom/CARICOMRegionalFoodandNutritionSecurityPolicy-5october2010.pdf

CARICOM. 2011. *Regional food and nutrition security action plan* [online]. [Cited 1 November 2020]. http://www.fao.org/3/a-bs907e.pdf

CARICOM. 2016a. Who we are. In: *CARICOM* [online]. [Cited 29 October 2019]. https://caricom.org/ about-caricom/who-we-are

CARICOM. 2016b. Suriname. In: *CARICOM* [online]. [Cited 11 November 2019]. https://caricom.org/country_profiles/suriname/

CARICOM. 2016c. Haiti. In: *CARICOM* [online]. [Cited 19 November 2019]. https://caricom.org/country_profiles/haiti/

CARICOM. 2016. Barbados. In: *CARICOM* [online]. [Cited 27 November 2019]. https://caricom.org/country_profiles/barbados/

CARICOM. 2016. Trinidad and Tobago. In: *CARICOM* [online]. [Cited 25 November 2019]. https://caricom.org/country_profiles/trinidad-and-tobago/

CARICOM. 2020. Members states and associate members. In: *CARICOM* [online]. [Cited 25 March 2021]. https://caricom.org/member-states-and-associate-members/

Carter, G. 2013. Dairy dilemma. In: *NationNews* [online]. [Cited 5 January 2020]. https://www.nationnews.com/2013/08/28/dairy-dilemma/

CDB. 2014. Country strategy paper St. Vincent and the Grenadines 2014-2018. In: *CDB* [online]. [Cited 16 August 2019]. https://www.caribank.org/publications-and-resources/resource-library/country-strategies/country-strategy-paper-st-vincent-and-grenadines-2014-2018

Central Statistical Office Dominica. 2011. *2011 population and housing census: preliminary results* [online]. [Cited 5 June 2019]. https://stats.gov.dm/wp-content/uploads/2019/06/Population_and_Housing_Census_2011.pdf

Cesarone, J. 2019. Cost benefit analysis template. In: *Engineering Solutions On-Line* [online]. [Cited 31 October 2019]. http://engineeringsolutions.homestead.com/template_CBA.html

Channel5Belize.com. 2015. BEL donates generously to St. Mary's feeding programme. *Channel5Belize.com*, 26 November 2015. (also available at https://edition.channel5belize.com/archives/121685).

Chowbay, Y. 2019. Regional school gardening competition launched. *Guyana Chronicle*, 9 December 2019. (also available at https://

guyanachronicle.com/2019/12/09/regional-school-gardening-competition-launched/).

CIA. 2021a. Saint Kitts and Nevis. In: *CIA - The World Factbook* [online]. [Cited 5 January 2021]. https://www.cia.gov/the-world-factbook/countries/saint-kitts-and-nevis

CIA. 2021b. Suriname. In: *CIA - The World Factbook* [online]. [Cited 5 January 2021]. https://www.cia.gov/the-world-factbook/countries/suriname/

CIA. 2021. Antigua and Barbuda. In: *CIA The World Factbook* [online]. [Cited 30 March 2021]. https://www.cia.gov/the-world-factbook/countries/antigua-and-barbuda/

CIA. 2021. Bahamas, the. In: *CIA The World Factbook* [online]. [Cited 25 March 2021]. https://www.cia.gov/the-world-factbook/countries/bahamas-the/

CIA. 2021. Barbados. In: *CIA The World Factbook* [online]. [Cited 25 March 2021]. https://www.cia.gov/the-world-factbook/countries/barbados/

CIA. 2021. Belize. In: *CIA The World Factbook* [online]. [Cited 31 March 2021]. https://www.cia.gov/library/publications/the-world-factbook/geos/bh.html

CIA. 2021. Dominica. In: *CIA The World Factbook* [online]. [Cited 29 March 2021]. https://www.cia.gov/the-world-factbook/countries/dominica/

CIA. 2021. Grenada. In: *CIA The World Factbook* [online]. [Cited 25 March 2021]. https://www.cia.gov/the-world-factbook/countries/grenada/

CIA. 2021. Guyana. In: *CIA The World Factbook* [online]. [Cited 29 March 2021]. https://www.cia.gov/the-world-factbook/countries/guyana/

CIA. 2021. Haiti. In: *CIA The World Factbook* [online]. [Cited 26 March 2021]. https://www.cia.gov/the-world-factbook/countries/haiti/

CIA. 2021. Jamaica. In: *CIA The World Factbook* [online]. [Cited 25 March 2021]. https://www.cia.gov/the-world-factbook/countries/jamaica/

CIA. 2021. Saint Lucia. In: *CIA The World Factbook* [online]. [Cited 25 March 2021]. https://www.cia.gov/the-world-factbook/countries/saint-lucia/

CIA. 2021. Saint Vincent and the Grenadines. In: *CIA The World Factbook* [online]. [Cited 20 March 2021]. https://www.cia.gov/the-world-factbook/countries/saint-vincent-and-the-grenadines/

CIA. 2021. Trinidad and Tobago. In: *CIA The World Factbook* [online]. [Cited 18 March 2021]. https://www.cia.gov/the-world-factbook/countries/trinidad-and-tobago/

Commonwealth of Dominica. 2014. *Fourth medium-term growth and social protection strategy (GSPS) 2014 - 2018* [online]. [Cited 26 October 2019]. http://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/laws/8496.pdf

Crawford, M. 2018. Ministry conducts school meals feeding programme seminar and staff meeting. *My Vue News*, 9 April 2018. (also available at https://www.myvuenews.com/ministry-conducts-school-meals-feeding-programme-seminar-and-staff-meeting/).

Damon, N. 2018. Revised food based dietary guidelines launched. In: *Department of Public Information* [online]. [Cited 20 November 2019]. https://dpi.gov.gy/revised-food-based-dietary-guidelines-launched/

Drake, L., Woolnough, A., Burbano, C. & Bundy, D., eds. 2016. *Global school feeding sourcebook. Lessons from 14 countries*. London, UK, Imperial College Press. (also available at https://documents.wfp.org/stellent/groups/public/documents/communications/wfp284904.pdf).

Duquais, J.-M. 2018. From the field: an update on school gardens. In: *Hope for Haiti* [online]. [Cited 16 October 2020]. https://hopeforhaiti.com/from-the-field-an-update-on-school-gardens/

ECC. 2017. About us. In: *ECC* [online]. [Cited 2 January 2020]. https://ecc.gov.jm/about-us/

Edgell, H. 2016. Belize: where food is everywhere and yet. In: *HollyWorld* [online]. [Cited 9 December 2019]. https://hollyedgell.wordpress.com/2016/08/27/belize-where-food-is-everywhere-and-children-go-hungry/

Encyclopedia Brittanica. 2018. *Haiti in the 21st century* [online]. [Cited 19 November 2019]. https://www.britannica.com/place/Haiti/Haiti-in-the-21st-century

Environment America. 2018. *Wildlife over waste* [online]. [Cited 5 November 2019]. https://environmentamerica.org/feature/ame/wildlife-over-waste

EPT. 2016. *Projet éducation pour tous (Education for all project)* [online]. [Cited 19 November 2019]. http://www.ept-menfp.ht/

European Commission. 2020. *International partnerships - Belize* [online]. [Cited 16 October 2019]. https://ec.europa.eu/international-partnerships/where-we-work/belize_en

FAO. 2006. Dietary guidelines for St. Vincent and the Grenadines. In: *FAO Food-based dietary guidelines* [online]. [Cited 20 November 2019]. http://www.fao.org/nutrition/education/food-dietary-guidelines/regions/countries/saint-vincent-and-the-grenadines/en/

FAO. 2007. Dietary guidelines for Saint Lucia. In: *FAO Food-based dietary guidelines* [online]. [Cited 4 November 2019]. http://www.fao.org/nutrition/education/food-dietary-guidelines/regions/countries/saint-lucia/en/

FAO. 2007. Dominica food-based dietary guidelines. In: *FAO Food-based dietary guidelines* [online]. [Cited 6 December 2019]. http://www.fao.org/nutrition/education/food-based-dietary-guidelines/regions/countries/dominica/en/

FAO. 2009. *Guide to conducting a right to food assessment* [online]. [Cited 19 August 2019]. http://www.fao.org/3/i0550e/i0550e.pdf

FAO. 2013. FAO study profiles benefits of school feeding programmes linked to family farms. In: *FAO* [online]. [Cited 22 November 2019]. http://www.fao.org/news/story/en/item/195074/icode/

FAO. 2013. Food-based dietary guidelines - Antigua and Barbuda. In: *FAO Food-based dietary guidelines* [online]. [Cited 26 October 2019]. http://www.fao.org/nutrition/education/food-dietary-guidelines/regions/countries/antigua-and-barbuda/en/

FAO. 2015a. Strengthening school feeding programmes in the Caribbean. FAO sub-regional office for the caribbean Issue Brief #13. In: *FAO* [online]. [Cited 10 October 2019]. http://www.fao.org/3/a-i5288e.pdf

FAO. 2015b. Suriname. In: *FAO The Right to Food around the Globe* [online]. [Cited 25 November 2019]. http://www.fao.org/right-to-food-around-the-globe/countries/sur/en/

FAO. 2015. Antigua and Barbuda and FAO building sustainable food and nutrition security. In: *FAO* [online]. [Cited 20 October 2019]. http://www.fao.org/3/a-au739e.pdf

FAO. 2015. Belize. In: *FAO The Right to Food around the Globe.* [online]. [Cited 9 December 2019]. http://www.fao.org/right-to-food-around-the-globe/countries/blz/en

FAO. 2015. Country programming framework for St. Vincent and the Grenadines 2016 to 2019. In: *FAO* [online]. [Cited 26 October 2019]. http://centreforapplieddevelopmentstudies.com/wp-content/uploads/2019/03/Country-Programming-Framework-3.pdf

FAO. 2015. Dominica. In: *FAO The Right to Food around the Globe.* [online]. [Cited 6 December 2019]. http://www.fao.org/right-to-food-around-the-globe/countries/ dma/en/

FAO. 2015. FAO collaborate with Caribbean and Brazilian governments to strengthen school feeding programmes in the Caribbean. In: *FAO* [online]. [Cited 4 November 2019]. http://www.fao.org/americas/noticias/ver/en/c/395907/

FAO. 2015. Haiti. In: *FAO The Right to Food around the Globe* [online]. [Cited 19 November 2019]. http://www.fao.org/right-to-food-around-the-globe/countries/hti/en/

FAO. 2015. Saint Vincent and the Grenadines. In: *FAO The Right to Food around the Globe* [online]. [Cited 21 November 2019]. http://www.fao.org/right-to-food-around-the-globe/countries/vct/en/

FAO. 2015. Students and farmers benefit from school feeding programmes. In: *FAO* [online]. [Cited 12 December 2019]. http://www.fao.org/in-action/students-and-farmers-benefit-from-school-feeding-programmes/en/

FAO. 2016a. Sustainable Schools. In: *FAO Programme of Brazil-FAO International Cooperation* [online]. [Cited 16 August 2020]. http://www.fao.org/in-action/program-brazil-fao/projects/school-feeding/sustainable-schools/en/

FAO. 2016b. Strengthening school feeding programmes in the framework of the zero hunger initiative in Latin America and the Caribbean 2025. In: *FAO - Programme of Brazil-FAO International Cooperation* [online]. [Cited 6 December 2019]. http://www.fao.org/in-action/program-brazil-fao/projects/school-feeding/en/

FAO. 2016. Food and nutrition education for healthy diets. In: *FAO Nutrition* [online]. [Cited 10 November 2019]. http://www.fao.org/3/c0064e/c0064e.pdf

FAO. 2017. Saint Vincent and the Grenadines. In: *FAOSTAT* [online]. [Cited 21 November 2019]. http://www.fao.org/faostat/en/#country/191

FAO. 2017. Strengthening sector policies for better food security and nutrition results: policy guidance series. In: *FAO* [online]. [Cited 26 November 2019]. http://www.fao.org/3/a-i7214e.pdf

FAO. 2018. Barbados. In: *FAO The Right to Food around the Globe.* [online]. [Cited 27 November 2019]. http://www.fao.org/right-to-food-around-the-globe/countries/brb/en/

FAO. 2018. FAO country profiles: Jamaica. In: *FAO* [online]. [Cited 25 November 2019]. http://www.fao.org/countryprofiles/index/en/?iso3=JAM

FAO. 2018. Jamaica. In: *FAOSTAT* [online]. [Cited 25 November 2019]. http://www.fao.org/faostat/en/#country/109

FAO. 2018. Jamaica and FAO: Building resilience and sustainable food security and nutrition. In: *FAO* [online]. [Cited 26 October 2019]. http://www.fao.org/3/ax917e/AX917E.pdf

FAO. 2018. Nutrition education and consumer awareness - nutrition education in schools. In: *FAO* [online]. [Cited 26 October 2019]. http://www.fao.org/ag/humannutrition/nutritioneducation/49740/en/

FAO. 2018. Saint Lucia. In: *FAO The Right to Food around the Globe.* [online]. [Cited 4 November 2019]. http://www.fao.org/right-to-food-around-the-globe/countries/lca/en/

FAO. 2018. Suite of food security indicators. In: *FAOSTAT* [online]. [Cited 26 July 2019]. http://www.fao.org/faostat/en/#data/FS

FAO. 2019a. *School food and nutrition framework* [online]. [Cited 22 March 2021]. http://www.fao.org/3/ca4091en/ca4091en.pdf

FAO. 2019b. Latin America and the Caribbean. In: *FAO Food-based dietary guidelines* [online]. [Cited 29 October 2019]. http://www.fao.org/nutrition/education/food-dietary-guidelines/regions/latin-america-caribbean/en/

FAO. 2020. Scaling-up Mesoamerica hunger free. In: *FAO South-South Cooperation* [online]. [Cited 10 July 2020]. http://www.fao.org/3/a-i5657e.pdf

FAO. 2021. Countries. In: *FAO The Right to Food around the Globe.* [online]. [Cited 5 February 2021]. http://www.fao.org/right-to-food-around-the-globe/countries/en/

FAO, IFAD, UNICEF, WFP & WHO. 2018. *The state of food security and nutrition in the world 2018. Building climate resilience for food security and nutrition*. Rome, FAO. (also available at http://www.fao.org/3/I9553EN/i9553en.pdf).

FAO & Ministry of Health Guyana. 2018. Food based dietary guidelines for Guyana. In: *FAO Food-based dietary guidelines* [online]. [Cited 5 July 2019]. http://www.fao.org/3/I8055EN/i8055en.pdf

FAO & PAHO. 2017. *Panorama of food and nutrition security in Latin America and the Caribbean*. Santiago de Chile, FAO & PAHO. 116 pp. (also available at http://www.fao.org/3/a-i7914e.pdf).

FAO & The Government of St. Vincent and the Grenadines. 2011. Country programme framework (CPF) 2012 – 2015 for St. Vincent and the Grenadines agricultural sector. In: *FAO* [online]. [Cited 25 October 2019]. http://www.fao.org/3/a-bp528e.pdf

FAO & WFP. 2018. *Home-grown school feeding. Resource framework. Technical document.* Rome, FAO and WFP. 170 pp. (also available at https://docs.wfp.org/api/documents/WFP-0000074274/download/?_ga=2.5109428.627697265.1616724134-102702633.1564955497).

FAO & WFP. 2019. *Strengthening school feeding programmes: FAO and WFP joint work in Latin America and the Caribbean.* Panama City, FAO and WFP. 48 pp. (also available at http://www.fao.org/3/ca4444en/CA4444EN.pdf).

Food and Nutrition Security Platform. 2017. Grenada: school feeding programme. In: *Food and Nutrition Security Platform* [online]. [Cited 6 December 2019]. https://plataformacelac.org/en/programa/356

Food and Nutrition Security Platform. 2018. Antigua and Barbuda: national school meals programme. In: *Food and Nutrition Security* [online]. [Cited 26 November 2019]. https://plataformacelac.org/en/programa/5

Food and Nutrition Security Platform. 2018. Saint Vincent and the Grenadines: school feeding programme. In: *Food and Nutrition Security Platform* [online]. [Cited 4 November 2019]. https://plataformacelac.org/en/programa/341

Gaskell, J.M. 2017. Charlestown primary school garden. *St. Kitts and Nevis Observer*, 19 May 2017. (also available at https://www.thestkittsnevisobserver.com/charlestown-primary-school-garden/).

Gerald, A.-S. 2016. From field to table: follow the food in Haitian home-grown school meals in 10 Steps. In: *ReliefWeb* [online]. [Cited 19 November 2019]. https://reliefweb.int/report/haiti/field-table-follow-food-haitian-home-grown-school-meals-10-steps

Global Nutrition Report. 2020. Country nutrition profile Dominica. In: *Global Nutrition Profile* [online]. [Cited 31 March 2021]. https://globalnutritionreport.org/resources/nutrition-profiles/latin-america-and-caribbean/caribbean/dominica/

Gortmaker, S., Long, M. & Wang, Y.C. 2009. The negative impact of sugar-sweetened beverages on children's health. In: *Robert Wood Johnson Foundation Healthy Eating Research* [online]. [Cited 31 March 2021]. https://healthyeatingresearch.org/wp-content/uploads/2013/12/HER-SSB-Synthesis-091116_FINAL.pdf

Government of Antigua and Barbuda. 2017. *Antigua and Barbuda recurrent and development estimates* [online]. [Cited 15 September 2020]. https://ab.gov.ag/pdf/budget/2017_Antigua_Estimates.pdf

Government of Antigua and Barbuda. 2018. *Recurrent and development estimates - estimates of revenue and expenditure 2018* [online]. [Cited 23 October 2019]. https://ab.gov.ag/pdf/budget/2018_Antigua_Estimates.pdf

Government of Belize Press Office. 2016. Press release - Belize joins Mesoamerica without Hunger. In: *Facebook* [online]. [Cited 6 December 2019]. https://www.facebook.com/GOBPressOffice/posts/982468505121986/

Government of Dominica. undated. Operations and procedures manual for the school feeding programme in Dominica (unpublished)

Government of Dominica. undated. Procedures manual school feeding programme - Draft (unpublished)

Government of Grenada. 2005. Grenada's school feeding manual (unpublished)

Government of Grenada. 2013a. Grenada food and nutrition security policy 2013. In: *FAOLEX Database* [online]. [Cited 10 November 2019]. http://www.fao.org/faolex/results/details/en/c/LEX-FAOC144960

Government of Grenada. 2013b. Grenada food and nutrition security plan of action 2013-2018. In: *FAOLEX Datase* [online]. [Cited 10 November 2019]. http://www.fao.org/faolex/results/details/en/c/LEX-FAOC144961/

Government of Jamaica. 2012. *Government of Jamaica policy development programme as at 1 April 2012* [online]. [Cited 18 November 2019]. https://unstats.un.org/unsd/envaccounting/workshops/St_Lucia_2014/GOJ_Policy.pdf

Government of St. Kitts and Nevis. 2016. St. Kitts and Nevis food and nutrition security policy. In: *WHO* [online]. [Cited 12 November 2019]. https://extranet.who.int/nutrition/gina/en/node/23539

Government of St. Lucia. undated. School feeding programme. In: *Government of Saint Lucia* [online]. [Cited 20 September 2020]. http://www.govt.lc/services/school-feeding-programme#:~:text=The parent is required to,to remain on the programme.

Government of St. Lucia. 1999. *Saint Lucia education act, 1999 (No. 41 of 1999)* [online]. [Cited 2 October 2019]. http://www.unesco.org/education/edurights/media/docs/cc8deda54e8fc22b0ea96d3bc34760df95e34caf.pdf

Government of St. Lucia. 2015. *Education sector development plan: priorities and strategies 2015 - 2020, volume I* [online]. [Cited 16 October 2020]. https://planipolis.iiep.unesco.org/sites/planipolis/files/ressources/saint_lucia_education-sector-development-plan-2015-2020.pdf

Government of St. Lucia. 2016. Education statistical digest 2015. Past trends, present position and projections up to 2017/18. In: *Government of Saint Lucia* [online]. [Cited 8 October 2020]. http://www.govt.lc/publications/education-statistical-digest-2015

Government of St. Lucia. 2018. *Estimates of revenue and expenditure 2018-2019* [online]. [Cited 20 September 2020]. https://www.finance.gov.lc/resources/download/2078

Government of St. Vincent and the Grenadines. 2014. Food and nutrition security policy and action plan. Final report. In: *FAO* [online]. [Cited 15 October 2020]. http://extwprlegs1.fao.org/docs/pdf/stv172922.pdf

Government of the Commonwealth of Dominica. 2016. School Nutrition Policy Draft (unpublished)

Government of the Commonwealth of Dominica. 2017. *Post-disaster needs assessment hurricane Maraia September 18, 2017* [online]. [Cited 8 November 2019]. https://www.gfdrr.org/en/publication/post-disaster-needs-assessment-dominica

Government of the Republic of Trinidad and Tobago. 2018. School gardening and garden-based education can play a role in improving the nutritional behaviour of young gardeners. In: *Trinidad and Tobago Government News* [online]. [Cited 15 September 2020]. http://www.news.gov.tt/content/school-gardening-and-garden-based-education-can-play-role-improving-nutritional-behaviour#.X7rJ9WhKjIV

Grand Bahama Island. 2019. *About Grand Bahama Island* [online]. [Cited 26 November 2019]. http://www.grandbahamavacations.com/ about-the-island/

Grantham-Mcgregor, S., Change, S. & Walker, S. 1998. Evaluation of school feeding programmes: some Jamaican examples. *American Journal of Clinical Nutrition*, 67(4): 785–789. https://doi.org/10.1093/ajcn/67.4.785S

Gray-Donald, K., Webb, M., Patterson-Andrews, H. & Granderson, I. 2014. Caribbean health : healthy children, healthy nation; tackling the obesity problem. In: *International Development Research Centre* [online]. [Cited 20 November 2019]. https://www.idrc.ca/sites/default/files/sp/Documents EN/idrc-healthy-children-healthy-nation.pdf

Haiti Libre. 2018a. Haiti - education : France supports the school canteens of the Great South. *Haiti Libre*, 3 February 2018. (also available at https://www.haitilibre.com/en/news-23461-haiti-education-france-supports-the-school-canteens-of-the-great-south.html).

Haiti Libre. 2018b. Haiti - environment : let's grow the school garden. *Haiti Libre*, 22 August 2018. (also available at https://www.haitilibre.com/en/news-25314-haiti-environment-let-s-grow-the-school-garden.html).

Haiti Libre. 2019. Haiti - humanitarian : Taiwan will donate to Haiti more than 20,000 tonnes of rice. *Haiti Libre*, 17 December 2019. (also available at https://www.haitilibre.com/en/news-29539-haiti-humanitarian-taiwan-will-donate-to-haiti-more-than-20-000-tonnes-of-rice.html).

Halcrow Group Limited. 2003. *Country poverty assessment final report volume 1 of 2: main report* [online]. [Cited 6 June 2019]. https://www.dphu.org/uploads/attachements/books/books_3121_0.pdf

Hanley, Nick and Spash, C.L. 1994. *Cost-Benefit Analysis and the Environment*. Cheltenham, UK, Edward Elgar Publishing.

Harris, E., Pemberton, C. & DeSormeaux, A. 2010. The impact of the banana trade regime (BTR) and the banana war on Dominica's banana industry. *Tropical Agriculture*, 87(4). (also available at https://journals.sta.uwi.edu/ta/index.asp?action=viewPastAbstract&articleId=1051&issueId=156).

Harvard T.H. Chan School of Public Health. 2019. *Sugary drinks* [online]. [Cited 29 October 2019]. https://www.hsph.harvard.edu/nutritionsource/healthy-drinks/sugary-drinks/

Healthy Caribbean Coalition. 2017. *Preventing childhood obesity in the Caribbean – Civil society action plan 2017-2021* [online]. [Cited 5 February 2020]. https://www.healthycaribbean.org/preventing-childhood-obesity-caribbean-civil-society-action-plan-2017-2021/

Healthy Caribbean Coalition. 2019. Childhood obesity fact sheets. In: *Healthy Caribbean Coalition* [online]. [Cited 29 October 2019]. https://www.healthycaribbean.org/obesity-fact-sheets/

Healthy Caribbean Coalition. 2019. Preventing childhood obesity in the Caribbean Bahamas fact sheet. In: *Healthy Caribbean Coalition* [online]. [Cited 20 November 2019]. https://www.healthycaribbean.org/wp-content/uploads/2019/12/HCC-COP-Fact-Sheet-Bahamas-Dec-2019.pdf

Healthy Schools. 2007. *Physical activity booklet A* [online]. [Cited 21 August 2019]. https://www.london.gov.uk/what-we-do/health/healthy-schools-london/awards/sites/default/files/Physical Activity - Booklet A.pdf

Hector, D., Rangan, A., Gill, T., Louie, K.C.Y. & Flood, V.M. 2009. *Soft drinks, weight status & health* [online].

[Cited 8 January 2020]. https://ro.uow.edu.au/hbspapers/306/

Henry, F.J. 2016. Childhood obesity in the Caribbean: weighty challenges & opportunities. *Obesities and Control Therapies*, 3(1): 1–4. https://doi.org/http://dx.doi.org/10.15226/2374-8354/2/2/00122

Hill, A. 2018. What is bulgur wheat? Everything you need to know. In: *Healthline* [online]. [Cited 18 October 2020]. https://www.healthline.com/nutrition/bulgur-wheat

Husbands, H. 2013. The Growth and Development of the School Feeding Porgramme in Barbados. In: *Facebook* [online]. [Cited 27 November 2019]. https://www.facebook.com/SenatorHarryHusbandsDlpStJamesNorth/posts/the-growth-and-development-of-the-school-feeding-programme-in-barbadoslecture-de/544703032249355/

IMF. 2006. Grenada: interim poverty reduction strategy paper. In: *IMF* [online]. [Cited 1 October 2019]. https://www.imf.org/en/Publications/CR/Issues/2016/12/31/Grenada-Interim-Poverty-Reduction-Strategy-Paper-19493

IMF. 2017. Guyana : 2017 article IV consultation-press release; staff report; and statement by the executive director for Guyana. In: *IMF* [online]. [Cited 15 September 2019]. https://www.imf.org/en/Publications/CR/Issues/2017/06/28/Guyana-2017-Article-IV-Consultation-Press-Release-Staff-Report-and-Statement-by-the-45010

IMF. 2017. Sixth review under the extended credit facilty arrangement and financing assurances review - press release; and staff report. In: *IMF* [online]. [Cited 20 October 2019]. https://www.imf.org/en/Publications/CR/Issues/2017/05/23/Grenada-Sixth-review-Under-the-Extended-Credit-Facility-Arrangement-and-Financing-Assurances-44936

IMF. 2018. Jamaica : 2018 article IV consultation, third review under the stand-by arrangement and request for modification of performance criteria-press release and staff report. In: *IMF* [online]. [Cited 18 September 2019]. https://www.imf.org/en/Publications/CR/Issues/2018/04/16/Jamaica-2018-Article-IV-Consultation-Third-Review-Under-the-Stand-By-Arrangement-and-Request-45801

Inter-American Institute for Cooperation on Agriculture. 2015. Hunger and nutrition from belly-full to body-fuel. In: *Inter-American Institute for Cooperation on Agriculture* [online]. [Cited 26 July 2019]. http://repositorio.iica.int/bitstream/11324/2668/1/BVE17038746i.pdf

International Food Policy Research Institute. 2015. 2015 nutrition country profile - Dominica fact sheet. In: *International Food Policy Research Institute* [online]. [Cited 26 July 2019]. http://www.ifpri.org/publication/2015-nutrition-country-profile-dominica

International Institute of Rural Reconstruction (IIRR). 2018. *Leveraging nutrition outcomes in schools: a synthesis of school feeding, school gardening and nutrition education experiences*. Phillipines, International Institute of Rural Reconstruction (IIRR) and the International Development Research Centre (IDRC). (also available at https://idl-bnc-idrc.dspacedirect.org/bitstream/handle/10625/57228/IDL-57228.pdf?sequence=2&isAllowed=y).

International Organization for Standardization (ISO). 2018. ISO 4217 Currency Codes. In: *ISO* [online]. https://www.iso.org/iso-4217-currency-codes.html

Ismali, S., Borja-Vega, C., Demas, A. & Jarvis, E. 2012. Guyana's Hinterland community-based school feeding programme. No. 89276. Washington, D.C.133 pp. (also available at http://documents.worldbank.org/curated/en/690761468031534184/Guyanas-Hinterland-Community-Based-School-Feeding-Programme).

Jackson, L. 2020. School gardens bring joy to the agriculture ministry. *The Gleaner*, 11 March 2020. (also available at http://jamaica-gleaner.com/article/news/20200311/school-gardens-bring-joy-agriculture-ministry).

Jamaica 4-H Clubs. 2020. National school garden programme. In: *Jamaica 4-H Clubs* [online]. [Cited 26 November 2020]. https://jamaica4hclubs.com/school-gardening/

Jamaican Observer. 2016. More than 130,000 students to benefit from school feeding programme. *Jamaican Observer*, 3 September 2016. (also available at http://www.jamaicaobserver.com/news/More-than-130-000-students-to-benefit-from-school-feeding-programme).

Johnson, P.M. 2019. *A glossary of political economy terms* [online]. [Cited 15 July 2019]. http://webhome.auburn.edu/~johnspm/gloss/

Johnson, R.K., Appel, L.J., Brands, M., Howard, B. V., Lefevre, M., Lustig, R.H., Sacks, F., Steffen, L.M. & Wylie-Rosett, J. 2009. Dietary sugars intake and cardiovascular health. A scientific statement from the American heart association. *Circulation*, 120(11): 1011–1020. https://doi.org/10.1161/circulationaha.109.192627

Jordan, W.D. 2017. Budget speech 2017. In: *Ministry of Finance Guyana* [online]. [Cited 27 October 2019]. https://finance.gov.gy/budget/budget-speeches/

Joseph, C. 2015. LUCELEC gets school feeding programme at Vieux-Fort primary on its way. In: *LUCELEC St. Lucia Electricity Services Ltd.* [online]. [Cited 26 October 2019]. https://www.lucelec.com/content/lucelec-gets-school-feeding-programme-vieux-fort-primary-its-way

Kairi Consultants Limited. 2008. *Country poverty assessment: Genada, Carriacou and Petit Martinique volume 1 main report* [online]. [Cited 26 October 2019]. https://www.gov.gd/egov/docs/reports/Grenada_CPA_Vol_1_Main_Report_Submitted.pdf

Kairi Consultants Limited. 2008. St. Vincent and the Grenadines country poverty assessment 2007/2008: living conditions in a Caribbean small island developing state. In: *Planipolis* [online]. [Cited 22 October 2019]. https://planipolis.iiep.unesco.org/en/2008/st-vincent-and-grenadines-country-poverty-assessment-20072008-living-conditions-caribbean-0

Kairi Consultants Limited. 2009. *Country poverty assessment - Dominica: volume 1 - main report* [online]. [Cited 26 October 2019]. https://prais.unccd.int/sites/default/files/2018-08/Dominica CPA 2009 Main Report Final.pdf

Krebs, N.F. & Jacobson, M.S. 2003. Prevention of pediatric overweight and obesity. *Pediatrics*, 112(2): 424–430. https://doi.org/https://doi.org/10.1542/peds.112.2.424

Linton, L. 2014. Gov't developing policy to regulate vending at schools. *Jamaica Information Service*, 2 May 2014. (also available at https://jis.gov.jm/govt-developing-policy-regulate-vending-schools/).

Mallonee, N., Streubel, J., Mersilus, M. & Heymsfield, G. 2015. The nutrition-sensitive potential of agricultural programmes in the context of school feeding: lessons from Haiti. In: *Nutrition Exchange* [online]. [Cited 19 November 2019]. https://www.ennonline.net/nex/6/nutritionsensitiveprogrammes

Marshall, W.K. 2021. Barbados. In: *Brittanica* [online]. [Cited 15 March 2021]. https://www.britannica.com/place/Barbados

McIntosh, D. 2014. 300,000 students to benefit from school feeding project. In: *Jamaica Information Service* [online]. [Cited 25 November 2019]. https://jis.gov.jm/300000-students-benefit-school-feeding-project/

MEDC. 2014. *Suriname: education for all 2015 national review*. UNESCO. 93 pp. (also available at https://unesdoc.unesco.org/ark:/48223/pf0000230019?posInSet=1&queryId=f7c5c69b-9fd3-4c9d-abdf-d1f946b6db5c).

Menke, J.K. 2019. Suriname. In: *Encyclopedia Brittanica* [online]. [Cited 11 November 2019]. https://www.britannica.com/place/Suriname

Mikkelsen, B. 2013. Can healthy eating at school be considered a human right. *The ethics of consumption*, pp. 412–416. Wageningen Academic Publishers.

Minimum-Wage.org. 2018. Saint Kitts and Nevis minimum wage, labor law, and employment data sheet. In: *Minimum-Wage.org* [online]. [Cited 12 November 2019]. https://www.minimum-wage.org/international/saint-kitts-and-nevis

Minimum-Wage.org. 2018. Saint Lucia minimum wage, labor law, and employment data sheet. In: *Minimum-Wage.org* [online]. [Cited 12 November 2019]. https://www.minimum-wage.org/international/saint-lucia

Ministère de L'éducation Nationale et de La Formation Professionnelle (MENFP) (Ministry of National Education and Vocational Training Haiti). 2016. Programme national de cantine scolaire (PNCS) (National school feeding policy and strategy). In: *UNESCO* [online]. [Cited 5 January 2020]. https://hivhealthclearinghouse.unesco.org/library/documents/politique-et-strategie-nationales-dalimentation-scolaire-psnas

Ministerie Van Onderwijs Werenschappen En Cultuur (Ministry of Education Science and Culture). 2015. *Evaluatierapport project naschoolse*

opvang en begeleiding (Evaluation report project after-school care and guidance) [online]. [Cited 8 February 2020]. https://parbode.com/download-het-evaluatierapport-project-naschoolse-opvang-en-begeleiding/

Ministry of Agriculture and Fisheries Jamaica. 2015. Ministry paper 2015. Interventions in the school feeding programme. In: *House of Parliament* [online]. [Cited 15 October 2019]. https://japarliament.gov.jm/index.php/publications/ministry-paper-new/2015-ministry-paper/1467-2015-ministry-paper-81-interventions-in-the-school-feeding-programme

Ministry of Agriculture and Fisheries Jamaica. 2019. Jamaica 4-h clubs. In: *Ministry of Agriculture and Fisheries* [online]. [Cited 26 November 2019]. https://moa.gov.jm/content/jamaica-4-h-clubs

Ministry of Agriculture and Fisheries & Ministry of Health. 2013. Food and nutrition security policy. In: *WHO Global database on the Implementation of Nutrition Action (GINA)* [online]. [Cited 22 October 2019]. http://extwprlegs1.fao.org/docs/pdf/jam148770.pdf

Ministry of Agriculture Belize. 2017. *The national food and nutrition security commission* [online]. [Cited 6 December 2019]. https://www.agriculture.gov.bz/the-national-food-and-nutrition-security-commission/

Ministry of Agriculture Guyana. 2011. *Food and nutrition security strategy for Guyana* [online]. [Cited 21 October 2019]. http://extwprlegs1.fao.org/docs/pdf/guy166205.pdf

Ministry of Education and National Reconciliation. 2020. History. In: *Ministry of Education and National Reconciliation* [online]. [Cited 5 November 2020]. http://education.gov.vc/education/index.php/sfp-history

Ministry of Education Guyana. 2013. Health and family life education curriculum guides. In: *UNESCO* [online]. [Cited 5 September 2020]. https://hivhealthclearinghouse.unesco.org/library/documents/health-and-family-life-education-curriculum-guides

Ministry of Education Guyana. 2014. National school feeding programme. In: *Ministry of Education Guyana* [online]. [Cited 12 April 2021]. https://www.education.gov.gy/web/index.php/about-moe/departments/item/855-national-school-feeding-programme

Ministry of Education Guyana. 2015. Guyana Education Sector Plan 2014-2018. In: *Global Partnership for Education* [online]. [Cited 21 October 2019]. https://www.globalpartnership.org/content/education-sector-plan-guyana

Ministry of Education Guyana. 2016. Operational guidelines for the community-based school feeding programme of the ministry of education (unpublished)

Ministry of Education Guyana. 2017. Guyana education sector improvement project - indigenous peoples plan (English). In: *World Bank* [online]. [Cited 2 October 2019]. http://documents.worldbank.org/curated/en/598821486463998272/Guyana-Education-Sector-Improvement-Project-indigenous-peoples-plan

Ministry of Education Jamaica. 2012. National education strategic plan: 2011 - 2020. In: *Planipolis* [online]. [Cited 26 October 2019]. http://planipolis.iiep.unesco.org/en/2012/national-education-strategic-plan-2011-2020-5530

Ministry of Education Saint Vincent and the Grenadines. 2014. Saint Vincent and the Grenadines education for all 2015 review. In: *UNESCO* [online]. [Cited 6 July 2019]. https://unesdoc.unesco.org/ark:/48223/pf0000232118

Ministry of Education Science Technology and Innovation. 2017. *Public sector reform: making Barbados work better* [online]. [Cited 29 October 2019]. https://static1.squarespace.com/static/5462370ae4b016683bde92a1/t/58da581a5016e1b24939d0b2/1490704411073/Manager+School+Meals+Department.pdf

Ministry of Education St. Kitts and Nevis. 2009. White paper on education development and policy 2009-201. Raising the standard, maximizing resources, aligning with best practices. Promoting success for all. In: *UNESCO* [online]. [Cited 17 October 2020]. http://planipolis.iiep.unesco.org/en/2009/saint-christopher-and-nevis-white-paper-education-development-and-policy-2009-2019-raising

Ministry of Education St. Kitts and Nevis. 2017. 2017/2021 Education sector plan education for all: embracing change, securing the future. In: *UNESCO*

[online]. [Cited 26 October 2019]. http://planipolis.iiep.unesco.org/sites/planipolis/files/ressources/st_kitts_education_sector_plan_2017-2021_0.pdf

Ministry of Education St. Kitts and Nevis. 2018. St. Kitts school feeding programme. In: *Food and Nutrition Security Platform* [online]. [Cited 31 October 2019]. https://plataformacelac.org/en/programa/939

Ministry of Education St. Kitts and Nevis. 2020. St. Kitts school feeding programme. In: *Ministry of Education St. Kitts and Nevis* [online]. [Cited 26 November 2020]. http://54.208.88.67/st-kitts-school-feeding-programme/

Ministry of Education Technological and Vocational Training. 2015. School meals. In: *Ministry of Education Technological and Vocational Training* [online]. [Cited 26 November 2019]. https://mes.gov.bb/Departments/School-Meals/

Ministry of Education Technological and Vocational Training. 2019. Tender – supply of food commodities for school meals programme. In: *Barbados Government Information Service* [online]. [Cited 26 October 2019]. https://gisbarbados.gov.bb/download/tender-supply-of-food-commodities-for-school-meals-programme/

Ministry of Education Trinidad and Tobago. 2006. Primary health and family life education (H.F.L.E.) curriculum. In: *UNESCO* [online]. [Cited 12 October 2020]. https://hivhealthclearinghouse.unesco.org/library/documents/primary-health-and-family-life-education-hfle-curriculum

Ministry of Education Trinidad and Tobago. 2009. Secondary school curriculum: forms 1-3: health and family life education. In: *UNESCO* [online]. [Cited 15 October 2020]. https://hivhealthclearinghouse.unesco.org/library/documents/secondary-school-curriculum-forms-1-3-health-and-family-life-education

Ministry of Education Trinidad and Tobago. 2013. Curriculum guides agricultural science infants 1 - standard 5. In: *Ministry of Education Trinidad and Tobago* [online]. [Cited 23 October 2020]. https://www.moe.gov.tt/curriculum-guides/

Ministry of Education Youth Sports and Culture Belize. 2017. Belize 2016-2017 education quick facts. In: *Ministry of Education, Culture, Science and Technology* [online]. [Cited 26 October 2019]. https://www.moe.gov.bz/resources/education-statistics/#66-education-quick-facts

Ministry of Education Youth Sports and Culture Belize. 2018. Belize 2017-2018 education quick facts. In: *Ministry of Education, Culture, Science and Technology* [online]. [Cited 26 October 2019]. http://www.moe.gov.bz/resources/education-statistics/#

Ministry of Finance and Investment Dominica. 2014. Economic and social review for the fiscal year 2013 - 2014. In: *Ministry of Finance and Investment* [online]. [Cited 5 November 2019]. http://finance.gov.dm/national-development-strategies/economic-and-social-review/file/19-economic-social-review-2013-2014

Ministry of Finance and Investment Dominica. 2015. Economic and social review for fiscal year 2014 - 2015. In: *Ministry of Finance and Investment* [online]. [Cited 5 November 2019]. http://finance.gov.dm/national-development-strategies/economic-and-social-review/file/23-economic-and-social-review-for-fiscal-year-2014-2015

Ministry of Finance and Investment Dominica. 2017. Economic and social review for fiscal year 2016 - 2017. In: *Ministry of Finance and Investment* [online]. [Cited 5 November 2019]. http://finance.gov.dm/national-development-strategies/economic-and-social-review/file/26-economic-and-social-review-for-fiscal-year-2016-2017

Ministry of Finance and the Public Service Jamaica. 2017. Estimates of expenditure 2017/2018 for the financial year ending 31st March 2018. In: *Ministry of Finance and the Public Service Jamaica* [online]. [Cited 20 October 2019]. https://mof.gov.jm/downloads/budgets/eoe/Estimates_of_Expenditure_2017-2018.pdf

Ministry of Finance Guyana. 2011. Guyana poverty reduction strategy Paper 2011-2015. In: *Food and Nutrition Security Platform* [online]. [Cited 26 October 2019]. https://plataformacelac.org/en/politica/96

Ministry of Finance St. Kitts and Nevis. 2016a. St. Christopher and Nevis estimates for the year 2017 volume II. Ministry expenditure plans. In: *Ministry of Finance St. Kitts and Nevis* [online]. [Cited 10 October 2019]. https://www.mof.gov.kn/wp-content/uploads/2016/02/Estimates-2017-Volume-II.pdf

Ministry of Finance St. Kitts and Nevis. 2016b. St. Christopher and Nevis Estimates for the year 2017 Volume I. Ministry expenditure plans. In: *Ministry of Finance St. Kitts and Nevis* [online]. [Cited 23 October 2019]. https://www.mof.gov.kn/wp-content/uploads/2016/02/Estimates-2017-Volume-I.pdf

Ministry of Finance St. Vincent and the Grenadines. 2018. *St. Vincent and the Grenadines 2018 budget address continuity and change: job creation, resilience, sustainable development and new opportunities in a rapidly changing global environment* [online]. [Cited 6 July 2019]. http://finance.gov.vc/finance/images/PDF/budgetaddress/2018-budget-address.pdf

Ministry of Health and Social Development & Ministry of Education. 2008. National school nutrition policy. In: *WHO* [online]. [Cited 26 October 2019]. https://extranet.who.int/nutrition/gina/sites/default/filesstore/SEY2008 - School Nutrition Policy.pdf

Ministry of Health and the Environment St. Vincent and the Grenadines. 2007. Strategic plan for health 2007-2012 St. Vincent and the Grenadines. In: *Health Research Wealth* [online]. [Cited 5 November 2019]. https://healthresearchweb.org/?action=download&file=National_Health_Policies-St_Vincent_Grenadines_Strategic_Plan_2007-2012.pdf

Ministry of Health Guyana. 2013. Guyana strategic plan for the integrated prevention and control of chronic non-communicable diseases and their risk 2013-2020. In: *WHO* [online]. https://www.mindbank.info/item/5339

Ministry of Health Jamaica. 2013. Health promoting school survey 2011 - final report. In: *Ministry of Health & Wellness* [online]. [Cited 20 October 2019]. https://www.moh.gov.jm/data/health-promoting-school-survey-2011-report/

Ministry of Health Jamaica. 2015. Food based dietary guidelines for Jamaica 2015. In: *FAO* [online]. [Cited 20 October 2019]. http://www.fao.org/nutrition/education/food-dietary-guidelines/regions/countries/jamaica/en/

Ministry of Health The Bahamas. 2011. *Compulsory standards for healthy lunch meals in Bahamian schools* [online]. [Cited 14 October 2020]. https://www.healthycaribbean.org/cop/documents/GBL-SCHOOL-LUNCH-Final-Document.pdf

Ministry of Health Trinidad and Tobago. 2014. Interim nutrition standard for food offered for sale in schools in Trinidad and Tobago (unpublished)

Ministry of Health Trinidad and Tobago. 2017. National strategic plan for the prevention and control of non communicable diseases: Trinidad and Tobago 2017 - 2021. In: *Ministry of Health Trinidad and Tobago* [online]. [Cited 26 July 2019]. https://health.gov.tt/services/ncd

Ministry of Labour and Social Security Jamaica. 2018. Public assistance division (overview). In: *Ministry of Labour and Social Security Jamaica* [online]. [Cited 25 November 2019]. https://www.mlss.gov.jm/departments/public-assistance-division-overview/?artid=57

Ministry of Planning and Development. 2017. Public sector investment programme Tobago 2018. "Changing the paradigm: putting the economy on a sustainable path". In: *FAOLEX Database* [online]. [Cited 5 October 2019]. http://extwprlegs1.fao.org/docs/pdf/tri183502.pdf

Ministry of the Environment The Bahamas. undated. Minimum standards for food vendors (unpublished)

MoEYI. 2015. Draft national school feeding policy (unpublished)

MoEYI. 2016. The school-feeding programme (unpublished)

MoEYI. 2017. Modernization of the school feeding programme: operations and procedures manual for the school-feeding programme (unpublished)

Montana Department of Public Health and Human Services. 2017. Standardized Recipes. In: *Montana's Official State Website* [online]. https://dphhs.mt.gov/Portals/85/ecfsd/documents/ChildCare/cacfp/StandardizedRecipes.pdf

Moody, D. 2017. Food security programmes implemented in southern schools. In: *Channel5Belize.com* [online]. [Cited 6 December 2019]. https://edition.channel5belize.com/archives/156151

National Farm to School Network. 2014. About national farm to school network. In: *National Farm to School Network* [online]. [Cited 31 October 2019]. http://www.farmtoschool.org/about

Newman, P., ed. 1998. The Kaldor-Hicks compensation. *The New Palgrave Dictionary of Economics and the Law*, p. Palgrace Macmillan.

Niles, M. 2019. 62 vendors receive food handlers' certification. *Guyana Chronicle*, 12 September 2019. (also available at https://guyanachronicle.com/2019/09/12/62-vendors-receive-food-handlers-certification/?fbclid=IwAR2-RQfR3AzZksRWoAIwohSkFoxnVC5e1RB_Rrdavzbi9e0MdA2KXEzKxV4).

NOW Grenada. 2015. Zero hunger challenge initiative. *NOW Grenada*, 19 April 2015. (also available at https://www.nowgrenada.com/2015/04/zero-hunger-challenge-initiative/).

NPL. 2014. Nutrition products limited annual report 2013- 2014. In: *NPL* [online]. [Cited 26 October 2019]. https://npl.gov.jm/ publications/

NPL. 2015. Nutrition products limited annual report 2014/2015. In: *NPL* [online]. [Cited 26 October 2019]. https://npl.gov.jm/ publications/

NPL. 2016. Nutrition products limited annual report 2015/2016. In: *NPL* [online]. [Cited 26 October 2019]. https://npl.gov.jm/ publications/

NPL. 2017. Nutrition products limited annual report 2016-2017. In: *NPL* [online]. [Cited 26 October 2019]. https://npl.gov.jm/ publications/

NSDSL. 2018. Overview of the NSDSL (unpublished)

NSMP. 2016. National School Meals Programme. In: *Facebook* [online]. [Cited 9 April 2021]. https://www.facebook.com/AntiguaNSMP

NSMP. 2020. Support local. In: *Facebook* [online]. [Cited 5 July 2020]. https://www.facebook.com/AntiguaNSMP/photos/a.1922207368028731/2517196028529859

Nunez, D. 2016. Belize joins Mesoamerica without hunger school feeding programme. In: *Ambergris Today Online* [online]. [Cited 6 December 2019]. https://www.ambergristoday.com/content/stories/2016/04/06/belize-joins-mesoamerica-without-hunger-school-feeding-program

OECS. 2017. *OECS education statistical digest 2016: statistics on education for the academic year 2014-15* [online]. [Cited 5 July 2019]. https://www.oecs.org/en/our-work/knowledge/library/education/oecs-education-statistical-digest

OECS Commission & UNICEF Eastern Caribbean Area. 2017. Final report child poverty in the eastern Caribbean area. In: *UNICEF Latin America and the Caribbean* [online]. [Cited 26 July 2019]. https://www.unicef.org/easterncaribbean/media/1176/file/child-poverty-in-the-eastern-caribbean-area-2017.pdf

Office of the United Nations High Commissioner for Human Rights (OHCHR). undated. Convention on the Rights of the Child. In: *OOHCHR* [online]. [Cited 29 October 2019]. https://www.ohchr.org/EN/ProfessionalInterest/Pages/CRC.aspx

Organisation for Economic Co-operation and Development (OECD). 2019. Education database: enrolment by age. In: *OECDiLibrary* [online]. [Cited 5 December 2019]. https://doi.org/10.1787/71c07338-en

Ottley, S. 2014. Report of the auditor general of the Republic of Trinidad and Tobago on a special audit of the school nutrition programme managed by the national schools dietary services limited. In: *Government of the Republic of Trinidad and Tobago* [online]. [Cited 26 October 2019]. http://www.auditorgeneral.gov.tt/sites/default/files/FINAL SNP - Special Audit Report.pdf

PAHO & WHO. 2014. *Plan of action for the prevention of obesity in children and adolescents* [online]. [Cited 5 January 2020]. https://www.paho.org/hq/dmdocuments/2015/Obesity-Plan-Of-Action-Child-Eng-2015.pdf

PAHO & WHO. 2016. Guyana country cooperation strategy 2016-2020. In: *PAHO* [online]. [Cited 25 October 2019]. https://apps.who.int/iris/bitstream/handle/10665/258607/ccs-guy-2016-2020-en.pdf;jsessionid=1DE7034C54290B1BEA3FEB8FC56FC4B3?sequence=1

Paris-Lambert, R. 2003. A local solution to child malnutrition: an assessment of school feeding programmes in the Toledo District, Belize. https://dokumen.tips/documents/a-local-solution-to-child-malnutrition-cornell-university-a-local-solution.html

Parliament of the Republic of Trinidad and Tobago. 2012. *Fourth report of the joint select committee on ministries, statutory authorities and state enterprises on the administration and methods of functioning of the national schools dietary services limited* [online].

[Cited 5 July 2019]. http://www.ttparliament.org/reports/P10-S2-J-20120605-JSC1-R4.pdf

Partners in Agriculture. 2016. School garden programmes: feeding the most needy and vulnerable. In: *Partners in Agriculture* [online]. [Cited 19 September 2020]. https://partnersinag.org/school-garden-programs-feeding-needy-vulnerable/

Partners in Agriculture. 2018. Growing school gardens. In: *Partners in Agriculture* [online]. [Cited 20 September 2020]. https://partnersinag.org/growing-school-gardens/

Paterson, R. 2019. "Disappointed with school feeding programme." *The Grenada Informer*, 4 April 2019. (also available at https://www.thegrenadainformer.com/carriacou/item/5153-disappointed-with-school-feeding-program).

St. Paul's Primary School. 2014. St. Paul's primary school. In: *Facebook* [online]. [Cited 17 October 2020]. https://www.facebook.com/StPauls-Primary-School-567175179970045/

PCD. 2011. School feding monitoring and evaluation toolkit. In: *Socialprotection.org* [online]. [Cited 29 October 2019]. https://socialprotection.org/discover/publications/school-feeding-monitoring-and-evaluation-toolkit

Pemberton, C., Harris-Charles, E. & Patterson-Andrews, H. 2010. Cultural bias in contingent valuation of copper mining in the Commonwealth of Dominica. *Ecological Economics*, 70(1): 19–23. (also available at https://doi.org/10.1016/j.ecolecon.2010.03.014).

Pemberton, R., McColling, D., Matthews, G. & Toussaint, M. 2018. *Historical dictionary of Trinidad and Tobago*. New edition. Lanham, Maryland, Rowman & Littlefield Publishers.

Planning Institute of Jamaica. 2009. Vision 2030 Jamaica national development plan. Education draft sector plan - final draft. In: *Planipolis* [online]. [Cited 26 October 2019]. http://planipolis.iiep.unesco.org/en/2009/vision-2030-jamaica-national-development-plan-education-draft-sector-plan-plan-final-draft-5183

Planning Institute of Jamaica. 2014. Jamaica social protection strategy. In: *Planning Institute of Jamaica* [online]. [Cited 22 October 2019]. https://www.pioj.gov.jm/product/jamaica-social-protection-strategy/#:~:text=The Strategy is developed in,causes%2C proximate causes and symptoms.

Planning Institute of Jamaica. 2015. Vision 2030 Jamaica medium term socio-economic policy framework 2015-2018. Achieving inclusive growth and sustainable development. In: *Planning Institute of Jamaica* [online]. [Cited 20 November 2019]. http://www.vision2030.gov.jm/Medium-Term-Socio-Economic-Policy-Framework

Planning Institute of Jamaica. 2017. National policy on poverty and national poverty reduction programme. In: *Planning Institute of Jamaica* [online]. [Cited 10 November 2019]. https://www.pioj.gov.jm/product/national-policy-on-poverty-and-national-poverty-reduction-programme/

Plenty Belize. 2008. *Toledo District school feeding programme (SFP)* [online]. [Cited 6 December 2019]. https://plentybelize.wordpress.com/current-projects/toledo-district-school-feeding-program-sfp/

Plenty International. 2016. *GATE school gardens programme* [online]. [Cited 28 November 2019]. https://plenty.org/programs/plenty-belize/ school-gardens/

Rose, S. 2018. Analysis of Jamaica's sustainable school feeding project (unpublished)

Rotary Club of Belize. 2008. *Primary school feeding programme* [online]. [Cited 6 December 2019]. http://www.rotarybelize.org/feeding-program/

Ruete, M. 2015. Investment in agriculture Policy brief #3. Financing for agriculture: how to boost opportunities in developing countries. In: *International Institute for Sustainable Development* [online]. [Cited 26 October 2019]. https://www.iisd.org/system/files/publications/financing-agriculture-boost-opportunities-devloping-countries.pdf

Simeon, D.T. 1998. School feeding in Jamaica: a review of its evaluation. *The American Journal of Clinical nutrition.*, 67(4): 790–794. https://doi.org/10.1093/ajcn/67.4.790S

Slow Food Barbados. 2020. *Educational gardens* [online]. [Cited 5 October 2020]. https://www.slowfoodbarbados.org/educational-gardens

St. Lucia News Online. 2015. Richfond combined benefits from First Citizens sponsored greenhouse. *St. Lucia News Online*, 13 March 2015. (also available

at https://www.stlucianewsonline.com/richfond-combined-benefits-from-first-citizens-sponsored-greenhouse/).

Steele, E.M., Baraldi, L.G., Louzada, M.L. da C., Moubarac, J.-C., Mozaffarian, D. & Monteiro, C.A. 2016. Ultra-processed foods and added sugars in the US diet: evidence from a nationally representative cross-sectional study. *BMJ Open*. https://doi.org/10.1136/bmjopen-2015-009892

SUWAMA. 2018. Project: organic school gardens (phase 1). Duration February 2017 - May 2018. In: *SUWAMA* [online]. [Cited 6 July 2020]. https://suwama.org/en/portfolio-item/project-organische-schooltuin-project-fase-1/

Swensson, L.F.J. 2015. Institutional procurement of food from smallholder farmers - The case of Brazil. In: *FAO* [online]. [Cited 29 October 2019]. http://www.fao.org/3/bc569e/bc569e.pdf

Tauranac, M. 2018. Five models for local school food procurement. In: *The Good Food Purchasing Programme* [online]. [Cited 29 October 2019]. https://goodfoodcities.org/five-models-for-local-school-food-procurement/

THA. 2018. *Tobago house of assembly draft estimates - details of recurrent expenditure 2019* [online]. [Cited 29 October 2019]. http://fte.tha.gov.tt/wp-content/uploads/2018/06/Draft-Estimates-of-Recurrent-Expenditure-2019.pdf

The Commonwealth. 2019. *Dominica* [online]. [Cited 15 December 2019]. https://thecommonwealth.org/our-member-countries/dominica

The Commonwealth. 2019. Trinidad and Tobago. In: *The Commonwealth* [online]. [Cited 25 November 2019]. https://thecommonwealth.org/our-member-countries/trinidad-and-tobago

The Commonwealth. 2020a. *Bahamas, The : Society* [online]. [Cited 26 November 2019]. https://thecommonwealth.org/our-member-countries/bahamas/society

The Commonwealth. 2020b. *Belize* [online]. [Cited 27 November 2019]. https://thecommonwealth.org/our-member-countries/belize

The Commonwealth. 2020c. *Grenada* [online]. [Cited 15 December 2019]. https://thecommonwealth.org/our-member-countries/grenada

The Commonwealth. 2021. Antigua and Barbuda. In: *The Commonwealth* [online]. [Cited 5 March 2021]. https://thecommonwealth.org/our-member-countries/antigua-and-barbuda

The Gleaner. 2011. Healthy meals in school for children. *The Gleaner*, 10 February 2011. (also available at http://jamaica-gleaner.com/gleaner/20110210/cook/cook4.html).

The Gleaner. 2014. Tips for school lunch and snacks. *The Gleaner*, 10 September 2014. (also available at http://jamaica-gleaner.com/article/health/20140910/tips-school-lunch-snacks).

The Gleaner. 2018. 'Jamaica moves' to be launched in school's island wide. *The Gleaner*, 25 February 2018. (also available at http://jamaica-gleaner.com/article/news/20180226/jamaica-moves-be-launched-schools-island-wide).

The Government of The Bahamas. 2011. *New Providence* [online]. https://www.bahamas.gov.bs/wps/portal/public/About The Bahamas/The Islands/NEW PROVIDENCE/!ut/p/b1/vZTJbqNAGISfJQ-Q0OzNsVmMwew068XCxhCwWWwwGD_9MNIcMiNN5jJJ96mlUn-q-n8VkRIxkbbZVJXZWHVtdvn5Trk9DVQTIQaaKgs4oAWOgRx-S9kkS0REjBPqlXfarGpe0btjHczLZpRMSS0PorqzxUfx

The National School Lunch Unit of the Ministry of Education. 2016. National School Lunch Programme (unpublished)

The Poverty Reduction Task Force of the National Economic and Social Development Council. 2003. *St. Vincent and the Grenadines interim poverty reduction strategy paper* [online]. [Cited 26 October 2019]. https://www.thegef.org/sites/default/files/ncsa-documents/IPRSP_for_St._Vincent.pdf

The St. Lucia STAR. 2014. Fighting the stigma attached to agriculture in St. Lucia. *The St. Lucia STAR*, 10 March 2014. (also available at https://stluciastar.com/fighting-the-stigma-attached-to-agriculture-in-st-lucia/).

Thomas, L. 2018. The Bahamas remains out of the CARICOM single market and economy, PM confirms. In: *The Official Website of the Government of The Bahamas.* [online]. [Cited 26 November 2019]. http://www.bahamas.gov.bs/wps/portal/public/gov/government/news/the bahamas remains out of the caricom single

market and economy%2C pm confirms/!ut/p/b1/vZTJjtpAElafJQ_gcXvrto_eG_DWXgD7gsDAeN_AYPP08UiRskhJLplUnUr6VZ_0lVR0Qu_ppDk-8vfjPW-bY_UxJ_DAAdOWZV60RQ

Times Caribbean. 2019. *St. Kitts-Nevis minimum wage increase maybe coming soon as advisory committee continues review* [online]. [Cited 25 November 2019]. http://www.timescaribbeanonline.com/st-kitts-nevis-minimum-wage-increase-maybe-coming-soon-as-advisory-committee-continues-review/

Toledo Ecotourism Association. 2008. *Beacon of hope: assessing the Toledo peoples' eco park plan - a plan for human development and social transformation for the Toledo District of Belize*. Ralpapajan. (also available at https://books.google.tt/books?id=DTmTAgAAQBAJ&printsec=frontcover&dq=Ralpapajan+beacon+of+hope&hl=es-419&sa=X&ved=0ahUKEwipkO3UsafmAhXozVkKHbMED_wQ6AEIJzAA#v=onepage&q=Ralpapajan beacon of hope&f=false).

Turnbell, M. 2018. Republic of China (Taiwan), food for the poor sign agreement for rice donation to Haiti. In: *Food for the Poor* [online]. [Cited 19 November 2019]. https://www.foodforthepoor.org/newsroom/archive_18/republic-china-taiwan-rice-donation-haiti-040518.html

Tus-T Water. 2017. Start bright - A Tus-t water school breakfast initiative - home. In: *Facebook* [online]. [Cited 4 November 2019]. https://www.facebook.com/StartBrightSchoolBreakfast/

U.S. Department of Health and Human Services and U.S. Department of Agriculture. 2015. *Dietary guidelines for Americans 2015-2020*. 8th edition. (also available at https://health.gov/dietaryguidelines/2015/guidelines/).

UNESCO. 2016. Antigua and Barbuda. In: *UNESCO Institute for Statistics* [online]. [Cited 26 November 2019]. http://uis.unesco.org/country/AG

UNESCO. 2016. Saint Kitts and Nevis education policy review, final report. In: *UNESCO Digital Library* [online]. [Cited 25 July 2019]. https://unesdoc.unesco.org/ark:/48223/pf0000245170

UNESCO. 2016. Saint Vincent and the Grenadines - universal periodic review 25th session. In: *ARC International* [online]. [Cited 5 July 2019]. http://arc-international.net/global-advocacy/universal-periodic-review/s/saint-vincent-and-the-grenadines-cycle-2/

UNICEF. 2017. Situation analysis of children in Antigua and Barbuda. In: *UNICEF Office for the Eastern Caribbean Area* [online]. [Cited 26 July 2019]. https://www.unicef.org/ECA_A_and_B_SitAn.pdf

UNICEF. 2017. Situational analysis of children in Dominica. In: *UNICEF Office for the Eastern Caribbean Area* [online]. [Cited 26 July 2019]. https://www.unicef.org/easterncaribbean/reports/situation-analysis-children-dominica

UNICEF. 2017. Situation analysis of children in Saint Kitts and Nevis. In: *UNICEF* [online]. [Cited 15 November 2019]. https://www.unicef.org/ECAO_St._Kitts_Sitan_2017.pdf

UNICEF. 2017. Situation analysis of children in Saint Vincent and the Grenadines. In: *UNICEF Office for the Eastern Caribbean Area* [online]. [Cited 26 July 2019]. https://www.unicef.org/easterncaribbean/reports/situation-analysis-children-saint-vincent-and-grenadines

UNICEF. 2019. About us. In: *UNICEF Belize* [online]. [Cited 27 November 2019]. https://www.unicef.org/belize/about-us

UNICEF & Guyana, M. of E. 2013. Piloting health and family life education as a timetabled subject in Guyana. In: *UNICEF* [online]. [Cited 11 October 2020]. https://www.unicef.org/evaldatabase/index_81143.html

United Nations Development Programme (UNDP). 2018. Human development index and its components. In: *United Nations Development Programme - Human Development Reports* [online]. [Cited 25 November 2019]. http://hdr.undp.org/en/composite/HDI

United Nations Human Rights Office of the High Commisssioner. 2019. *Convention on the rights of the child* [online]. [Cited 29 October 2019]. https://www.ohchr.org/en/professionalinterest/pages/crc.aspx

US Department of Veterans Affairs. undated. *Health Benefits* [online]. [Cited 6 June 2019]. https://www.va.gov/healthbenefits/cost/financial_ assessment.asp

USAID. 2018. Food assistance fact sheet - Haiti. In: *USAID* [online]. [Cited 19 November 2019]. https://www.usaid.gov/haiti/food-assistance

VP Digital. 2015. Big boost for school feeding – LUCELEC kitchen, garden for VF primary school. *The Voice*, 3 October 2015. (also available at https://thevoiceslu.com/2015/10/big-boost-for-school-feeding-lucelec-kitchen-garden-for-vf-primary-school/).

Wall-Bassett, E.D., Kunkel, E.M., Guiste, P., Gerard, P.D., Fang, X. & Prevost, J.L. 2012. Anthropometric status and nutrient intake of Dominican children in schools with and without school feeding programmes. *Topics in Clinical Nutrition*, 27(2): 85–94. https://doi.org/10.1097/TIN.0b013e3182542139

WFP. 2016. *School meals investment case cost-benefit analysis & national cost assessment* [online]. [Cited 8 August 2019]. https://docs.wfp.org/api/documents/3e9732b72e5b413e8b04cbd10e52495f/download/

WFP. 2017. Assistance to the national school feeding programme in Haiti standard project report 2016. In: *WFP* [online]. [Cited 26 October 2019]. https://docs.wfp.org/api/documents/0e3f2b7107d348d78b80960ccb45e6cc/download/

WFP. 2017. Smart school meals. Nutrition-sensitive national programmes in Latin America and the Caribbean: a review of 16 countries. In: *WFP* [online]. [Cited 5 July 2019]. https://www.wfp.org/publications/smart-school-meals-nutrition-sensitive-national-programmes-latin-america-and-caribbean

WFP. 2018. Cost benefit analysis of the school meals programme - Lao PDR. In: *WFP* [online]. [Cited 15 September 2020]. https://www.wfp.org/publications/cost-benefit-analysis-school-meals-programme-lao-pdr

WFP. 2019a. School feeding in Ghana - investment case - cost benefit analysis report. In: *WFP* [online]. [Cited 26 October 2019]. https://www.wfp.org/publications/school-feeding-ghana-investment-case-cost-benefit-analysis-report

WFP. 2019b. Decentralized evaluation final evaluation of WFP Haiti's food for education and child nutrition programme (2016-2019). In: *WFP* [online]. [Cited 8 October 2020]. https://docs.wfp.org/api/documents/WFP-0000114311/download/?_ga=2.245128773.1174197726.1602367013-830125409.1515613442

WHO. 2010. *Nutrition Landscape Information System (NLIS) country profile indicators interpretation guide*. Geneva, WHO. 38 pp. (also available at https://apps.who.int/iris/bitstream/handle/10665/44397/9789241599955_eng.pdf?sequence=1&isAllowed=y).

WHO. 2018. Global nutrition monitoring framework country profile: Dominica. In: *WHO Nutrition Landscape Information System* [online]. [Cited 6 December 2019]. https://apps.who.int/nutrition/landscape/report.aspx?iso=DMA&rid=1620&goButton=Go

WHO. 2018. Global nutrition monitoring framework country profile: Jamaica. In: *WHO Nutrition Landscape Information System* [online]. [Cited 25 November 2019]. http://apps.who.int/nutrition/landscape/global-monitoring-framework?ISO=JAM

WHO. 2018. Global nutrition monitoring framework country profile: Trinidad and Tobago. In: *WHO - Nutrition Landscape Information System* [online]. [Cited 25 November 2019]. http://apps.who.int/nutrition/landscape/global-monitoring-framework?iso=TTO

WHO. 2019. Countries. In: *WHO* [online]. [Cited 9 November 2020]. https://www.who.int/countries/

WHO. 2020a. *Obesity and overweight* [online]. [Cited 25 August 2020]. https://www.who.int/en/news-room/fact-sheets/detail/obesity-and-overweight

WHO. 2020b. Global health estimates: leading causes of DALYs. In: *WHO The Global Health Estimates* [online]. [Cited 3 March 2020]. https://www.who.int/data/gho/data/themes/mortality-and-global-health-estimates/global-health-estimates-leading-causes-of-dalys

Wilson, C. 2017. Obesity, malnutrition and hunger in Dominica. *The Borgen Project*, 23 March 2017. (also available at https://borgenproject.org/hunger-in-dominica/).

World Bank. 2016. Suriname education management information systems : SABER country report 2016. In: *World Bank* [online]. [Cited 5 July 2019]. https://openknowledge.worldbank.org/handle/10986/26514

World Bank. 2019. *Countries and economies* [online]. [Cited 29 October 2019]. https://data.worldbank.org/country

World Bank. 2019. The world bank in Jamaica - overview. In: *World Bank* [online]. [Cited 25 November 2019]. https://www.worldbank.org/en/country/jamaica/overview

World Bank. 2020a. Countries and economies. In: *World Bank Open Data* [online]. [Cited 21 August 2020]. https://data.worldbank.org/

World Bank. 2020b. *The world bank in Haiti - overview* [online]. [Cited 19 November 2019]. https://www.worldbank.org/en/country/haiti/overview#1

Xuereb, G. 2017. Sugar sweetened beverages taxed in the Caribbean - progress and challenges. Powerpoint presentation presented at the PAHO workshop "Caribbean Subregional Workshop on Alcohol, Tobacco and SugarSweetened Beverages Taxation", 16-17 May 2017, Barbados. PAHO. [Cited 26 October 2019]. https://onecaribbeanhealth.org/wp-content/uploads/2017/01/Sugar-Sweetened-Beverages-taxes-in-the-Caribbean-Dr-Godfrey-Xuereb.pdf

Zephirin, M.P. 1990. *Manual of nutrition and dietetic practice for the Caribbean*. 3rd edition. Kingston, Jamaica, Caribbean Food and Nutrition Institute.

Appendix 1

Sample calculation of benefits of school feeding programme (Dominica)*

1A: Direct transfer of food	• Value of food commodities provided in SFP = XCD 763 683.41	1B: Individual healthcare expenditure reduction	• Disability adjusted life years (DALYs) lost by all nutritional deficiencies/ capita = 0.0122 (Saint Lucia figure) • Number of students in SFP = 2 169 • All nutritional deficiencies DALYs averted through SFP = 26.4165 years • Cost /year/ individual for healthcare = XCD 1 584.90 • Total health care reduction of SFP = XCD 41 867.51 • Total value transfer = 763 683.41 + 41 867.51 = XCD 805 550.92 = 1A + 1B	2. Return on investment	• Total wages paid to cooks = XCD 336 000.00 • Total health care reduction = XCD 41 867.51 • Total income created/protected by the SFP = XCD 377 867.51 • Rate of return=5.00% • Return on investment = XCD 18 893.38	3: Increased wages from better jobs due to better education	• Annual impact of the SFP on wages through increased enrollment + increased attendance + reduced dropout + increased test scores = 4.35%/year • Average annual base (or minimum) wage Dominica = XCD 8 100.00/year • Number of students in SFP = 2 169 • Productivity wages increase = XCD 764 247.15 • Total Increased Productivity = XCD 764 247.15	

*Calculations performed in Excel and rounding errors may be observed as presented.

4A: Increased wages from increased life expectancy from productivity increase and more schooling (4A)	4B: Increased wages from reduced DALYs due to food supplied by the SFP	4C: Increased wages from reduced DALYs due to health interventions as part of the SFP
• Productivity wages increase/student = XCD 352.35 • Adjusted base wage after productivity increase = XCD 8 452.35/year • % adjusted base wage from productivity increase = 4.2% • Impact of increase in wage on life expectancy = 7.4% • Life expectancy = 77.2 years • Additional life expectancy from productivity increase = 0.42 * 0.74 * 77.2 = 0.2381 years • Increase in schooling through SFP = 7.0% • Impact on life Expectancy of 1 more year in school = 5.5% • Additional life expectancy from increase in schooling = 0.07 * 0.055 * 77.2 = 0.2972 years • Total additional life expectancy = 0.5353 years • Number of additional years for students in programme = 0.535 * 2 169 = 1 161.2119 years • Impact of additional year of life expectancy on income = 5.0% • Increased income from increased life expectancy = increased wages *impact of additional year on income*number of additional years = XCD 490 748.4557	• DALYs lost by all nutritional deficiencies/capita = 0.0122 years • % of Recommended Daily Allowance from SFP = 33.0% • Reduction of DALYs/capita from food supplied by the SFP = 0.0122 * 0.33 = 0.0040 years • No. of students = 2 169 • Reduction of DALYs from food supplied by the SFP = 2 169 * 0.0040 = 8.7174 years • Increased wages from better health from food supplied by SFP = Adjusted base wage * reduction of DALYs = XCD 73 682.8925	• DALYs Averted due to better nutrition/capita = 0.0122 years • Reduction of DALYs through health Interventions = 3.7% • Reduction of DALYs/capita from health interventions = 0.0122 * 0.037 = 0.0004 • Reduction of DALYs from health interventions from SFP = 2 169 * 0.0004 = 0.9642 years • Annual adjusted base wage = XCD 8 452.35/year • Increased wages from health interventions from SFP = reduction in DALYs from health interventions*adjusted base wage = XCD 8 149.77 • Total benefit from healthier and longer life = 4A + 4B + 4C = XCD 572 581.12 • Annual total benefits = 805 550.92 + 18893.38 + 764 247.15 + 572 581.12 = XCD 2 161 273.57

A review of school feeding programmes in the Caribbean Community
A driver for food and nutrition security

This book is the first comprehensive study of school feeding in the Caribbean and specifically 14 CARICOM member states: Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname and Trinidad and Tobago. It explores the features of school feeding in each state, with an emphasis on the school feeding programmes. These programmes are classified, especially in terms of the centralization of operations with respect to the procurement of food ingredients and meal preparation. This book presents detailed evaluations of the annual net benefit of these programmes and surveys food and nutrition education in the states, including the roles of school gardens. It also provides general recommendations on school feeding, as well as specific recommendations for each CARICOM member state.

For more information and comments:

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This book was made possible thanks to the generous support of the FAO Subregional Office in Barbados and school feeding agencies, as well as international, regional and local organizations in all of the member states. The research for this book was carried out by a team from the Department of Agricultural Economics and Extension, The University of the West Indies, St. Augustine, Trinidad and Tobago, with the support of the Caribbean Agro-Economic Society.

This book is dedicated to the stalwart workers in school feeding.

ISBN 978-92-5-134397-5
9 789251 343975
CB4650EN/1/10.21