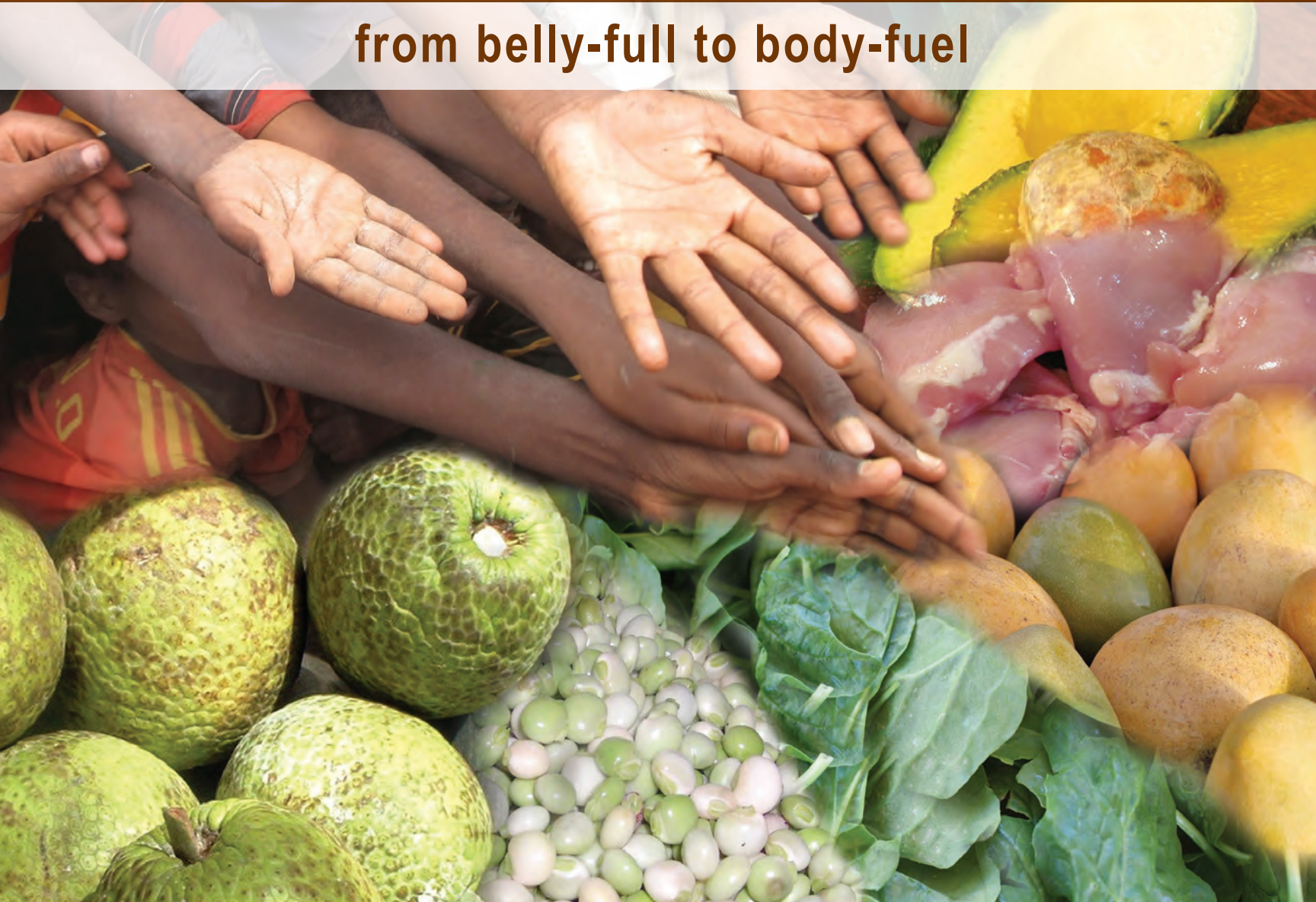




# Hunger and Nutrition

from belly-full to body-fuel







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from belly-full to body-fuel

Inter-American Institute for Cooperation on Agriculture (IICA), 2015



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Empty Calories

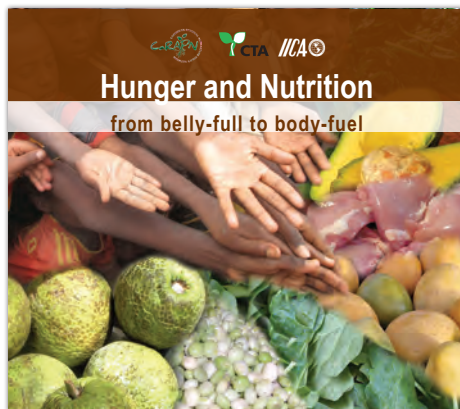
Nutrient dense



Food is an important and major, but not only source of nutrition. **But all foods are not equal!** To keep the body healthy, an individual must choose among the wide range of options and within their means, foods that are 'nutrient dense'. Simply put, individuals must 'fuel-up' on a mix of foods that have the greatest nutritional value and not 'fill-up' on 'empty calorie' foods. Although they are attractively packaged, tasty and filling, 'empty calorie foods', often called 'Junk foods', contain little or no nutritional value.

Choosing to consume too much empty calorie foods is detrimental to good health.

## Critical Issues, Perspectives and Options (CIPO)



CaRAPN initiated the CIPO series to the need for respond and contribute to the need for more regional-oriented thinking, perspectives and opinions on global issues. Global issues, in particular, those that affect food quality and supply, have a significant impact and influence on human wellbeing in the Caribbean. Issues related to human health and the role of nutrition and food remain at the forefront of decision-making for governments, private sector and households.

CIPO also provides an additional and alternative platform for Caribbean professionals to publish on a wider range of topics along the agriculture-food-rural development continuum, for a wider audience.

CIPO #4 themed “Hunger and Nutrition, from belly-full to body-fuel”, pulls together research and perspectives on some critical points along the food and nutrition security chain for the Caribbean, namely:

- i. Exploring Hunger:
- ii. Understanding Nutrition;
- iii. Food – the pathway to hunger alleviation and health

The concluding section, *Options Forward*, offers an alternative frame to understand and address food and nutrition. A Special Profile on ‘School Feeding Programs’ as viable options in any national food and nutrition strategy is also included.



CaRAPN is an initiative of the Technical Centre for Agriculture and Rural Cooperation (CTA) and the Inter-American Institute for Cooperation on Agriculture (IICA), aimed at supporting agricultural policy processes in the Caribbean and fostering networking between the Caribbean and the wider African, Caribbean and Pacific (ACP) group.

## Previous Issues



CIPO #3 (2012)  
ISBN13:978-92-9248-296-8

### **Farming Change, growing more food with a changing resource base**

CIPO #3 comprises three inter-related papers on issues related to the most basic topics for food production:

- (1) Soil Loss – growing food crops without soil, by Professor Nazeer Ahmad
- (2) Forest Cover – securing eco-system services for sustainable farming, by Cecil Lyndon John; and
- (3) Species Under Siege – combating the IAS threat, by Naitram Ramnanan



CIPO #2 (2009)  
ISBN 13:978-92-9248-161-2

### **The Agriculture, Food and Health Challenge – Critical Issues, Perspectives and Options**

This issue explores matters relating to nutrition and health, the potential and need for greater balance and emphasis on securing both food and fuel security from agricultural crops and from marine resources. The three inter-related papers are:

- (1) Agriculture – linking food and health by Gillian Goddard;
- (2) Agriculture for food, fuel or both, by Professor Albert Binger; and
- (3) Food from the Sea, by Marcia Creary



CIPO #1(2007)  
ISBN 92-90-39-782-9

### **Managing Hazards, Reducing Risks and Increasing Investment in Agriculture**

CIPO #1 sought to widen understanding and promote a new mind-set with respect to three critical issues for agricultural development, contained in the following papers:

- (1) Natural Hazards and Disaster Management in Agriculture in the Caribbean, by Steve Maximay
- (2) A Multi-Commodity Agricultural Insurance for Risk reduction, by Thomas Edmund; and
- (3) Catalysing and Expanding Investments in Agriculture and Rural Areas, by Vitus Evans.

## Institutional Acronyms

AAFC	Agriculture and Agri-Food Canada	EEC	Eastern European Community
BSMP	Barbados School Meals Program	EPA	Economic Partnership Agreement
BAS	Barbados Agricultural Society	ESA	Agriculture and Development Economics Division of the FAO
BADMC	Barbados Agricultural Development and Marketing Cooperation	EU	European Union
BMA	Barbados Manufacturing Association	EUFIC	European Food Information Council
BSMP	Barbados School Meals Program	FAO	Food and Agricultural Organization of the United Nations
CAHFSA	Caribbean Agricultural Health and Food Safety Agency	FDA	Food and Drug Administration (U.S)
CARICOM	Caribbean Community	GATT	General Agreement on Tariffs and Trade
CARIRI	Caribbean Industrial Research Institute	GFNC	Grenada Food and Nutrition Council
CARPHA	Caribbean Public Health Agency	GMF	George Mateljon Foundation
COTED	Caribbean Community Council for Trade and Economic Development	IICA	Inter American Institute for Cooperation on Agriculture
CBO	Community Based Organization	IFAS	Institute of Food and Agricultural Sciences
CCHD	Caribbean Commission on Health and Development	IFMDP	Integrated Forest Management and Development Program
CDB	Caribbean Development Bank	IFPRI	International Food Policy Research Institute
CEHI	Caribbean Environmental Health Institute	LAC	Latin America and the Caribbean
CEP	Caribbean Environmental Program	MALFF	Ministry of Agriculture, Lands, Forestry & Fisheries
CFNI	Caribbean Food and Nutrition Institute	MDG	Millennium Development Goal
CHoG	Conference of Heads of Government (CARICOM)	MoA	Ministry of Agriculture
CIDA	Canadian International Development Agency	MoE	Ministry of Education
CDC	Centre for Disease Control and Prevention	NGO	Non-Government Organization
CTA	Tropical Centre for Agricultural and Rural Cooperation ACP-EU	NSMP	National School Meals Program
ECLAC	Economic Commission for Latin America and the Caribbean	OECS	Organization of Eastern Caribbean States
ECOSOC	Economic and Social Council of the United Nations	OECD	Organization of Economic Cooperation and Development
		PATH	Program of Advancement through Health and Education
		REACH	Renewed Action for Ending Child Hunger



SFP	School Feeding Program	FNS	food and nutrition security
SVDPS	St Vincent De Paul Society	Fob	freight on board
TEFAP	The Emergency Food Assistance Program	FOP	front-of-pack
THP	The Hunger Project	FPP	food procurement policy
UK	United Kingdom	GAP	good agricultural practices
UN	United Nations	GCR	Greater Caribbean Region
UR	Uruguay Round	GDP	gross domestic product
US	United States of America	GI	glycaemic index
USAID	United States Agency for International Development	GM	genetically modified
USDA	United States Department of Agriculture	GMOs	genetically modified organisms
USG	United States Government	GMP	good manufacturing practices
USGS	United States Geological Survey	HACCP	hazard analysis critical control point
UTT	University of Trinidad and Tobago	HDL	high-density lipoprotein
UWI	University of the West Indies	HFCS	high-fructose corn syrup
WCO	World Customs Organisation	HIV	human immunodeficiency virus
WFP	World Food Program	IBS	irritable bowel syndrome
WHES	World Hunger Education Service	IAS	invasive alien species
WHO	World Health Organization	LBW	low birth weight
WTO	World Trade Organization	LDL	low-density lipoprotein
		LMIC	low- and middle-income countries
		LPG	liquid petroleum gas
		N/A decision	nutrition/affordability decision
		NFIDCs	net food importing developing countries
		PEM	protein-energy malnutrition
		RFNS	regional food and nutrition strategy
		RFNSP	regional food and nutrition security policy
		RFNSPAP	regional food and nutrition security policy and action plan
		SIDS	small island developing states
		SPH	stems per hectare
		TB	tuberculosis
		VAT	value-added tax
		WTB	willingness to buy
<b>Abbreviations</b>			
AIDS	acquired immune-deficiency syndrome		
ANI	affordable nutrition index		
ATB	ability to buy		
BMI	body mass index		
BOP	back-of-pack		
CET	common external tariff		
CIF	cost insurance freight		
CNCD	chronic non-communicable disease		
DES	dietary energy supplies		
ENA	essential nutrition actions		
FBDG	food-based dietary guidelines		
FN	food and nutrition		

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## About the Theme: from belly-full to body-fuel

As a policy and practical issue, 'Nutrition' is nothing new to the Caribbean. Since the 70s and 80s, there have been several policies aimed at reducing the incidence and debilitating impacts of poor nutrition, especially malnutrition, among infants and children. The first regional policy (1973), i.e., the Regional Food and Nutrition Strategy (1973 RFNS), recognized high incidences of malnutrition as among the critical problems facing the young independent Caribbean states. According to the 1973 RFNS, the development experiences during the 1960s and 1970s left Caribbean peoples with unfulfilled expectations, confirming that *'malnutrition, with its associated health and productivity effects, is widespread throughout the region. High incidences of under-nutrition also prevail among the population.'*<sup>1</sup>

Malnutrition is a condition that develops when the body does not get the right amount of vitamins, minerals and other nutrients to maintain healthy tissues and organ function.

In the early decades, malnutrition in the Caribbean was synonymous with under-nutrition linked to poverty and hunger. Several segments of the Caribbean population were simply not getting enough to eat. The 1973 RFNS reported that between 29% and 75% of Caribbean families did not receive sufficient food. The consequences on children, as a group, and pregnant women were devastating! Governments, with support from international organisations, charities and the private sector, placed priority on 'eliminating hunger' through safety net and social welfare programs. In other words, early hunger alleviation programs in the Caribbean targeted the poor, vulnerable and marginalized groups in society.

Generally, the foods provided were meant to satisfy hunger, and comprised largely of milk (in the form of fortified milk powder), white refined flour and flour products and refined grains. In reviewing school-feeding programs in selected Caribbean countries, Best (2012) observed that the type of meals served consisted mainly of bread made of white flour with cheese or butter, rice and skimmed milk. Attention to nutritional content during the early stages and attempts to make the meal colourful or attractive to the children were virtually non-existent.<sup>2</sup> This assisted feeding menu and the resulting impacts on child nutrition are best described by Lennox Lampkin, a Caribbean nutrition advocate as the 'belly-full philosophy'. Experiences have shown that such 'belly-full' approaches to nutrition have limited positive impacts on the overall health status of the target beneficiaries. Growing diet-related health problems in children, teens and young adults spurred more concerted efforts to firmly establish the link between hunger and nutrition. This also fuelled efforts to link food to healthy consumption choices.

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1 Caribbean Community, Regional Food and Nutrition Strategy, Volume 1, Policy Statement for the 80s. Letchworth Press Ltd., Barbados Caribbean Community, Regional Food and Nutrition Strategy, Volume 1, Policy Statement for the 80s. Letchworth Press Ltd., Barbados (1981).

2 Nicole Best. "Influencing Nutrition and Food Production – School Feeding Programs". In *Critical Issues, Perspectives and Options.*" (2012).

The apparent preference of Caribbean populations for imported, mostly processed foods has been cited as a contributing factor to the rise in diet-related illnesses in the region. The 1973 RFNS concluded that the '*orientation of consumption patterns and tastes to foreign goods*', was a major economic problem plaguing the region in the 60s and 70s. Extend the problem to today and the roots of the current health crisis, captured by the term chronic non-communicable diseases (CNCDs) become obvious.

Malnutrition is no longer synonymous with under-nutrition and under-nutrition is no longer automatically associated with the poor, downtrodden and hungry. Malnutrition is now increasingly being associated with the other extreme - over-nutrition - linked to rising affluence, availability, easy access and affordability of a diverse range of food products generally referred to as 'empty calories'. While foods referred to as empty calories do satisfy hunger, they do not provide the body with the fuel it needs to power its various internal organs and external functions. It is over-consumption of such foods that has caused a sharp spike in CNCDs among Caribbean populations. Even more worrisome is that CNCDs are now strongly linked to a rise in 'adult diseases', among infants and children, particularly diabetes.

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Rabbit Stew

Jirie Ital

Music

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**Best Local Dish Competition**

*Show your creativity with local foods*

**Register at the Dept. of Agriculture**

'Eat Local Promotions' are regularly used to bring local production even closer to Caribbean consumption choices.

The theme of this 4<sup>th</sup> CIPO, ‘Hunger and Nutrition, from belly-full to body-fuel’, was deliberately chosen to send a strong message of the clear and present danger of poor nutrition for the region’s sustainable development. The content seeks to promote recognition of the absolute importance of nutrition for health and in turn, the need to develop a food system rooted in nutrition, from production to consumption. This CIPO promotes the concept of food as the pathway to hunger alleviation and nutrition, but also recognizes that the concept of food is not universal, i.e., ‘a balanced plate does not fit all palates’.<sup>3</sup>

Available documentation and recent experiences suggest that the current regional dialogue is shifting from a focus on malnutrition to a more inclusive and integrated food and nutrition (FN) focus. Forty years later, the 1973 RFNS analysis on food consumption choices, malnutrition and the associated challenges with supply, availability and access to nutrition-rich foods is still relevant. Recent policy dialogue and actions in the Caribbean suggest that the region is cognizant that a transition must take place, from just hunger, to health and disease prevention. The region also appears to be recognizing the importance of focusing on nutrition security as opposed to just food security. This recognition is reflected in the more recent Regional Food and Nutrition Security Policy (RFNSP) of 2010 and its accompanying Action Plan (2011), as well as, in national FNS policies currently being articulated.

Hunt (2012), documents studies which confirm that today, the Caribbean region is grappling with the effects of over-nutrition in macro-nutrients and under-nutrition in micro-nutrients.<sup>4</sup> This has resulted from a rise in consumption of a diet (or consumption of refined...)high in refined carbohydrates, fats and salt, and a fall in consumption of fruits, vegetables, roots, tubers, legumes and nuts. Hunt acknowledges that growing awareness of this shift and its worrisome impacts have been driving a change away from simply food production or supply-oriented policy responses to ones based on promoting, facilitating access, and regulating the quantity and nutritive quality of foods that are available and regularly consumed, i.e., a nutrition or body fuel focus.

This 4<sup>th</sup> CIPO seeks to broaden the scope of thinking, widen the dialogue and clarify the basis for action, as the region, individually and collectively, continues to pursue the goal of ‘the health of the Caribbean is the wealth of the Caribbean’. The discussion draws and links relevant content of three main papers:

1. The Food Security and Nutrition debate: clarifying the issues and connecting the dots, by Lisa Hunt, Nutritionist in the Ministry of Health, Saint Lucia;
2. The Price Factor: exploring food pricing to inform and enhance households’ food purchasing decisions by Camille Russell, Masters Student in International Trade Policy, Shridath Ramphal Centre, Cave Hill Campus, University of the West Indies;
3. Influencing Nutrition and Food Production – School Feeding Programs, by Nicole Best, of Best Media, Grenada.

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<sup>3</sup> Phrase coined by the editor

These papers were also supplemented by the following literature research:

1. The Role and Reach of Government Policy in Enforcing Nutritional Guidelines, by Nkosi Felix, Graduate student in AgriBusiness and Marketing, St. Augustine Campus, University of the West Indies;
2. The Barbados School Meals Program – An Overview, by Jacklyn Broomes, M.Phil Student, Crop Science, St. Augustine Campus, University of the West Indies);
3. Building Coherence and Linkages among the Components of Food and Nutrition Security Policy in Dominica, by Talitha Laudat, Cuban graduate B.Sc. Agriculture Engineering.

Using these as the base raw material, complemented with other observations and information, the Editor organized and presents the discussion in the following parts.

**Part I-Exploring Hunger**, discusses the various definitions and interpretations of the word hunger, its causes and global efforts to eliminate its extreme forms. Particular focus is placed on Goal 1 of the Millennium Development Goals (MDGs) which specifies the need to eliminate extreme hunger by 2015, with a focus on the vulnerable. This is based on the traditional understanding of hunger as ‘not enough food’ and hence a state of starvation and ultimately, ill-health. This traditional understanding led to a similarly traditional response of providing food, which according to Lennox Lampkin was merely ensuring ‘belly-full’. While such strategies are necessary and cannot be faulted in cases of extreme hunger, they are certainly not sufficient in all situations. This provides the basis for understanding hunger from another perspective, i.e., as having enough food but not consuming enough nutrients, or body fuel, which leads to the same outcome, ill-health. This sets the tone for the rest of the discussions on aspects of hunger, nutrition and health.

**Part II-Understanding Nutrition**, draws from the contributions of Nkosi Felix and Lisa Hunt as they cite and locate elements of nutrition research in a Caribbean perspective. Attempts are made to clarify the concept of nutrition, underscoring both the benefits of proper nutrition and the adverse effects of poor nutrition on health. Both contributors emphasise nutritional guidelines as an important framework and information tool to support healthy consumption choices. Unfortunately, as Hunt noted, consumption patterns have shifted over time, away from recommended guidelines, towards ‘Western diets’ characterized by over-utilization of highly refined and processed foods. This process of ‘nutritional transitions’ is still having adverse consequences on health.

**Part III-Food the pathway to hunger alleviation and health**, recognises that food and nutrition are not synonymous. Food is an important source of hunger alleviation, nutrition and ultimately, health. Therefore an efficient food system is critical. However, understanding of the food system depends on whether its products are classified based on trade commodity definitions or based on nutrient content. This has complicated the process for rooting food system policy on nutrition.

Camille Russell briefly restates the conclusion of several researchers, that extra-regional imports dominate the regional food system. She explores the issue of food pricing, showing that marketing, food services and value chain activities all influence the final price to the consumer. Indeed, growth in retailing, while making food more accessible, has raised concerns about the quality of foods offered, is affecting food affordability and is fuelling food price speculation.

The concluding discussion offers an alternative way for understanding and framing FN interventions. It summarizes the main and inter-connected issues through three critical control points – the food product itself, the pathways that get food to the consumer, and the purchaser (i.e., the one consuming the food product). In pursuing an action agenda, it is strongly recommended that no effort be spared in ensuring that all stakeholders - government, private sector (producers and retailers) consumers and households - have a common understanding of the diverse facets of hunger, health and nutrition, the central and connecting role of food and ultimately, the drivers of household and individual food choices.

This CIPO issue presents a Special Profile on School Feeding Programs as a viable Option Forward. As hunger and health issues have traditionally been targeted at the most vulnerable – infants and children – school feeding programs are increasingly presented as a key policy instrument for simultaneously tackling child health and early education. These programs must also deliver on expectations of stimulating increases in national food production to increase the proportion of local content in school meals and steering nutritional transitions towards the healthy food options.

The food and nutrition challenge is complex and dynamic. No one publication can capture all, or fully define the inter-connections among the salient elements of food and nutrition. CIPO #4 builds on the discussion in CIPO #2 and seeks to make a case for better understanding and tying nutritional issues firmly into the food production-distribution system.

I chose to integrate the research from the contributing authors rather than the usual approach of publishing individual papers, to try to tell a story and to show how complex, diverse and intricately linked the issues involved in hunger, health and food are. Read with an open mind, a hunger for more knowledge and a determination to make healthy food choices, at least most of the time!

Diana Francis  
Policy and Regional Programming Specialist  
IICA Caribbean Region



Cassava, with roots rich in carbohydrates and leaves which contain up to 25% protein, plus iron, calcium and vitamins A and C, is being promoted as a good candidate for increasing local content in school meals in the Caribbean.



Jamaica School Feeding Taste & Learn Sessions  
at two Kingston schools





Part I

# Exploring Hunger

## 1.1 Meanings and interpretations

### 1.1.1 Hunger

Searches for the word ‘hunger’ almost always include ‘food’ as part of the definition. Hunger is:

- a craving or urgent need for food or a specific nutrient; an uneasy sensation occasioned by the lack of food, or a weakened condition brought about by prolonged lack of food; (Merriam-Webster Dictionary)<sup>4</sup>
- the uneasy or painful sensation caused by want of food; craving appetite; also the exhausted condition caused by want of food, or the want or scarcity of food in a country; or (c) a strong desire or craving; (Oxford English Dictionary (1971))<sup>5</sup>
- the feeling of discomfort that is the body’s signal that it is in need of more food. All people experience this feeling at times but, for most people, particularly in the developed world, this phenomenon is a fleeting event that is alleviated once the next meal is taken, causing no deep or permanent damage. When it is a hunger or persistent lack of food, the consequences can be devastating. (The Hunger Project (THP))<sup>6</sup>

These definitions of hunger provide an interesting starting point for the publication’s theme. While all three definitions appear to put the focus on ‘food’, the Merriam-Webster Dictionary is the only definition which includes the word ‘nutrient’. Further, THP<sup>7</sup> noted that, *‘although hunger can and is often described in terms of its medical implications, hunger can also be viewed as representative of all the tragic and horrific circumstances that cause it’*.

Poverty is a major one of these circumstances! However, THP pointed out that *‘millions live with hunger and malnourishment because they simply cannot afford to buy enough food, cannot afford nutritious foods, or cannot afford the farming supplies they need to grow enough good food of their own’*. However, ‘not every poor person is hungry! But almost all hungry people are poor’. THP concluded that hunger and poverty are powerful familiar terms but evoke different images for everyone.

---

4 <http://www.merriam-webster.com/dictionary/hunger>

5 Agriculture in the 21st Century: The Need for Global Partnership to Address Poor Food Distribution, Waste, Malnutrition and Famine Worldwide, posted September 15, 2012 in Science, sourced from <http://www.mutualresponsibility.org/science/agriculture-in-the-21st-century-the-need-for-global-partnership-to-address-poor-food-distribution-waste-malnutrition-and-famine-worldwide>.

6 Hunger and Poverty: Definitions and Distinctions. The Hunger Project (THP) 5 Union Square West, New York, NY 10003. [www.thp.org](http://www.thp.org). sourced from Emma Weisfeld-Adams and Anastasia Andrzejewski. Hunger and Poverty: Definitions and Distinctions. (2008) The Hunger Project (THP) 5 Union Square West, New York, NY 10003, accessed at <http://www.thp.org/files/Hunger%20and%20Poverty.pdf>

7 Ibid: Emma Weisfeld-Adams and Anastasia Andrzejewski. Hunger and Poverty: Definitions and Distinctions.

Poor, but not hungry (have land; can grow food)



Poor and hungry (living on land, but can't grow food)



Photo: Diana Francis

**Not every poor person is hungry!  
But almost all hungry people are poor!**

## 1.1.2 Nutrition

Applied to humans, nutrition is defined as the process of getting food into the body and using it as raw materials for growth, fuel for energy and vitamins and minerals to keep the body healthy and functioning properly.<sup>8</sup> Under-nourishment, under-nutrition and malnutrition, terms closely associated with hunger, are explained as follows:

- *Undernourishment* is the measure of food deprivation. An individual is considered undernourished if he or she does not receive enough dietary energy to maintain a healthy and active life (Food and Agriculture Organization (FAO));<sup>9</sup>
- *Under-nutrition* is the outcome of insufficient food intake (hunger) and repeated infectious diseases. It includes being underweight for one's age, too short for one's age (stunted), dangerously thin (wasted) and deficient in vitamins and minerals (i.e., micro-nutrient deficiency).<sup>10</sup> Micronutrients are sometimes dubbed "little helpers" due to their role in helping some of the body's chemical reactions happen a lot faster.
- *Malnutrition* refers to both under-nutrition and over-nutrition and is caused by more than just a lack of dietary energy. It can occur if the quality or variety of food is insufficient even if food is plentiful in terms of quantity. Infections, disease and unsafe water and sanitation can also cause malnutrition.

Under-nutrition, related to malnutrition, is a major issue in poverty stricken economies. It was stated as the world's most serious health problem but with the least focus.<sup>11</sup> Under-nutrition leads to infectious diseases causing an estimated 3.5 million preventable maternal and child deaths.

It was found that both extremes of malnutrition, i.e., over- and under-nutrition can exist in one country at the same time. In such a situation, achieving food security requires that key mineral and vitamin deficiencies will have to be overcome. Hence the importance of placing emphasis, equally, on strengthening conditions for achieving nutrition security.

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8 Sarren S. Gropper, Jack L. Smith, James L. Groff. *Advanced Nutrition and Human Metabolism* Forth Edition (Belmont: Wadsworth, 2005)

9 Ibid: Emma Weisfeld-Adams and Anastasia Andrzejewski. *Hunger and Poverty: Definitions and Distinctions*

10 A Report card on Nutrition, Number 4, May 2006, Nutrition, Survival and Development, UNICEF, "Report Card on Nutrition". *Nutrition, Survival and Development, NO 4 (2006)*, accessed at [www.unicef.org/publications/index\\_33685.html](http://www.unicef.org/publications/index_33685.html)

11 "Scaling up nutrition: a framework for action," Washington DC: World Bank, (2010), accessed at <<http://siteresources.worldbank.org/Nutrition/Resources/281846-1131636806329/PolicyBriefNutrition.pdf>>

### 1.1.3 Nutrition and Health

The central and pivotal role of nutrition and its links to health are well established. Malnutrition, associated with food, is described as a general term that indicates a lack of some or all nutritional elements necessary for human health.<sup>12</sup> World Hunger Education Service (WHES) defined two basic types of malnutrition:

- protein-energy malnutrition (PEM) the first and most important type, which is the lack of enough protein (from meat and other sources) and food that provides energy (measured in calories) which all of the basic food groups provide. (Box #1).
- Micro-nutrient (vitamin and mineral) deficiency, the second type, but also very important. This is not the type of malnutrition that is referred to when world hunger is discussed, though it is certainly very important. (Box #2).

The first type, PEM, is the type of malnutrition usually referred to when world hunger is discussed. This means, that typically, global efforts to alleviate hunger are not generally focused on micro-nutrient deficiency (the second type). This distinction is also important in terms of the Caribbean's FNS policy responses. It is also important from the perspective that the 2007/08 food price crisis, followed by one of the worst global economic recessions in recent times, has revived the global humanitarian interest in malnutrition<sup>13</sup> and a search for more appropriate and sustainable home-grown solutions.





The World Hunger Education Service (WHES) observed that recently there has also been a move to include obesity as a third form of malnutrition. Considering obesity as malnutrition expands the traditional meaning beyond merely poor nutrition from insufficient food. It is poor nutrition, but it is certainly not typically due to a lack of calories, but rather too many calories. For the Caribbean, obesity is a serious and worrisome trend associated with the broader description of hunger as 'a craving or urgent need for a specific nutrient'. While traditional hunger does exist and is still a problem in the region, obesity is emerging as an equally and even more serious form of 'hunger' and public health problem amidst the availability of food. The issue here thus extends to the quality of such food and its capacity to deliver 'nutrition' for health.

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<sup>12</sup> World Hunger and Poverty Facts and Statistics, World Hunger Education Service (WHES), sourced from <http://www.worldhunger.org/index.html>






<sup>13</sup> Food: The link between under-nutrition and climate change, irinnews.org IRIN, humanitarian news and analysis a service of the UN Office for the Coordination of Humanitarian Affairs UN Office for the Coordination of Humanitarian Affairs, "Food: The link between under-nutrition and climate change.", accessed at <http://www.irinnews.org/indepthmain.aspx?indepthid=81&reportid=87353>

**Box #1: Fast Facts ~ Highest Food Sources of Protein**

		#g Protein per 100g	#g Protein/Serving	Protein to Calorie Ratio
	#1: Turkey Breast	30g	92g/½Breast (306g)	1g protein/4.5 cal.
		Chicken: Breast (58g) = 17g protein. Leg (69g) = 18g protein. Thigh (37g) = 9g protein.		
	#2: Fish	26g	22g/3oz Fillet (85g)	1g protein/4.5 calories
	#3: Cheese (Low-fat)	32g	9g/1oz slice (28g)	1g protein/ 4.7 cal.
		Other cheese high in protein per ounce (28g): Low-fat Cottage Cheese (5g), Low-fat Swiss Cheese (8g), Low-fat Cheddar (6g), Parmesan (10g), Romano (9g). *Low fat Mozzarella and Cottage cheese provide the most protein per calorie.		
	#4: Pork Loin (Chops)	25g	33g/1 Chop (134g)	1g protein/5.2 cal.
		Other pork cuts: Sirloin Roast 3oz (28g) provides 23g of protein, Ham 3oz (28g) provides 18g of protein, 1 slice of bacon (8g) provides 3g of protein.		
	#5: Lean Beef/Veal	36g	31g/3oz Slice (85g)	1g protein/5.3 cal.
		Other cuts: T-Bone Steak 3oz (28g) provides 19g of protein, 1 Piece of Beef Jerky (20g) provides 7g of protein.		



Box #1: Fast Facts ~ Highest Food Sources of Protein

		#g Protein per 100g	#g Protein/Serving	Protein to Calorie Ratio
	#6: Tofu	7g	6g/ 3oz Slice (85g)	1g protein/7.4 cal.
	#7: Beans	17g	29g 1 cup (172g)	1g protein/10.4 cal.
		Other beans high in protein per cup cooked: Kidney Beans (17g), White Beans (17g), Lima Beans (15g), Fava Beans (14g), Black Beans (15g), Mung Beans (14g).		
	#8: Eggs	13g	6g 1 Large Egg (50g)	1g protein/12 cal.
	#9: Yogurt, Milks	6g	14g 1 cup (245g)	1g protein/18 cal.
	#10: Nuts and Seeds	33g	9g 1 Ounce (28g)	1g protein/15.8 cal.

Source: <http://www.healthaliciousness.com/articles/foods-highest-in-protein.php#LOAAZEpbMI71cZ71.99>

**Box #2: Fast Facts ~ About Micro-Nutrients – Vitamins and Minerals**

<p>Vitamins are necessary</p> <p>Vitamins from food is important</p>	<p>Life cannot exist without vitamins. Vitamins are necessary for maintaining the body's functions. Vitamins are not calories, proteins, minerals, fat or water; but they are necessary for the proper absorption and use of these substances.</p> <p>Vitamins are important components of the body's enzyme systems which can be supplied through a daily diet with a wide and varied selection of many different unprocessed foods and five servings of fruits and vegetables every day. It is important to get enough of the following vitamins through a healthy daily diet:</p> <ul style="list-style-type: none"> <li>– Vitamin C found in fruit and vegetables.</li> <li>– Vitamin D found in fish, especially oily fish, fortified milk.</li> <li>– Folic Acid (Vitamin B9) found in lentils, chickpeas, beans, almonds, nuts, citrus fruits, strawberries, vegetables, whole wheat bread, oatmeal, cereals.</li> </ul> <p>Vitamin supplements should not replace vitamins from food. Many studies show that vitamins from food are more effective than vitamins from supplements. Most vitamins in supplements have been extracted from natural foods.</p>
<p>For more on Vitamins, go to <a href="http://www.foodpyramid.com/vitamins/">http://www.foodpyramid.com/vitamins/</a></p>	
<p>Minerals- Fuel for the body</p>	<p>The human body requires minerals to function properly. Dietary minerals are needed to work hand-in-hand with vitamins to ensure good nutrition. The dietary minerals are important constituents of the bones, teeth, muscle, blood, tissues and nerve cells. Minerals are also important for transmission of nerve signals and to maintain a normal heart rhythm. They are also used to produce hormones in the body. Minerals can be found in a variety of foods (dairy, meat, cereal products, vegetables, fruit, and nuts).</p> <p>Minerals are divided into two groups:</p> <ul style="list-style-type: none"> <li>– Macro Elements: Calcium, Phosphate, Sulfur, Sodium, Potassium, Chlorine, Magnesium. These minerals are needed in large amounts.</li> <li>– Micro Elements (Trace Elements): Iron, Zinc, Copper, Manganese, Selenium, Iodine, Molybdenum, Cobalt. These minerals are needed in small amounts.</li> </ul>
<p>For more on Minerals, go to <a href="http://www.foodpyramid.com/dietary-minerals/">http://www.foodpyramid.com/dietary-minerals/</a></p>	

## 1.2 Causes of Hunger

The International Food Policy Research Institute (IFPRI) contends that hunger is one piece of a complex of inter-related social ills. It is intricately linked to global economic, political and social power structures; modes of development and consumption; population dynamics; and social biases based on race, ethnicity, gender and age.<sup>14</sup>

There is general agreement that poverty is the main cause of hunger. In Haiti, the most impoverished country in the Caribbean, extreme poverty has been blamed on decades of politically-induced conflict and economic crises. Haiti's hunger reflects the Merriam-Webster Dictionary definition as 'the want or scarcity of food in a country'. Associated with extreme deforestation, it also reflects the THP description of hunger as the physical inability '...to grow enough good food of their own'. Research by a number of agencies, including the Caribbean Development Bank (CDB), the Economic Commission for Latin America and the Caribbean (ECLAC) and Kairi Consultants, has linked hunger and malnutrition to rising incidence of rural and urban poverty. These findings are well documented and consistent with studies worldwide that show the link between hunger and poverty, and the impact of inequality and economic marginalization on poverty and hunger. WHES noted that climate change, particularly increasing drought and flooding, is now being viewed as a current and future cause of hunger and poverty.<sup>15</sup> They attempt to indicate the links between our earth and poor and hungry people.

The 2010 CARICOM RFNSP reconfirmed the situation in the Caribbean as being that of '*unacceptably high levels of poverty and inequality of income and access to resources*'.<sup>16</sup> Surveys revealed that portions of the CARICOM population still have difficulties in accessing sufficient food. This increasing incidence of pockets of poverty in many countries is recognised in the 2010 RFNSP as an adverse result of short-comings in policy design and implementation. The 2010 RFNSP's Guiding Principles recognized poverty, social exclusion and a lack of participation in political decision-making processes as the main causes of food insecurity leading to hunger.

### Eating Mud Cookies to Survive!

By David J. Stewart

Can you imagine be so poor and so hungry that you have no choice but to eat MUD? Hungry people in the slums of Haiti are giving new meaning to the phrase "dirt poor." As food prices soar, many desperate people are eating mud cookies to stave off their hunger pangs.

[http://www.jesus-is-savior.com/Disturbing%20Truths/eating\\_mud.htm](http://www.jesus-is-savior.com/Disturbing%20Truths/eating_mud.htm)



<sup>14</sup> Causes of Hunger, Marc J. Cohen and Don Reeves, International Food Policy Research Institute (IFPRI), May 1995 Marc J. Cohen & Don Reeves, Causes of Hunger. International Food Policy Research Institute (IFPRI), (1995), accessed at <http://www.ifpri.org/2020/briefs/number19.htm>

<sup>15</sup> Global issues: the environment and hunger. [http://www.worldhunger.org/env\\_hunger.htm#global\\_warming](http://www.worldhunger.org/env_hunger.htm#global_warming).

<sup>16</sup> CARICOM Secretariat. Regional Food and Nutrition Security Policy (RFNSP). 14 October 2010.

### 1.3 Costs of Hunger

“How is it possible that in the 21st century, hunger continues to be the number one risk to health worldwide? Not cancer, not heart disease, not even AIDS; Hunger!” More people die each year from hunger and related diseases than from AIDS, malaria and tuberculosis combined. Nutritional deficiencies, i.e., lack of vitamin A, iron and iodine, ranked #8 on the World Health Organization (WHO’s) list of killers. In total, 6 million children died in 2002 because they were underweight or lacked essential nutrients. That’s about the same as the entire population of Indiana in the United States (U.S). (World Food Program (WFP))<sup>17</sup> The WFP referenced study after study –in Britain, India, Brazil, Sierra Leone and Sri Lanka– that showed a connection between the productivity and wages of adult workers and their nutritional status. Together, good nutrition and basic education are crucial for workforce productivity. Improved productivity creates more jobs, higher incomes, increased consumption and prosperity for workers and investors alike. Achieving this will require greater investment in human capital – putting money into nutrition, health and education programs that help people, especially children. Good nutrition for women and girls in particular, has lasting effects for whole societies.

U.S research<sup>18</sup> concluded that while 35 million Americans feel the physical effects of hunger each day, every household and individual in the U.S feels the economic effects. One such study, titled “The Economic Cost of Domestic Hunger: Estimated Annual Burden to the United States” (2007, Indianapolis Economic Club), found that the U.S. pays more than \$90 billion annually for the direct and indirect costs of hunger-related charities, illness and psychosocial dysfunction and the impact of less education/lower productivity. These costs, borne by all Americans, distributed on an individual basis, means that on average, each U.S resident pays \$300 annually for the hunger bill. The study found that the lion’s share of the overall cost, \$66.8 billion, resulted from illness associated with hunger. What was unusual about hunger was the wide range of problems associated with it, which included not only the illness burden, but also expenses on food pantries and other charities to mitigate the problem, and lost productivity due to hunger’s adverse impact on learning.

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<sup>17</sup> “The Economic Impact of Hunger, James T. Morris, Executive Director, Indianapolis Economic Club. 9 February 2004, downloaded from <http://documents.wfp.org/stellent/groups/public/documents/newsroom/wfp076510.pdf>; “The Economic Cost of Domestic Hunger: Estimated Annual Burden to the United States, June 5, 2007. Sodexo Foundation and researchers affiliated with Harvard University School of Public Health, Brandeis University and Loyola University. downloaded from <http://www.sodexohousa.com> and Brandeis University. ‘Social and economic cost of hunger and food insecurity in US in 2010 was \$167.5 billion.’ ScienceDaily, 5 Oct. 2011. Web. 3 Dec. 2012. James T, Morris, ‘The Economics Impact of Hunger’. Indianapolis Economic Club. (2004), accessed at <http://documents.wfp.org/stellent/groups/public/documents/newsroom/wfp076510.pdf>; Sodexo Foundation and researchers, ‘The Economic Cost of Domestic Hunger: Estimated Annual Burden to the United States, Harvard University School of Public Health, Brandeis University and Loyola University (2007), accessed at <http://www.sodexohousa.com> and Brandeis University. “Social and economic cost of hunger and food insecurity in US in 2010.” Science Daily, 5 Oct. 2011. Web. 3 Dec. 2012.

<sup>18</sup> Ibid; Indianapolis Economic Club, Sodexo Foundation and researchers affiliated with Harvard University School of Public Health, Brandeis University and Loyola University and Brandeis University, James, “The Economics Impact of Hunger,” 2013, Sodexo Foundation and Researchers, ‘*The Economic Cost of Domestic Hunger: Estimated Annual Burden to the United States, & Brandeis University* “Social and economic cost of hunger and food insecurity in US in 2010.

ScienceDaily updated and extended this U.S. 2007 study, revealing that in 2010, hunger cost the U.S at least \$167.5 billion due to the combination of lost economic productivity per year, more expensive public education because of the rising costs of poor education outcomes, avoidable health care costs, and the cost of charity to keep families fed. This \$167.5 billion did not include the cost of the Supplemental Nutrition Assistance Program and the other key federal nutrition programs, with an estimated annual budget of \$94 billion. The state of domestic hunger continues to be a top concern and policy priority in the U.S. (Box #3).

The conclusion is that improving the nutritional status of children and adults has clear economic payoffs. IFPRI concluded that the world community has both the knowledge and the resources to eliminate hunger. Putting these tools to work requires us to ground our choices –small and large, individual and collective, political and economic– in ethical values, including empowerment and justice, stewardship of common resources for the common good, and affirmation of diversity.<sup>19</sup>

### Box 3: FYI ~ Domestic Hunger and Poverty in the USA

- Feeding America’s nationwide network of food banks is feeding 1 million more Americans each week than we did in 2006.
- 1/3 of client households report having to choose between food and other basic necessities, such as rent, utilities and medical care [1].
- About 35 million Americans live in households with insufficient food [2];
- The federal data set consistently indicates that close to 12% of the nation’s people lack sufficient nutrition;
- Food stamp use rose 1.8% in the US in January 2013 from a year earlier, with 15% of the US population receiving benefits [3].
- The number of recipients in the food stamp program, formally known as the Supplemental Nutrition Assistance Program (SNAP), reached 47.3 million, or nearly one in seven Americans.
- Roughly 46 million people in the US (15% of the population) lived below the official poverty line in 2011 (i.e. US\$ 11, 484 for an individual or \$23, 021 for a family of four per year) [4].

[1] Feeding America. 2013. Hunger Study 2010. < <http://feedingamerica.org/hunger-in-america/hunger-studies/hunger-study-2010.aspx>>

[2] <[http://www.sodexofoundation.org/hunger\\_us/Images/Cost%20of%20Domestic%20Hunger%20Report%20\\_tcm150-155150.pdf](http://www.sodexofoundation.org/hunger_us/Images/Cost%20of%20Domestic%20Hunger%20Report%20_tcm150-155150.pdf)>

[3] <http://blogs.wsj.com/economics/2013/04/05/some-15-of-u-s-receives-food-stamps/>

[4] [http://blogs.wsj.com/economics/2013/04/11/who-makes-up-the-working-poor-in-america/?mod=WSJ\\_article\\_outbrain&obref=obinsite](http://blogs.wsj.com/economics/2013/04/11/who-makes-up-the-working-poor-in-america/?mod=WSJ_article_outbrain&obref=obinsite)

<sup>19</sup> IFPRI 1995 (ibid) Cohen & Reeves, *Causes of Hunger*.

# Eliminating Extreme Hunger - MDG #1

In 2000, 189 nations made a promise to free people from extreme poverty and multiple deprivations. This pledge turned into the eight Millennium Development Goals. Goal 1 – the fight against poverty and hunger - is central to implementing the MDGs.

- Target 1C: Halve, between 1990 and 2015, the proportion of people who suffer from hunger.
- Indicators: 1.8- Prevalence of underweight children under-five years of age; 1.9 - Proportion of population below minimum level of dietary energy consumption

- Hunger may have spiked in 2009, one of the many dire consequences of the global food and financial crises
- Progress to end hunger has been stymied in most regions
- Despite some progress, one in four children in the developing world are still underweight
- Children in rural areas are nearly twice as likely to be underweight as those in urban areas
- In some regions, the prevalence of underweight children is dramatically higher among the poor
- Over 42 million people have been uprooted by conflict or persecution

*“Three years to the deadline; Hunger remains a global challenge. The most recent FAO estimates of undernourishment set the mark at 850 million living in hunger in the world in the 2006/2008 period-15.5% of the world population. This continuing high level reflects the lack of progress on hunger in several regions, even as income poverty has decreased. Progress has also been slow in reducing child under-nutrition. The 2015 deadline is fast approaching. The contributions of national Governments, the international community, civil society and the private sector will need to intensify as we take on the longstanding and long-term challenge of inequality, and press forward on food security...”*

The Millennium Development Goals Report 2012



***“The question is not whether to abandon global targets but rather how to improve the MDG architecture and how to adjust them to the priorities beyond 2015.”*** (Vandemoortele, 2011)

By 2015, the world will have met some of the MDGs’ key targets, such as halving the poverty rate, and will get close to completing primary education for all children; but achieving the health goals looks difficult.

Building on the MDGs, the global community should move beyond meeting basic human needs and promote dynamic, inclusive and sustainable development. Future goals must reach beyond traditional development thinking to become sustainable one-world goals that apply to poor and rich countries alike.

Based on discussions at a meeting at Bellagio, Italy 2011 and regional consultations in 2012, potential indicators for eleven (11) potential future “Bellagio Goals”, were defined as follows:

- ▶ inclusive growth for dignified livelihoods and adequate standards of living;
- ▶ sufficient food and water for active living;
- ▶ appropriate education and skills for productive participation in society;
- ▶ good health for the best possible physical and mental well-being;
- ▶ security for ensuring freedom from violence;
- ▶ gender equality, enabling men and women to participate and benefit equally in society;
- ▶ building resilient communities and nations for reduced disaster risk from natural and technological hazards;
- ▶ improving infrastructure for access to essential information, services and opportunities;
- ▶ empowering people to realize their civil and political rights;
- ▶ sustainable management of the biosphere, enabling people and the planet to thrive together; and
- ▶ global governance and equitable rules for realizing human potential.

Source: Post-2015 Development Agenda: Goals, Targets and Indicators - Special Report by Nicole Bates-Eamer, Barry Carin, Min Ha Lee and Wonhyuk Lim, with Mukesh Kapila, 2012 by The Centre for International Governance Innovation and the Korea Development Institute. This work is licensed under a Creative Commons Attribution — Non-commercial — No Derivatives License.





Part II

# **Understanding Nutrition**

## 2.1 Nutrition: clarifying the concept

### 2.1.1 What is Nutrition?

Nutrition, not food, is one of the eight core characteristics that differentiate living from non-living things, referred to as GRIMNER. Nutrition, denoted by the 'N', is defined as the process by which living organisms acquire food from the external environment and utilize it in building living tissue (Box #4).

The role of food, therefore, is understood as a raw material for growth. Food therefore is a 'carrier' for micro-nutrients, needed in small quantities, and as well for macro-nutrients, needed for growth and energy. Macronutrients are carbohydrates, fats and protein. Other important macro-nutrients that do not provide energy are fibre and water.

A healthy and balanced diet needs to provide adequate amounts of both macro and micro-nutrients. Good nutrition provides the raw materials. The foods one eats provide the energy to fuel bodily functions. In the same way as a car requires fuel to run, or a cell phone battery requires charging, a human body needs to be fuelled by nutrient-rich foods every day. As nutrition science has advanced over time, it is now well accepted that good nutrition provides more than just energy, structural components, vitamins and minerals. There are other substances in the foods, such as phytochemicals and antioxidants, which also provide health benefits.

### 2.1.2 Food Groups

Knowledge about the concentration of the different macro- and micro- nutrients contained in foods and food components form the base for defining food groups and dietary or nutritional guidelines. Dietary guidelines are recommendations on the proportional intake of each food group that is necessary for proper nutrition and health. According to the USDA, a basic premise of the Dietary Guidelines is that nutrient needs should be met primarily by consuming food. Food provides an array of nutrients and other components that have beneficial effects on health. The USDA's Dietary Guidelines reinforce two overarching concepts, i.e., the need to: (a) maintain calorie balance over time to achieve and sustain a healthy weight and (b) focus on consuming nutrient-dense foods and beverages.<sup>20</sup>

#### Box #4: Fast Facts - GRIMNER

**G**rowth - all living things grow (i.e. a permanent increase in size,

**R**espiration - all living thing respire (to obtain energy),

**I**rritability - living things are able respond to environmental changes,

**M**ovement -all organisms can move either part of/their entire structure,

**N**utrition- all living things feed,

**E**xcretion- all living things are able to remove waste products

**R**eproduction - all living are able of replicating themselves.

<sup>20</sup> U.S. Department of Agriculture and U.S. Department of Health and Human Services. Dietary Guidelines for Americans, 2010. 7th Edition, Washington, DC: U.S. Government Printing Office, December 2010. Any

The former Caribbean Food and Nutrition Institute (CFNI)<sup>21</sup> categorized food into six (6) groups based on the nutrient content and their role in health, specifically:

1. Staples,
2. Legumes and Nuts,
3. Vegetables,
4. Fruits,
5. Foods from Animals, and
6. Fats and Oils.

CFNI also provided recommendations for the relative proportions of each food, based on the nutritional requirements of a healthy daily diet and other factors, including, age, health profile, etc. Recommendations for a healthy and balanced daily diet proposed:

- approximately 45% from staples, such as, starchy fruits, roots, tubers/ground provisions that provide complex carbohydrates, an important source of energy;
- about 22% from Legumes and Nuts;
- approximately 12% -Vegetables; 9% -Fruits; 8% -Foods from Animals;
- approximately 4% - Fats and Oils;

Research by CFNI also suggested that these absolute proportions may alter as nutrition science advances, especially for the tropical food crops that are traditionally grown and consumed in the region, but not subject to extensive nutritional analysis as other foods. The CFNI was one of five CARICOM Organs merged in 2011 into a new regional body – Caribbean Public Health Agency (CARPHA). CARPHA was legally established on 2nd July 2011 by an Inter-Governmental Agreement signed by Caribbean Community Member States. The Agency began business on the 1st January 2013.

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<sup>21</sup> Investing in Food and Nutrition Security- Identifying potential investment opportunities in the Agriculture and Food Industries in CARICOM. Charles Carmichael, Andrew Jacque and Diana Francis, May 2009, ISBN13: 978-92-9248-053-0

The USDA guidelines recommend consumption of nutrition rich, or 'nutrient-dense' foods and beverages that provide vitamins, minerals and other substances which offer positive health effects with relatively few calories. All vegetables, fruits, whole grains, seafood, eggs, beans and peas, unsalted nuts and seeds, fat-free and low-fat milk and milk products, and lean meats and poultry, (prepared without adding solid fats or sugars) are nutrient-dense foods.

The term "nutrient dense" indicates that the nutrients and other beneficial substances in a food have not been "diluted" by the addition of calories from added solid fats, sugars, or refined starches, sodium or by the solid fats naturally present in the food. Ideally, they also are in forms that retain naturally occurring components, such as dietary fibre.

The U.S 2012 Dietary Guidelines define food groups as:

1. Vegetables,
2. Fruits,
3. Grains,
4. Dairy Products and
5. Protein Foods.

A brief explanation of the USDA Food Groups is provided to enhance understanding of the differences to the CFNI Food Groups. (Box #5). From general observations and 'layperson' perspectives, it is interesting that:

- the USDA food groups include green peas and green (string) beans with Vegetables and not with other peas and beans. Peas and Beans, classified as Legumes, under the CFNI Food Group, are specified by the USDA as a sub-category within Vegetables. The USDA also noted that *"Beans and peas are considered part of this [Protein Food] group, as well as the vegetable group, but should be counted in one group only;*
- what the CFNI considers as 'staples' (carbohydrates) food source is classified by the USDA within Vegetables (root crops), as a sub-group 'Starchy Vegetables' and under Grains, which is very specific to seed-bearing crops, whether they be whole, refined and or enriched grains and/or grain products;
- the USDA did not create as one group what the CFNI termed 'Food from Animals'. But rather specified a distinct Group for Dairy (milk and milk products) derived from a 'live' animal, as separate from other food from (slaughtered) animals, the latter classified under the 'Protein Foods' Group.

### Box #5: USDA Food Patterns – Food Groups and Subgroups

<b>Food Group</b>	<b>Subgroup and Examples</b>
Vegetables	Dark-green vegetables: all fresh, frozen and canned dark-green leafy vegetables and broccoli, cooked or raw, for example, broccoli, spinach, romaine, collard, turnip and mustard greens.
	Red and orange vegetables: all fresh, frozen and canned red and orange vegetables, cooked or raw, for example, tomatoes, red peppers, carrots, sweet potatoes, winter squash and pumpkin
	Beans and peas: all cooked and canned beans and peas; for example, kidney beans, lentils, chickpeas and pinto beans. Does not include green beans or green peas (See additional comment under protein food group)
	Starchy vegetables: all fresh, frozen and canned starchy vegetables; for example, white potatoes, corn and green peas.
	Other vegetables: all fresh, frozen and canned other vegetables, cooked or raw, for example iceberg lettuce, green beans and onions.
Fruits	All fresh, frozen, canned and dried fruits and fruit juices; for example, oranges and orange juice, apples and apple juice, bananas, grapes, melons, berries and raisons.
Grains	Whole Grains: all whole-grain products and whole grains used as ingredients; for example whole-wheat bread, whole-grain cereals, oatmeal and brown rice
	Enriched grains: all enriched refined-grain products and enriched refined grains used as ingredients; for example, white breads, enriched grain cereals and crackers, oatmeal and brown rice
Dairy products	All milks, including lactose-free and lactose-reduced products and fortified soy beverages, yoghurts, frozen yoghurts, dairy desserts and cheeses. Most choices should be fat-free or low fat. Cream, sour cream and cream cheese are not included due to their low calcium content.
Protein Foods	All meat, poultry, seafood, eggs, nuts, seeds and processed soy products. Meat and poultry should be lean or low fat. Beans and peas are considered part of this group as well as the vegetable group, but should be counted in one group only.

Source: p.g.52, U.S. Department of Agriculture and U.S. Department of Health and Human Services. Dietary Guidelines for Americans, 2010. 7th Edition, Washington, DC: U.S. Government Printing Office, December 2010.

It is also interesting to note the USDA's exact and deliberate approach to grouping foods according to their nutrient content as opposed to source, as illustrated by the explicit statement that 'Cream, sour cream and cream cheese are not included in the Dairy group due to their low calcium content'. Hence the essential basis for the 'Dairy' category appears to be linked to its 'calcium' content.

The USDA also explicitly recognized that milk and milk products were not the only source of calcium and listed others classified under other Food Groups, specifically: Orange Juice calcium fortified (Fruits Group), Sardines, canned, in oil, drained (Protein Foods), Soy milk, original and vanilla with added calcium (in both Protein Foods as processed soy products and in Milk & Milk products as fortified soy beverages), and Rice milk, with added calcium. Regarding the latter, soy and rice milks and products, the USDA guidelines classify them as being part of the vegan "dairy group", which is composed of calcium-fortified beverages and foods from plant sources. For the purpose of their analysis, calcium-fortified soy beverage, calcium-fortified rice milk, tofu made with calcium-sulphate, and calcium-fortified soy yogurt were all included.

Interesting!

Whatever Group YOU decide to place the foods that you CHOOSE to eat, your plate must contain foods that cover ALL YOUR NUTRIENT REQUIREMENTS for a healthy daily diet, whether you regard yourself as an omnivore, carnivore, herbivore or anything inbetween.

**STAPLES**



**PROTEIN**



**FATS AND OILS**



**DAIRY**



**FRUITS AND VEGETABLES**



[nutritionmattersforlife.com.au](http://nutritionmattersforlife.com.au)

## 2.2 Benefits of Good Nutrition

**Contributor: Nkosi Felix**

There is a direct relationship between nutrition (or the lack thereof) and health through the nutritive quality of food consumed. Regular consumption of foods of high nutritive quality (in appropriate amounts) is linked to vitality, maintenance of healthy body weight, longer life and reduced risk of many diseases.<sup>22</sup> Inadequate consumption of these foods is linked to ill-health, including chronic non-communicable diseases.

Among the most critical and long-term benefits of good nutrition is reduced infant and child mortality. This can be measured in the reduced economic and social costs of health care from pre-natal to childhood. Evidence of good nutrition among the young population includes reduced stunting, increased attendance in schools and improved cognitive ability, all of which are the foundation for productive citizens. In other words, early-life health is the basis for human capital formation. Bleakley (2010) suggests that this is likely to be true for two reasons: (a) much of a person's physiological and cognitive development happens in childhood, and (b) economic theory shows that human-capital investments should be made early in life.

The early child health and economic growth is illustrated as: Early-life health → Return to human capital → Income. This relationship suggests that poor early child health could affect lifetime income directly and through investments. Ultimately, therefore, interventions to improve early health, through nutrition, are strategic actions to secure human capital and economic development. In that way programs, such as school meals/school feeding can be very useful in improving early child health. In exploring how adult health might affect income through human-capital channels, Bleakley (2010) explained the relationship further: Adult health → Income. That is to say, direct impacts associated with illness reduce the ability to work. And Adult health → Return to human capital → Income. This implies that the utilization rate of human capital can be higher if it spends less time idled because of disease. If this is expected, early-life investments in human capital should increase.

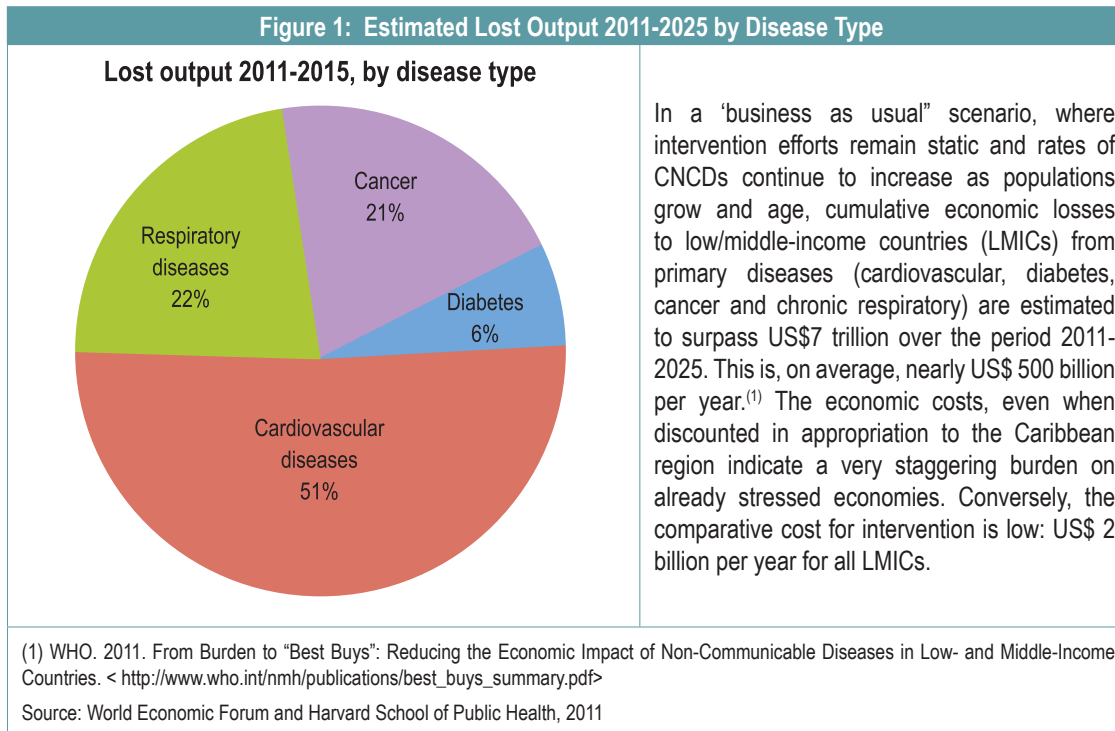
Good nutrition is essential in combating CNCDs. Ill-health conditions linked to poor nutrition are the result of consumption of calories in excess of personal daily caloric requirements or nutritional requirements and include heart disease, diabetes and weight problems (Fig. 1).

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<sup>22</sup> *What is the Relationship between Nutrition and Health?* George Mateljan Foundation. (2012), accessed at <http://www.whfoods.com/genpage.php?tname=george&dbid=214> >



Figure 1: Estimated Lost Output 2011-2025 by Disease Type



Based on the inter-relationships among nutrition, health and economic productivity illustrated in Fig.1, it is clear that labour is diminished by disability and death brought on by ill-health and poor nutrition, and capital is reduced because costs of screening, treatment and health care use up resources that would otherwise be available for productive public and private investments.<sup>23</sup> This provides a strong basis for Government intervention in nutrition for sustainable development.

The FAO (2000) recommended that Governments' focus should be redirected to nutritional issues, such as, micronutrients, infections, food safety and problems of an aging and obese population. These are all variables of nutritional security which raises the level of its importance in securing a county's human capital. In short, a healthy population provides a healthy and productive labour force, which is essential to economic development. The economic impacts of an unhealthy population range from loss of productivity to high health care costs, often throughout an entire lifetime and across generations.

<sup>23</sup> Dele Abegunde & Anderson Stanciole. An Estimation of the Economic Impact of Chronic Non-communicable Diseases in Selected Countries. WHO Working Paper. Department of Chronic Diseases and Health Promotion, (2006).

## 2.3 Nutrition Transitions

**Contributor: Lisa Hunt**

In 2010, under-nutrition was deemed as the world's most serious health problem, but one with the least focus.<sup>24</sup> By 2012, the Caribbean region was faced with both extreme forms of malnutrition:- over-nutrition in macronutrients and nutrient deficiencies in micronutrients. This situation is a direct result of changing eating pattern of Caribbean populations, from a diet high in fruits, vegetables, provisions, legumes and nuts to one high in refined carbohydrates, fats and salt. This changing consumption pattern has been responsible for the high incidence of CNCND's.<sup>25</sup> (Box #6). Such changes in diet and lifestyles, referred to as 'nutrition transition', are a direct and undesirable consequence of economic development. Such transitions are usually measured by expanding urbanization and globalization which enabled access to a range of 'Western diet' food products. These foods tend to be high in fat, sugar, salt, refined carbohydrates, and low in fibre, usually processed, fast, and convenience foods.<sup>26</sup>

### Box #6: FYI Caribbean Consumption Trends, 1960-2002

Between 1960 and 2002, the eating patterns of the average CARICOM consumer has trended towards an increased intake of oils, fats, sugars/sweeteners and highly processed grains. By 2002, consumption of fats and oils was almost twice the recommended level, as across CARICOM, several popular dishes and bakery products make regular use of vegetable oils, margarine, butter and shortening, especially for fried foods. Sugars and sweeteners were also consumed at volumes twice the recommended level, associated with an increasing consumption of an ever-widening variety of single strength, concentrate juices, nectars, drinks, flavoured waters and beverages, in particular, carbonated beverages. Such over-consumption was especially high among the young and lower income brackets.<sup>(1)</sup> In several Caribbean countries, agro-industrial activity is dominated by beverages, confectionary and bakery products.<sup>(2)</sup> The bulk of foods in these two categories is highly processed convenient and fast food options now increasingly accessible through globalization and urbanization.<sup>(3)</sup>

(1) Investing in Food and Nutrition Security: Identifying Potential Investment Opportunities in the Agriculture and Food Industries in CARICOM (CaRAPN, 2009), <http://www.scribd.com/doc/28199049/Investing-in-Food-and-Nutrition-Security-CARICOM-2009>

(2) Henry, F. 2004. Public policies to control Obesity in the Caribbean: Caribbean Commission on Health & Development- Consultant Reports.

(3) The Impact of Global Change and Urbanization on Household Food Security, Nutrition and Food Safety (FAO 2010) [www.fao.org/ag/agn/nutrition/national\\_urbanization\\_en.stm](http://www.fao.org/ag/agn/nutrition/national_urbanization_en.stm)

24 World Bank. 2010. Scaling up Nutrition: A Framework for Action. World Bank. Scaling up Nutrition: A Framework for Action, (2010) <

25 D. P. Sinha. "Changing patterns of food, nutrition and health in the Caribbean." *Nutrition Research*, 15(6)(1995): 899 – 938; Martorell R, Kettel Khan L, Hughes ML. 2000. Grummer-Strawn LM. Overweight and Obesity in preschool children from developing countries *International Journal of Obesity* 24:959-967.

26 B. M. Popkin. "The Nutrition transition and its health implications in lower-income countries. *Public Health Nutrition* 1: (1998):5-21; and B. M. Popkin. The Nutrition Transition and Obesity in the developing world. *Journal of Nutrition* 131(2001): 3

**Caribbean diets and nutrition have transitioned towards highly processed, high sugar-sodium-fat foods**



### 2.3.1 Nutrition Transitions: Drivers and Indications

- **Factory-type Farming Systems**

For a long time, it was generally understood, that the safety and quality of food starts on the farm. However, with bioengineering of seed and other genetic material, it is becoming clear that the safety and nutrient profile of food is pre-determined at the stage of seed selection, genetic manipulation and multiplication. This applies to both animal and plant-based products.

Excessive use of agri-chemicals and genetically modified organisms (GMOs) in conventional farming systems has been a major global concern. GMOs are organisms that have been changed genetically by insertion of specially isolated and selected deoxyribonucleic acid (DNA) of another live organism. GMOs are commonly used in conventional farming to help plants resist pests and increase yields, among other improved properties. However, GM foods are still a relatively controversial subject due to lack of consensus and conclusive evidence regarding their impact on human health and natural biodiversity. On the other extreme, organic farming systems, to a large extent, rely on healthy and natural interactions within the biodiversity pool for efficient soil functioning and crop development. Since organic farming aims to optimize conditions for preserving the inherent nutrient content of foods, it is promoted as a sustainable production method which contributes to human and environmental health.

A comparison of the nutritional content between organic and conventionally grown vegetables showed that organic produce had higher nutritional value: organic lettuce had 29% more magnesium; organic spinach- 52% more vitamin C; organic carrots- 69% more magnesium; and organic cabbage- 43% more vitamin C, 41% more iron and 40% more magnesium than their conventional counterparts.<sup>27</sup> However, improper use and application of organic matter (compost) can also render organically unsafe for human consumption.

Irrespective of the type of farming systems, food safety will always be priority. The rise in factory-farming and mass production manufacturing systems has made it even more imperative to monitor food safety risks, especially from mega suppliers like China. However, the USDA has raised concerns about the safety of the vast array of imported foods produced in China. This is due largely to China's weak food safety standards, excessive use of agro chemicals, unsafe additives used in food processing and drug residues in fish.<sup>28</sup> Concerns over food safety have led to rejections of Chinese food items in the U.S, as well as in Japan and Europe.<sup>29</sup>

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27 V. Worthington . Nutritional quality of organic versus conventional fruits, vegetables and grains. *Journal of Alternative and Complement Medicine* 7(2001):161–73

28 F. Gale & J.C. Buzby. Imports from China and Food Safety Issues. Unites States Department of Agriculture, Economic Research Service,( 2009).

29 L. Calvin, F. Gale, D. Hu and B. Lohmar. Improvements underway in China. *Amber Waves* Department of Agriculture, Economic Research Service. (2006).

- **Advances in food preparation technologies**

Nutrient quality is affected by the way food is produced, handled, stored, distributed, processed, retailed and prepared before it is consumed. The more a food is processed and exposed to light, heat or air, the more nutrients that will be lost in the food. The closer a food is to its natural state (such as, fresh vegetables, fruits, peas, beans and root crops) the more nutrients it contains<sup>30</sup>, i.e., nutrient dense. It is widely recommended that the healthiest methods of food preparation are those that do not compromise the quality of the inherent nutrients. These include boiling, steaming, baking, grilling and stewing (with little oil).

Advances in production methods have spurred increases in farm output. This in turn has driven advances in processing technologies and created new methods of extending shelf-life, storage capacity and reducing time spent in food preparation. These methods depend on extensive use of chemical ingredients and additives that often suspend natural processes after harvest, to preserve them for future use.

Such food altering processes include canning, vacuum sealing, blast-freezing and an ever-increasing range of processing and packaging of food and beverages. Processed foods or foods with extended shelf-life have become so readily available and in most circumstances relatively more affordable, that they have permeated the diets of most if not all population segments in developing countries, including in the Caribbean.

- **Widespread use of Fortification, Additives and Preservatives**

Fortification is the process of reintroduced essential micro-nutrients into foods lost during processing. The more common nutrients used in fortification are Vitamins A, B, C and D and minerals such as niacin and iron (Box #7). Over-consumption of these foods can promote weight gain and water retention in the body, leading to ill-health.

Most processed foods also now contain comparatively large volumes of preservatives and additives. These are chemicals added to foods to either bleach (improve colour), stabilize (preserve consistency/extend shelf-life), soften, sweeten and/or emulsify [prevent separation] foods.<sup>31</sup>

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30 A. Morris., B. Audia and B. Olive-Jean. Effect of Processing on Nutrient of Foods, *Cajanus* 37(2004):160- 164.

31 V. E. Kemi., H. J Rita, M. U. Karkkainen, H.T. Viljankainen, M. M. Laaksonen, T. A Outila and C. J. Lanberg-Allardt. Habitual High Phosphorus Intakes and Foods with phosphate additives negatively affect serum parathyroid hormone concentration: a cross- sectional study on healthy pre-menopausal women. *Public Health Nutrition* (2009):12(10) 1-8.

### Box #7: Fast Facts ~ About Food Fortification

Food	Fortifying agent
Salt	Iodine, iron,
Flours, bread, rice	Vitamins B1, B2, niacin, iron
Milk, margarine	Vitamins A and D
Sugar, monosodium glutamate, tea	Vitamin A
Infant formulas, cookies	Iron
Vegetable mixtures amino acids, proteins	Vitamins, minerals,
Soy milk, orange juice	Calcium
Ready-to-eat cereals	Vitamins, minerals
Diet beverages	Vitamins, minerals

Source:<http://archive.unu.edu/unupress/food/8F154e/8F154E03.htm>, accessed 1st August 2013. For additional reading, see 'Guidelines on food fortification with micronutrients', ISBN 92 4 159401 2, ©World Health Organization and Food and Agriculture Organization of the United Nations, 2006

Food fortification might be done for several reasons. The first is to restore nutrients lost during food processing, a process known as enrichment. In this case, the amount of nutrients added is approximately equal to the natural content in the food before processing. A second reason is to add nutrients that may not be present naturally in food, a process known as fortification. In this case, the amount of nutrient added may be higher than that present before processing. Fortification also standardizes the contents of nutrients that show variable concentrations. A typical example is the addition of vitamin C to orange juice to standardize vitamin C concentration and compensate for changes due to seasonal and processing variations. Finally, for technological purposes, a preservative or colouring agent is added to processed foods.

Therefore, depending on the reasons for adding nutrients, the objectives may be: to maintain the nutritional quality of foods, keeping nutrient levels adequate to correct or prevent specific nutritional deficiencies in the population at large or in groups at risk of certain deficiencies (i.e., the elderly, vegetarians, pregnant women, etc.); to increase the added nutritional value of a product (commercial view); and to provide certain technological functions in food processing.

According to these principles, currently in several countries nutrients are added to a wide variety of food carriers, such as cereals, flours, bread, milk, margarine, infant formulas, soy milk, orange juice, salt, sugar, monosodium glutamate, tea, dietetic beverages, and even parenteral and enteral solutions. Most fortifying agents are vitamins and minerals, and in some cases essential amino acids and proteins. These additions have helped to solve public health problems, such as salt iodization to prevent goiter.

The main and frequently used additives and/or preservatives are:

*Sugar, fructose, dextrose, maltose, etc.*, tend to be very high in most processed foods, especially in soft-drinks (10-12 teaspoons in 12-ounce), consumption of which has been linked to increased weight and obesity in children. As the intake of soft drink increases, there is an inverse effect on fruit and vegetable intake (fresh or juiced)<sup>32</sup> and a serious adverse impact on the incidence of chronic diseases.

*Salt, or sodium* is used to preserve and enhance flavour in processed foods, such as, deli meats, canned foods, ready to eat meals, frozen meals, ready-to-eat breakfasts, cheese packaged products and restaurants food.<sup>33</sup> Called the silent killer, high consumption levels have been linked to hypertension, stroke and heart disease.<sup>34</sup>

*Total Fats* are refined fats added to processed foods. High consumption of saturated fats (found in several animal products) can result in overweight or obesity and an increased risk of chronic disease, such as, hypertension, diabetes Type-2, cardiovascular disease, cancer and stroke.<sup>35</sup> There are, however, healthy fats which are essential to good health and disease prevention, grouped as monounsaturated and polyunsaturated fats found in foods, such as, fish, avocado, seeds and nuts.

*Trans-Fats*, the worst type of fat, are man-made, produced when liquid oil is converted to solid in a process called hydrogenation. These fats increase low density lipoprotein (LDL), i.e., the bad cholesterol levels, in the blood and decrease high density lipoprotein (HDL), i.e., the good cholesterol.<sup>36</sup> This increases the risk factor for heart diseases. Trans-fats are used to increase shelf life of packaged products and are common in processed foods, shortening and hard margarine. They pose dangerous health risks and are considered so detrimental to human health that the U.S. has banned their use in their food production. However, foods high in trans-fats are still being imported with increasing frequency, and in variations and volumes that threaten food and nutrition security of Caribbean populations.

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32 M. P. St. Onge., K. L. Keller and S. B. Heymsfield. Changes in childhood food consumption patterns: a cause for concern in light of increasing body weights. *The American Journal of Clinical Nutrition*. 78(2003): 1068-1073. And J. James, P. Thomas, P. D. Cavan, D. Kerr. Preventing childhood obesity by reducing consumption of carbonated drinks: cluster randomised controlled trial. *British Medical Journal*, 328(2004): 1237-1243.

33 A. F. Subar, S. M. Krebs-Smith, A. Cook and L. Kahle. "Dietary sources of nutrients among US adults, 1989 to 1991." *Journal of the American Dietetic Association*. 98 (1998):537-47.

34 P. Strazzullo, L. Elia, N.B. Kandala and F. P. Cappuccio. Salt intake, stroke, and cardiovascular disease: meta-analysis of prospective studies. *British Medical Journal* (2009): 33., and F. M. Jacobson. "Salt: the forgotten killer." *Center for Science in the Public Interest*. Washington, D.C. (2005).

35 D. Mozaffarian, R. Micha, S. Wallace . 2010. Effects on coronary heart disease of increasing polyunsaturated fat in place of saturated fat: a systematic review and meta-analysis of randomized controlled trials. *Public Library of Science(POLoS Med)*. (2010): 7. And P. W. Siri-Tarino, Q. Sun, F. B. Hu and R. M. Krauss. Meta-analysis of prospective cohort studies evaluating the association of saturated fat with cardiovascular disease. *The American Journal of Clinical Nutrition*. 91(2010):535-46.; and M. I. Goran, K. Coronges, R. N. Bergman, M. L. Cruz and B. A. Gower. Influence of family history of type 2 diabetes on insulin sensitivity in prepubertal children. *Journal of Clinical Endocrinol Metabolizm* 88(2003):192–195. Accessed November 12 2013 . <http://www.ncbi.nlm.nih.gov/pubmed/12519851>

36 American Diabetes Association (ADA). Standards of medical care in diabetes. *Diabetes Care*. 34 (1) (2011):11–61.

- **Inconsistencies in Food labelling requirements and applications**

With the advances in food production and processing technologies, the quality and extent of application of food labelling has become an essential factor in nutrition. Labels provide the nutrient content and identify the ingredients and additives contained in food used in production. There have been instances where certain specific chemical additives, especially those with questionable health benefits, have either been omitted or referred to by some other non-descript term. In some cases the ingredients may simply read “artificial flavouring” or “artificial colouring”. There are also cases where the additive is simply specified based on its function rather than by its actual name, such as ‘gelatin’, a common emulsifier added to food, but with no specific information on its source.

Internationally, nutritional labelling and health claims are governed by the Codex Alimentarius, (Box#8). Nutritional labelling is not a universal requirement and hence not mandatory in several countries, such as the EU, USA, Canada, Australia, New Zealand, Hong Kong, India and Mexico. However, concern over rising incidence of CNCs is also fuelling the controversy over food labelling. Proponents for nutritional labelling argue that providing such information is critical to promote and enable consumers to make healthier food choices. In contrast, some producers, particularly those who rely heavily on use of GM ingredients and additives, contend that such explicit identification on food labels could potentially place such products at a disadvantage due to consumer fears about the safety of GM foods.

Food labelling regulations are a source of conflict in international trade, with a major issue related to the requirements for clearly identifying whether a food has genetically modified organisms, ingredients or additives. Among the imported foods consumed in the Caribbean region that are genetically modified include corn, tomato, milk and meat.

**Box #8: Fast Facts ~ Nutrition and Codex Alimentarius**



**C O D E X**  
International Food Standards  
A L I M E N T A R I U S

The Codex is a set of international standards, guidelines and related texts for food products. These standards were developed by the Codex Alimentarius Commission of the Joint FAO/WHO Food Standards Programme. Its aim is to protect consumer health and encourage fair practice in international food trade. Although its implementation is voluntary, the World Trade Organization (WTO) recognized it as a reference in international trade and trade disputes. The Codex Committee on Food Labelling develops guidelines on nutrition labelling and health claims. The Committee has developed three standards and guidelines relevant to nutrition labelling: the General Standard for the Labelling of Pre-packaged Foods sets down the underlying principle that labelling should not be false, deceptive nor misleading; the Guidelines on Nutrition Labelling recommend that nutrition labelling be voluntary unless a nutrition claim is made; the General Standard for the Labelling of and Claims for Pre-packaged Foods for Special Dietary Use recommends that all foods for special dietary uses display a nutrition label.  
Source: WHO Website



Several food manufacturers and brands do not indicate on foods labels which foods contain GM organisms and there is no action or current regulation in the Caribbean on GM foods. This means that awareness and knowledge on which imported foods are genetically altered is extremely limited, at best. This betrays a fundamental right of consumers to make an informed choice based on knowledge of what is in the foods they consume.

- **Longer ‘food miles’**

“Food miles” is an emerging concept that involves the calculation of CO2 emissions associated with the transport of food over long distances to arrive at the final consumer. (Source: WTO). Product, process and transportation technologies and networks also allow global trade to occur within greatly reduced time spans. Despite their high perishability, fruits and vegetables travel thousands of miles on a daily basis to consumers in all parts of the world. Measures are taken to retain their ‘freshness’ en-route and in-transit. However, there is still some degree of nutrient loss, especially in the micro-nutrient group. The longer the trade route, the longer the ‘fresh’ commodity is exposed to nutrient depletion. Vitamins, such as, A, B1, C and E in fruits and vegetables start to deplete immediately after harvest. These Vitamins are important anti-oxidants with well documented disease-fighting qualities. Temperature changes, exposure to air and light and handling, all rob fruits and vegetables of essential nutrients. Food with less distance to travel from farm to plate is less susceptible to nutrient loss, especially vital antioxidants, and contamination from harmful bacteria. Increasing local production of fruits and vegetables can help increase nutrition insecurity and reduce incidences of micronutrient deficiency.<sup>37</sup>

- **Growth of the Food Retail Industry**

The increase in imports and the related excess energy supply (mostly of foods high in fats and oils and sugars and sweeteners) have helped to propel the growth of the food retail industry across the region. Since 1990, the growth of supermarkets in Latin American and the Caribbean grew from a 10-20% share to a 50-60% share of the retail sector in 2008.

For the Caribbean, supermarket shares account for up to 42% of the sector, with a high level of dominance noted in the higher per capita Member States such as Bahamas, Barbados, Saint Lucia, Trinidad and Tobago, St. Kitts and Nevis, and Antigua and Barbuda.<sup>38</sup> This development has certainly transformed food industry practices, including procurement, quality control, stock control and category management. The result is a wider variety of food items and competitive pricing, and a growing share of foods imported from North America and other extra-regional sources, which often benefit from better store shelf placement.

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37 T. Johns and J. Romeo. Functionality of Food Phytochemicals. *Recent advances in Phytochemistry*, 31(1997): 53-87. And S. K. Lee, & A. A. Kader. Preharvest and postharvest factors influencing vitamin C content of horticultural crops. *Postharvest Biology & Technology*. 20 (2000): 207–220. And I. L. Goldman, A. A. Kader and C. Heintz. Influence of production, handling, and storage on phytonutrient content of food. *Nutrition Review* (1999): S46–S52, and WHO 2001. *Urban and Peri-Urban Food and Nutrition Action Plan*. WHO Regional Office for Europe.

38 Sacha Silva, Robert Best, James Tefft. *Reducing the CARICOM Food Import Bill and the Real Cost of Food: Policy and Investment Options. FAO Project - Promoting CARICOM/CARIFORUM Food Security*, Barbados, (2011).

### 2.3.2 Nutrition Transitions: Health Impact

Health is considered both a form of human capital itself and an input to producing other forms of human capital.<sup>39</sup> There is no doubt that the general health profile in the Caribbean has improved over the last 50 years. However, with lifestyle changes, including consumption patterns,<sup>40</sup> there has been dramatic shift from a pattern of high prevalence of infectious disease and malnutrition to a pattern of a high prevalence of chronic diseases. Henry (2004) concluded that this nutrition transition caused major modifications in diet, reflected in changes in body composition.<sup>41</sup>

The Caribbean region is now plagued with CNCD's including diabetes, obesity, hypertension, cardiovascular disease, kidney diseases and cancer. These diseases were normally seen in more affluent societies but are now prevalent among low income countries as well.<sup>42</sup> One half of the deaths in the region are attributable to chronic diseases. Surveys carried out in the region found that 7-20% of males and 22-48% of females older than 15 years of age have a BMI of 27 or greater. (Box #9).

Studies between 1995 and 2004 revealed that approximately half of the adult population in the Caribbean region was overweight and 25% was obese.<sup>43</sup> According to the CFNI, in 2010, approximately 55% of the adult female population had BMI over 25 (over-weight) or BMI > 30 (obese).<sup>44</sup> A reversal of these trends will require another nutrition transition, this time away from unhealthy eating patterns and lifestyles.

#### Box #9: Fast Facts ~ Measuring Obesity

Obesity is calculated using the Body Mass Index (BMI), which is a simple index of weight-for-height, i.e.,  $BMI = \text{a person's weight in kilograms} \div \text{the square of height in meters (kg/m}^2\text{)}$ . A BMI greater than or equal to 30 is obesity. BMI provides the most useful population-level measure of overweight and obesity (as it is the same for both sexes and for all ages of adults). However, it should be considered a rough guide because it may not correspond to the same degree of fatness in different individuals.

Source:WHO

39 H. Bleakley. Health, Human Capital and Development. *Annual Review of Economics*. (2010), accessed at <<http://popcenter.uchicago.edu/pdf/arec18.pdf>>

40 Fitzroy Henry. Nutrition Challenges in the Caribbean. Jamaica, Caribbean Food and Nutrition Institute, (2004), accessed at <http://freedownload.is/doc/health-risks-and-child-rights-in-the-caribbean-6163543.html>

41 Fitzroy Henry. Public policies to control Obesity in the Caribbean: Caribbean Commission on Health & Development- Consultant Reports. (2004), accessed at [http://www.who.int/macrohealth/action/PAHO\\_Report.pdf](http://www.who.int/macrohealth/action/PAHO_Report.pdf)

42 B. M. Popkin. The Nutrition transition: New Trends in the Global Diet. *Nutrition Reviews* 52 (1994): 285- 298.

43 D. P. Sinha, Changing patterns of food, nutrition and health in the Caribbean. and Henry, Public policies to control Obesity in the Caribbean.

44 CFNI. 2010. Caribbean Food and Nutrition Institute 2009 Annual Report.

- **Obesity:**

Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health.<sup>45</sup> Increased incidence of obesity is strongly associated with overconsumption of total fats and sugar, low consumption of fruits, vegetables, provisions, peas and fibre and physical inactivity. Obesity is a growing epidemic in the Caribbean and a serious public health issue.<sup>46</sup> It is a risk factor for many other chronic diseases, including Type 2 Diabetes. In particular, it is now a major problem among children, who are also now being diagnosed with Type-2 diabetes, hypertension and high cholesterol, previously thought to be 'adult diseases'.

- **Type-2 Diabetes:**

The Medical Encyclopaedia defines Type-2 diabetes as a chronic disease. It occurs when the body (the pancreas) does not produce sufficient amounts of insulin to convert sugars into energy, or when the body does not use its insulin supplies efficiently. Insulin is an essential hormone that moves glucose into the cells of the body. In diabetes, the function is lost and the unconverted sugar (glucose) that remains in the blood is very harmful to health. Type-2 Diabetes is one of the fastest growing obesity diseases and is associated with many complications, including cardiovascular disease, kidney disease, neuropathy, blindness, and amputations.<sup>47</sup> Processed foods have been associated with increased risk of Type-2 diabetes.<sup>48</sup>

- **Other Overweight and Obesity-related Conditions**

*Blount's Disease:* a disorder which occurs when an excessive amount of weight surrounds growing bones. This is especially the case with the lower half of the body, such as legs. It is more prevalent in children.

*Respiratory Problems:* Obesity makes the lungs work harder to get the necessary oxygen to the body in a timely manner. Asthma is more common among the obese.

*Stroke:* When the arteries, which carry blood to the brain, get blocked, the end result is a stroke. Such blockages happen in obese people much more often, because they usually have high cholesterol and blood pressure, which contributes to blockages.

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45 World Health Organization "Obesity & Overweight" accessed at [www.who.int/mediacentre/factsheets/fs311/en/](http://www.who.int/mediacentre/factsheets/fs311/en/)

46 P. S. Gaskin and S. P. Walter. Obesity in a cohort of black Jamaican children as estimated by BMI and indices of adiposity. *European Journal of Clinical Nutrition* 57(2003):420-426.

47 H. C. Gerstein, K. Swedberg, J. Carlsson, J. J. McMurray, E. L. Michelson, B. Olofsson, M. A. Pfeffer and S. Yusuf. 'The haemoglobin A1c level as a progressive risk factor for cardiovascular death, hospitalization for heart failure, or death in patients with chronic heart failure: an analysis of the Candesartan in Heart failure: Assessment of Reduction in Mortality and Morbidity (CHARM) program'. *Archives of International Medicine* 168 (2008): 1699-1704.

48 L. S. Gross, L. Li, E. S. Ford, S. Liu. Increased consumption of refined carbohydrates and the epidemic of type 2 diabetes in the United States: an ecological assessment. *American Journal of Clinical Nutrition* 79 (2004):774-9.

*Liver Damage:* It is difficult for the body to deal with fast food obesity, because these foods usually do not get distributed appropriately. When this is the case, fat can build up around the liver, which may result in its inflammation, scarring, and even permanent damage.

*Polycystic Ovary Syndrome,* the main cause of female infertility, is the enlarging and presence of numerous small cysts located along the outer edge of each ovary. Obese women have a much higher chance of developing this disorder. This obesity disease also results in excessive hair growth and irregular menstrual cycles.

- **Other Health Impacts of Nutrition Transitions**

*Heart Disease:* describes a range of diseases that affects the heart. People with obesity usually have lower levels of good (HDL) cholesterol and higher levels of bad (LDL) cholesterol. This increases the risks of obesity and heart disease tremendously.

*Dyslipidemia:* a disorder of lipoprotein metabolism, including lipoprotein overproduction or deficiency<sup>49</sup> eventually leads to obesity and heart disease. This is a major fast food obesity-related disease.

*Arthritis:* a condition that results from strain on the joints for extended periods. Excessive body weight causes such strain and can predispose younger people to incidences of arthritis.

*Micro-nutrient deficiencies:* Two important micro-nutrient deficient conditions are vitamin and iron deficiencies. Some vitamins and minerals need other nutrients to be absorbed. Also, certain other factors such as health status, drug (medication) use or inhibitors in food can affect their absorption and availability in the body. Caffeine which can be found in some carbonated drinks, coffee, teas and chocolate can inhibit the absorption or cause losses of some nutrients including, iron, Vitamin D and calcium.<sup>50</sup>

Vitamin A, D, E, and K need fat for absorption and are thus called fat soluble vitamins. Therefore any disorder that affects the absorptions of fat will lead to a deficiency of the fat soluble vitamins.<sup>51</sup> An example is Irritable Bowel Syndrome (IBS) which is a condition that affects the large intestine, characterized by chronic abdominal pain, cramping and changes in bowel movements.<sup>52</sup>

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49 MedicineNet.com. 2012. Definition of Dyslipidemia. [www.medterms.com/script/main/art.asp?articlekey=33979](http://www.medterms.com/script/main/art.asp?articlekey=33979)

50 J. E. James. Understanding Caffeine: A Biobehavioral Analysis. Behavioral Medicine and Health Psychology Series 2(1997): 225- 227

51 J. Anderson, L. Young and S. Prior. Fats Soluble Vitamins. Factsheet .(2008), accessed at <http://www.ext.colostate.edu/pubs/foodnut/09362.html>

52 S. Khan and L. Chang. Diagnosis and Management of IBS, Nature Reviews Gastroenterology and Hepatology 7 (2010): 565-581, accessed at [www.researchgate.net/...Diagnosis\\_and\\_](http://www.researchgate.net/...Diagnosis_and_)

Iron is a mineral found mainly in animal foods as well as in small quantities in some vegetables, peas and nuts. Though iron may not always be lacking in the diet *per se*, the problems stem in the absorption pathway where digested food is made use of by the body. Absorption of iron is a critical issue as many foods have inhibitors which reduce the body's ability to absorb iron, leading to iron deficiency. (Box #10).

In summary, "Health equals Wealth" was the principal message coming out of a 2001 report of the Caribbean Commission on Health and Development (CCHD) which highlighted the increasing incidence of CNCs. This was further endorsed at the CARICOM Summit on CNCs in 2007, a Caribbean mantra which implicitly recognizes that hunger and therefore under-nutrition jeopardizes health which in turn has significant socio-economic and other development impacts.

Being unhealthy depresses the ability to work productively and/or incentive to invest in human capital. Human capital development represents one of the most lucrative avenues for development in the emerging global knowledge economy. Nutrition transitions which have led to significant health, social and economic costs. The associated economic costs include rising social and financial costs of health-care and disability. However the impact, in terms of the opportunity costs to human capital development holds significance for CARICOM, especially since with few natural resources, human capital represents a major resource for driving and sustaining development.

#### Box #10: FYI ~ Iron deficiency in the Caribbean

- 22% of persons in the Americas including the Caribbean are anaemic. It is the primary cause of anaemia, with preschool age being the most affected (39.5%), followed by pregnant women (31.1%).
- Iron deficiency anaemia is the most prevalent micronutrient deficiency in the Caribbean.
- Anaemia seems to be a moderate problem in countries such as Saint Lucia, St Vincent, Antigua, Grenada, Dominica and Trinidad, but a severe problem in Guyana and Haiti.
- Iron deficiency anaemia has negative consequences on development of children including performance at school and even work productivity in adults.

Source: WHO. 2008. Worldwide Prevalence of Anemia: 1993-2005. WHO. 2001. Urban and Peri - Urban Food and Nutrition Action Plan. WHO Regional Office for Europe.



Part III

# **Food - the Pathway to Hunger Alleviation and Health**

## Introduction: Food - meaning and interpretations

Food is indispensable to the hunger, nutrition and health dialogue. Food, when consumed, should provide the body with the required nutrients to support growth and health. As recommended by the USDA, these choices should be towards foods that are 'nutrient-dense' and also in forms that retain naturally occurring components, such as, dietary fibre.<sup>53</sup>

Food, in its simplest understanding, is a carrier for nutrients needed for health. CIPO Issue #2 provided an extensive discussion on what constitutes food, noting that in today's society, 'food' in of itself, means different things to different people. Even the source of 'food' is also a subject of much discussion. This is because in spite of the efforts to develop value-chains that link farm output to food processing industries, there is still an artificial divide and disconnect between the farm activity (often referred to as agriculture) and the 'food and beverage' industry<sup>54</sup>, (usually classified as agribusiness or agroindustry).

Food, as a source of nutrition, is classified into five or six groups based on nutrient content and health benefits. Food as a commodity for agricultural trade, is also classified into groups, but by origin (i.e., from animals or plants), natural (i.e., primary), or prepared forms (through industrial processes, i.e., semi-processed, finished consumer goods) and categories in between.<sup>55</sup>

The trade classification is based on the Harmonized System (HS, Annex 1). (Box #11). Unfortunately, trade classification has dominated and has contributed to disconnect between food and nutrition in regional and national policies. The increasing role of trade in supplying food, especially processed products to regional markets, has been 'blamed' for driving the changing notions of what constitutes 'food' and nutrition transitions.

### Box #11: FYI ~ Trade Groups, HS Chapters 1-24

- Section I: Live animals and animal products (HS Chapters 1-5)
- Section II: Vegetable products (covers all food crops and some non-food crops as well) (HS Chapters 6-14)
- Section III: Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes ((HS Chapter 15)
- Section IV: Prepared foodstuffs; beverages, spirits and vinegar; tobacco and manufactured tobacco substitutes. (HS Chapters 16 – 24)

Source: WCO. Details in Annex 1

<sup>53</sup> Ibid: U.S. Department of Agriculture and U.S. Department of Health and Human Services. Dietary Guidelines for Americans, 2010.

<sup>54</sup> The Agriculture, Food and Health Challenge - Critical Issues, Perspectives and Options, 2009. Inter-American Institute for Cooperation & Agriculture (IICA) and Technical Centre for Agriculture and Rural Cooperation (CTA). ISBN13: 978-92-9248-161-2

<sup>55</sup> Ibid: Investing in Food and Nutrition Security - Identifying Potential Investment Opportunities in the Agriculture and Food Industries in CARICOM, 2009, IICA and CTA



# The Food Evolution or Revolution?

## Future Foods - INSECTS

“Things like crickets and grasshoppers will be ground down and used as an ingredient in things like burgers.”

The Dutch government is putting serious money into getting insects into mainstream diets. It recently invested one million euros (£783,000) into research and to prepare legislation governing insect farms.

A large chunk of the world’s population already eat insects as a regular part of their diet. Caterpillars and locusts are popular in Africa, wasps are a delicacy in Japan, crickets are eaten in Thailand.

But insects will need an image overhaul if they are to become more palatable to the squeamish Europeans and North Americans, says Gaye, who is a member of the Experimental Food Society.

“They will become popular when we get away from the word insects and use something like mini-livestock.”

**Insect nutritional value / 100g**

Food Source	Protein (g)	Calcium (mg)	Iron (mg)
Caterpillar	28.2	n/a	35.5
Grasshopper	20.6	35.2	5
Dung beetle	17.2	30.9	7.7
Minced beef	27.4	n/a	3.5

Source: *Future foods: What will we be eating in 20 years' time?* By Denise Winterman. BBC News Magazine. <http://www.bbc.com/news/magazine-18813075>



## Are we, Caribbean consumers, there yet?

### 3. The Food System – imports and pricing

*Contributor: Camille Russell*

#### 3.1 Importing Food

CARICOM food supply spans a wide range of products. This is obvious from a quick glance at the HS tariff system. Of note is the great diversity in the range of value added, captured in HS 16-24, a diversity not reflected in the Caribbean food production system. The major producers of value-added products are Trinidad, Jamaica, Barbados, Guyana and Belize, mainly beverages (HS-22) and cereal preparations (HS-19). However, these producers operate at a relative price disadvantage, compared to larger, more networked and integrated foreign competitors. This has fuelled the concern that competition from the overseas food imports are “crowding out” regional food production, particularly in sectors, such as, frozen poultry/beef versus fresh poultry/beef, and in others of high substitutability, such as, wheat flour versus cassava flour. In this context, producers in Jamaica, Trinidad and Tobago, Barbados, Belize, Guyana, the counties with relatively more mature processing industries, are particularly vulnerable<sup>56</sup> to import competition. The key issues relating to food importation and briefly summarized below.

- **High and growing food import bill**<sup>57</sup>

Concern over the Caribbean food supply situation is not new. In 1975, at the Second Conference of the CARICOM Heads of Government (CHOG) held in St. Kitts and Nevis, regional Heads pushed for the “*implementation of plans for greater regional self-sufficiency in food production*”. Not only were proposals adopted to develop milk and dairy products, mutton and lamb, poultry and hatching eggs, but the (now-defunct) Caribbean Food Corporation was created. Since then, CARICOM initiatives to combat increasing food import bills have included the Regional Transformation Program for Agriculture (1996), Regional Special Program for Food Security (2002), The Jagdeo Initiative (2005) and the Liliendaal Declaration (2009) and the more recent Regional Food and Nutrition Security Policy (RFNSP, 2010) and Action Plan (2011).

By 2006, the CARICOM Secretariat had estimated the region’s food import bill (exclusive of Haiti and the Bahamas) at approximately US\$3.5 Billion. Trade liberalization commitments under the World Trade Organization (WTO) Uruguay Round (UR) negotiations (1986-1994) and Economic Partnership Agreements (EPAs) have all been blamed for the rising food import bill. Since the early 1960s there has been steadily increasing aggregate in the level of CARICOM food import bill, where import levels doubled. Sharp increases were experienced between 1977 and 1980, 1994 and 1997 and particularly between 2003 and 2008.<sup>58</sup> Four countries– Haiti, Jamaica, Trinidad and Tobago and the Bahamas – accounted for nearly ¾ of these imports.

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<sup>56</sup> Ibid: S. Silva, R. Best and J. Tefft. Reducing the CARICOM Food Import Bill and the Real Cost of Food: Policy and Investment Options, Barbados. (2011). FAO Project - Promoting CARICOM/ CARIFORUM Food Security.

<sup>57</sup> Ibid: S. Silva, R. Best and J. Tefft (2011)

<sup>58</sup> Ibid: S. Silva, R. Best and J. Tefft (2011)

In terms of the composition of the food import bill, processed goods and a handful of “big-ticket” items, sourced largely from the US and EU dominated food imports, specifically:

- Wheat, maize and derived products; (US\$489 million)
- Food preparations, excluding extracts, sauces, cereals, and soups; (US\$455 million);
- Chicken, pork, beef and mutton; (US\$420 million);
- Cheese and dry/evaporated milk; (US\$403.5 million);
- Rice; milled/husked/broken/paddy (US\$287.8 million);
- Beverages; (US\$255 million);
- Sugar, both raw and refined; both raw and refined (\$191 million)
- Fisheries products - dried, frozen and smoked (US\$ 174 million); and
- Inputs into the production of animal feed (US\$160 million).

The data suggest that the trade imbalance between regionally produced-exported-traded goods and those imported from extra-regional sources has worsened. While fresh produce, meat products, fish, baked goods, rice, beverages and sugar in CARICOM were sourced largely from regional food producers, dairy, wheat/maize, food preparations and inputs into animal feed production were supplied from extra-regional sources. As observed in several studies, household-level expenditures validated a strong bias in favour of extra-regional imported foodstuffs as well as regionally manufactured food items with strong imported input content.

Essentially, the FAO (2011) study reconfirmed previous conclusions of import dependence both at the consumer level (for food) and at the industry level (for inputs into food manufacturing). This, coupled with the adverse relationship between rising imports and declining local production in most, if not all CARICOM countries, threatens to erode gains made in addressing the food-nutrition-health challenge. This situation is further complicated by rising and volatile prices of inputs into both food production and food distribution.

- **Volatile and rising food prices**

Over the last few years, the world food market has suffered unprecedented dramatic increases in food prices. The “official” start of the food price crisis is often cited circa mid-2006 when most food prices experienced a steep hike in international markets. This led to a sharp escalation in prices for essential food products.<sup>59</sup> The several causal factors -structural and short-term factors- are comprehensively analysed and well documented.<sup>60</sup>

The general consensus holds, that soaring and volatile prices will continue to shape the international food commodities market. Climate change, fuel price increases, growing food demand in China, India and other emerging economies, and competition for crops for food and bio-fuels<sup>61</sup> are all projected to continue to affect food production and supplies.<sup>62</sup> In the short-term, high food prices will benefit the countries that produce and export such commodities. The recent experiences clearly indicated the wide and far reaching short-to-medium impacts which adversely affected all stakeholders in Caribbean countries - i.e., farmers, producers, distributors, decision-makers and households, especially the poor and vulnerable. Among the immediate impacts were widening trade deficits as food import bills soared and increasing inflationary pressures as prices for virtually all foods, spiked!

Industry stakeholders have identified rising costs of inputs as a major factor in price increases. According to Dunstan Demille, of Consolidated Foods, Saint Lucia, efforts have been made to save costs by improving production and manufacturing techniques. However, rising cost of inputs over the last few years, most of which are imported, have eroded the impacts of these cost-saving efforts and caused substantial increases in production costs.<sup>63</sup> In St. Vincent, similar concerns were raised after the East Caribbean Flour Mills announced its intentions to increase the price of flour from 1<sup>st</sup> March 2011.<sup>64</sup> In Barbados, with the increase in the price of wheat by 20-24% in 2011, local bakeries subsequently adjusted the price of bread upwards to cover the increased cost of the input.<sup>65</sup>

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59 Economic Commission for Latin America and the Caribbean, *The Escalation of World Food Prices and its Implications for the Caribbean* (Santiago, Chile ECLAC Publications, 2008), 1, <http://www.eclac.cl/publicaciones/xml/9/34779/L.179.pdf>

60 Inter-American Institute for Cooperation on Agriculture, *Concerns Mount Over Rising Food Prices* (San Jose, Costa Rica IICA Technical Note, 2011) 2, <http://www.iica.int/esp/dg/Documents/TechnicalnoteFoodCrisis.pdf>

61 Albert Binger. *Agriculture for Food, Fuel or Both. The Agriculture, Food and Health Challenge – Critical Issues, Perspectives and Options*. Inter-American Institute for Cooperation on Agriculture (IICA) and The Technical Centre for Agricultural and Rural Cooperation (CTA) *Critical Issues, Perspectives and Options 2*(2009).

62 Food and Agriculture Organisation, *Regional Consultation on Policy and Programmatic Actions to Address High Food Prices in the Caribbean-Summary of Proceedings* (Port of Spain, Trinidad and Tobago, 2011, 5, [http://www.fao.org/fileadmin/user\\_upload/ISFP/Caribbean\\_Regional\\_Consultation\\_on\\_Policy\\_and\\_Programmatic\\_Actions\\_t%E2%80%A6.pdf](http://www.fao.org/fileadmin/user_upload/ISFP/Caribbean_Regional_Consultation_on_Policy_and_Programmatic_Actions_t%E2%80%A6.pdf) (accessed 24 March 2012).

63 Information obtained through direct communication with Dunstan Demille, Consolidated Foods, Saint Lucia.

64 Government of St. Vincent and the Grenadines, “Flour price Increases”, (St. Vincent and the Grenadines, Government Website-Citizen Services 2012) [http://www.gov.vc/index.php?option=com\\_content&view=section&layout=blog&id=6&Itemid=159&limitstart=14](http://www.gov.vc/index.php?option=com_content&view=section&layout=blog&id=6&Itemid=159&limitstart=14)

65 Lisa King, “Bread Prices will Rise,” *Nation News*, April 9, 2011

Flour and bakery products were not the only foods affected by rising costs. There were also substantial increases in the price of liquefied petroleum gas (LPG). In Barbados, the price of LPG increased in January 2011, by Bds. \$4.11 (roughly US\$2.06), subsequently retailed at Bds. \$200.83 (roughly US\$100.40); while the 25-pound cylinder and the 20-pound cylinder increased by Bds. \$1.84 and \$1.53; retailed Bds. \$55.31 and \$44.20 respectively. The price of eggs increased from 5-10% since March 14 2011.<sup>66</sup>

As food price inflation accelerated, real consumption declined, especially among the poor. This contributed directly to the increase in poverty and inequality.<sup>67</sup> According to the World Bank and the United Nations Economic and Social Council (ECOSOC), the global food crisis already eliminated seven years of global advances in the movement against poverty thus severely jeopardizing the achievement of the MDGs.<sup>68</sup> ECLAC also estimated that a 15% increase in food prices in 2008 relative to 2007 would have pushed more than 200 million people into poverty and some 84 million people into indigence in the LAC region. This would have contributed to an increase in both poverty and indigence rates of near three percentage points.

For the Caribbean, like many other regions, the macroeconomic and social implications of this crisis were further compounded by increases in energy prices and global recession. The resulting fiscal imbalances have placed development gains and goals at risk. This has led to public calls for governments' to address the risk of rising food import bills and by extension, deficiencies in the Caribbean food supply situation.



66 Natasha Beckles, 'Electricity Bills Going up', Nation News, April 12, 2011,

67 Ibid S. Silva, R. Best and J. Tefft (2011)

68 Economic Commission for Latin America and the Caribbean, The Escalation of World Food Prices and its Implications for the Caribbean (Santiago, Chile ECLAC Publications. 1 (2008), accessed at <http://www.eclac.cl/publicaciones/xml/9/34779/L.179.pdf>

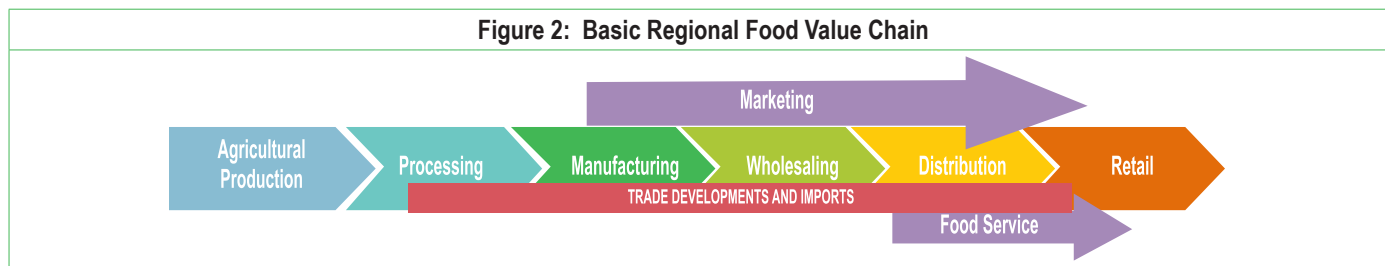
## 3.2 Pricing Food

### • The Affordability Factor

The concept of affordability boils down to ability to purchase, which in turn, is dependent on earning power/income status. A household's earning power and disposable income can be subject to minimum wage ceiling and tax considerations which reduce the amount of income available to afford a basic food basket. Research by CFNI estimated that in 2004, most households require between 10-31% of their minimum wage to purchase their food basket. This percentage reflects a combination of low and static income earnings and rising costs of living, including rising food prices. Apart from income levels, the price of food definitely and directly impacts affordability. Generally, the price of food is determined by:

- the balance of supply and demand conditions:- which affects the returns to the industry, i.e., when there is excess supply relative to demand, the price is forced downwards. The reverse is also true;
  - the influence of trade:- in determining price, traders consider prevailing world food prices, especially for commodities (i.e. rice, corn, etc.), the success of the product in export markets, as well as the importation of substitutes and inputs;
  - the nature and extent of value chain integration:- greater integration between producer and consumer reduces product price volatility and creates a more stable food market;
  - use of technology and innovation:- these especially affect labour and marketing costs, such that improvements in technology and innovation increase food production and process efficiencies and which can enhance price stability;
  - product competition:- marketers are forced to price competitively, especially in industries with high levels of direct and substitute sources. Therefore high levels of competition in such industries tend to constrain retail prices;
  - the direct and hidden costs at each stage in the value chain, plus any additional mark-up by the wholesaler or retailer.
- **Hidden Value Chain costs**

Figure 2 provides a basic illustration of a food value chain, from production to distribution, or as commonly referred to, from 'farm to market'.



. . . from Farm

There is a view that problems with food pricing start at the farm (depicted in Fig. 2 as Agricultural production). Eustace Vitalis, former regional purchasing manager for Sandals Resorts, Saint Lucia, observed that typically, local farmers are not aware of their production costs.<sup>69</sup> Generally, their pricing is guided by existing industry standards or they set the price of their commodities by the asking price of buyers (restaurants or hotels). This means that even if production costs - whether in terms of labour or transportation- increase, the price remains set at the industry level. The reverse is also true. Vitalis also noted that such pricing practices are inefficient and they persist mainly due to a general lack of cohesion among farmers to arrive at prices, and hence minimize price-suppression and price-undercutting.

. . . to Market

Figure 2 also captures services from manufacturing, wholesaling, distribution and retail under the concept of 'Marketing'. Marketing is generally described as 'the management process through which goods and services move from concept to the customer. It includes the coordination of four elements previously termed the 4Ps:

- identification, selection and development of a product,
- determination of its price,
- selection of a distribution channel to reach the customer's place, and
- development and implementation of a promotional strategy<sup>70</sup>

With market dynamics, the 4Ps have now been replaced with the 4Cs, i.e.,

- consumer – development of a product that meets a need or want;
- cost – determination and accounting for all costs (economic, social, etc.) in satisfying the consumer;
- communication – important in identifying/articulating the attributes that the consumer is looking for beyond just product advertising and promotion; and
- convenience – not only place, but the convenience to buy and thus the channels available to the consumer to access the product.

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<sup>69</sup> Obtained through direct discussions (2012) with Eustace Vitalis, former regional purchasing manager for Sandals Resorts, Saint Lucia

<sup>70</sup> <http://www.businessdictionary.com/definition/marketing.html>

Marketing activities can impact food prices in various ways, including:

- increasing pressures on food manufacturers to differentiate their products across a variety of factors (such as taste, quality) relevant to specific consumer market segments. Such pressures reduce the commoditization of products, resulting in diminishing real returns over time and reduce exposure to imported or substitute products.
- globalization of consumer brands which could lead to greater concentration of brands in the hands of fewer global brand managers, which allows these players to better manage brand strategies and have more leverage in dealings with retailers.
- increased attention to specialization and customization of food products:- i.e., eating preferences, specific food and cooking styles, tastes and health benefits, among other consumer demand characteristics, are increasingly influencing the product offerings.

The 2010 RFNSP concluded that *“over the recent past, therefore the major component of the cost of food products to consumers in the region has consisted increasingly of processing and distribution services, now estimated to constitute upwards of 50% of the final market price to the consumer, especially for branded commodities.”* Industry players agree, that to the extent that the bulk of food production, product transformation and value-added benefits to the consumer occur across these services, then the bulk of the cost to final market price also lies in these services.

- Distribution:

Distribution involves transport and delivery, as well as handling, preparation, marketing and energy and labour costs. Industry stakeholders observed that high production and processing costs were also transferred to distribution services, adding yet another major component to the final market price. Faced with such high costs, distributors have to acquire the product at the increased price which forces them to either maintain and/or increase the profit margin or mark-up in order to recoup additional costs incurred for advertising and promotion.

Dunstan Demille of Consolidated Foods Ltd., Saint Lucia explained that distribution services varied considerably, based on the nature of the commodity. For instance distribution of fresh fruit requires careful handling, efficient transportation, cooling and refrigerated shipping. Other perishable items, such, as fresh juice, milk, yogurt etc., also require careful handling in the distribution process. This additional care also affects distribution costs which influences the final market price.



Andrew Forde of Lasco Barbados added that for branded products sold at a higher premium, distribution costs also tend to be higher. This is especially with respect to maintaining brand image advertising. He admitted, however, that while many marketers agree that processing and distribution services constitute a significant percentage to the final consumer price, the costs associated with these services should be regarded as estimates and not exact or constant amounts since they are subject to seasonality, supply, links in the distribution chain, competition and ultimately, the nature of the product itself.

- Food Services:

Food services are now a fixture in modern food distribution and marketing systems. Consumers' changing lifestyles and eating preferences are driving growth in 'eating away from home'. Convenient food service establishments and a wider variety of retail points of sale now dot the marketing landscape offering a diverse range of prepared food options and packaging formats that cater fully to the 'convenience factor'. Forde confirmed that consumer perception about price, value and quality, were pivotal to the determination of shopping behaviour and product choice.

Therefore an understanding of consumer characteristics and behaviour is essential to any pricing strategy. Once these are determined, then product marketing, including branding, labelling, advertising, product placement and finally pricing strategies, will be more effective.

- Trade costs:

Since imports from extra-regional sources, constitute a major share of the food supply, trade costs add to the price of food. The computation of Port charges in Barbados is used as an example of the major costs absorbed in the price of imported food products as follows:<sup>71</sup>

- Cost Insurance Freight (CIF) charges: the amount charged for the merchandise, plus freight to the agreed destination and insurance for the product to the point of destination.
- Port Charges: various charges and duties incurred at the point of entry.
- Mark-ups/Margins: Local companies usually employ a cost plus method when product pricing. The cost base is the CIF plus local charges, which include from port charges, distribution costs, and marketing costs. Mark-ups usually range between 20%-50%, with higher mark-up for specialty items where there is little or no competition. Wholesalers and retailers will also observe the industry margin for particular products when determining the mark-up/margin for their products. (Box #12).

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<sup>71</sup> Barbados Business, Duties and Taxes <http://businessbarbados.com/investor-guide/duties-and-taxes/>

### Box #12: Fast Facts ~ Composition of Port Charges in Barbados

- **Tariffs:** these are duties charged on imports, following the Common External Tariff (CET) schedule. Generally most items are subject to a Customs Tariff of 20%. There are a few exemptions to this, including agriculture products which attract a duty rate of 40%. In addition to customs duties, many countries also apply other duties and charges, including stamp taxes, administrative fees and other levies to imported goods
- **Environmental Levy:** The main purpose of environmental levy is to defray the cost of the disposal of refuse generated by the use of goods imported into Barbados. This levy is charged at the rate of 1% of the CIF Value on most goods.
- **Excise Tax:** Most excisable goods are subject to the tax at a specific rate, with the exception of motor vehicles, which are subject to ad valorem rates (tax based on the value of the item). Excise tax is charged on four categories of goods: alcoholic beverages, tobacco products, motor vehicles, and petroleum products.
- **Value Added Tax (VAT):** Value Added Tax is charged at the rate of 17.5%. This tax is compounded and is charged on the total of the CIF Value and any other import taxes. Some goods are zero-rated.

#### *An example of calculation of duties and taxes in Barbados*

Customs Value (CIF)	\$100.00
Import Duty (CET): 20% of Customs Value (\$100.00 * 20%)	\$20.00
Environmental Levy: 1% of Customs Value (\$100.00 * 1%)	\$1.00
Value Added Tax: 17.5% of (Customs Value Plus Sum of Duties and Taxes) ((\$100.00 + \$20.00 + \$1.00)*17.5%)	\$21.18
<b>Total Duties and Taxes:</b> (\$20.00 + \$1.00 + \$21.18)	\$42.18

See Barbados Business, Duties and Taxes <http://businessbarbados.com/investor-guide/duties-and-taxes/>

As shown in Table 1, after CIF values and port charges are considered, price mark-ups can reach up to, and over, 400%. As indicated previously, markups/margins can range even higher depending on the specialty of the product and the level of product competition. These price differentials reflect the combined costs of the processing and distribution services which essentially comprise a significant bulk of the final price to consumers.

Table 1: Cost components for various imported food products							
Product	CIF Prices (BDD\$/kg)	Port Charges (BDD\$)				Retail Price (BDD\$/kg)	Mark-up/Margin
		Import Duty (40%)	Environ. Levy	VAT (17.5%)	Total Port Charges		
Corn Flour	1.88	0.75	0.02	0.46	1.23	9.95	429%
Wheat Flour	1.14	0.46	0.01	0.28	0.75	3.49	206%
Pasta	2.70	1.08	0.03	0.67	1.77	6.17	128%
Couscous	2.70	1.08	0.03	0.67	1.77	11.98	344%
Rice (milled)	1.32	0.53	0.01	0.33	0.87	3.35	154%
Sugar (raw)	1.08	0.43	0.01	0.27	0.71	1.52	41%
Cheese	7.90	3.16	0.08	1.95	5.19	14.38	82%

Source: data from UN COMTRADE, ITC Trade Map used to calculate these costs and percentages

Analysis was undertaken for Trinidad and Tobago on marketing margins using the difference between CIF and retail prices (Table 2).<sup>72</sup> Between 2001 and 2005, the analysis indicated that import prices of most of the identified commodities experienced some increases, although some commodities, such as chicken meat and bananas, experienced declines. This analysis clearly shows that marketing costs, in particular, the percentage mark-up, do indeed influence price increases.

72 C. R. Løvendal, K. T. Jakobsen and A. Jacque. Food Prices and Food Security in Trinidad and Tobago, (Port of Spain, Trinidad and Tobago FAO ESA Working Papers No. 07-27, 2007), 18, accessed 14 June. 2012, at <ftp://ftp.fao.org/docrep/fao/010/ai134e/ai134e00.pdf>

**Table 2: CIF-Retail Price Marketing Margins on Selected Food Products, Trinidad, 2001 - 2005**

	CIF Prices (TT\$/kg)					Retail Prices (TT\$/kg)					% Mark-up	
	2001	2002	2003	2004	2005	2001	2002	2003	2004	2005	'01-02	'04-05
Meat of Swine	7.61	8.04	10.27	10.96		20.32	20.9	21.33	23.21	25.23	163.5	N/A
Beef	13.48	15.49	15.4	13.48	11.15	17.73	17.53	18.61	21.67	24.27	22.4	89.2
Chicken Meat	5.49	5.19	4	3.75	4.28	6.97	6.57	8.29	9.28	9.18	26.8	131
Flour-wheat	1.89	1.59	1.68	1.94	2.13	3.14	3.41	3.54	3.72	3.64	90.2	81.5
Milled Rice	3.39	1.88	2.19	2.98	3.01	4.27	4.2	4.33	5.24	6.13	74.8	89.7
Raw Sugar	1.76	1.92	1.86	1.47	2.08	4.52	4.52	4.43	4.38	4.23	146	150.9
Powder Milk	15	13.95	14.57	16.3	26.1	23.29	24.16	26.51	27.5	28.05	64.2	38.1
Bananas	3.21	2.69	2.65	2.65	2.35	4.75	4.96	5.23	5.47	6.05	66.2	132
Irish Potatoes	1.28	1.85	1.83	1.61	1.78	2.87	2.97	2.79	2.85	3.06	92.2	74.4
Sweet Potatoes	3.71	3.63	3.66	3.72	3.71	7.32	4.96	8.65	6.38	11.12	66.9	135.7
Tomatoes (*)	3.41	5.24	4.4	4.07	4.22	8.31	9.58	9.21	12.93	14.28	113.2	228.1
Carrots	2.72	2.66	2.71	3.34	3.4	7.11	7.56	8.29	9.5	10.37	172.8	194.6
Cabbage	2.47	2.45	2.8	2.68	3.48	6.18	6.32	6.75	6.4	8.8	154.1	145.9

(\*) – refers to fresh/chilled

Source: Løvendal, Jakobsen and Jacque 2007

### 3.3 Food Pricing and the Nutrition/Affordability Decision

**Contributor: Brent Theophile**

- **The Nutrition/Affordability Decision**

The Nutrition/Affordability Decision (N/A decision) and its associated willingness to buy (WTB) and ability to buy (ATB) concepts are inspired by a general notion that if healthy foods were competitively priced relative to the less healthy alternatives, then this would encourage healthy food choices within existing incomes.<sup>73</sup> However, this assumes that prices are the major determinant of food purchasing choices. It is well understood that food purchasing and consumption decisions are a complex process. This is especially because of the subjective nature of consumer perceptions, purchasing power and a variety of other different stimuli, inclusive of, and which contribute to, the price of the product.

This leads to the question of how the price of healthy foods affects their purchase/consumption decision. Arriving at an answer will require disconnecting price and affordability considerations from the concepts of willingness to buy (WTB) which is essentially a classical definition, in Economics, for demand and ability to buy (ATB), which is associated with the pillar of ‘accessibility’ in the traditional FNS definition.

- WTB is a broad concept that includes affordability as well as demand-set factors that influence purchasing decision (e.g. acceptability of the product, nutrient value *viz* other products, etc.).
- ATB is determined solely by having sufficient disposable income to enable purchase (affordability).
- WTB can exist even though ATB is not present or is constrained, and both are affected by the pricing of a (comparatively more) nutritious food *viz* less healthy food alternatives (Box #13).

The WTB-ATB decision set leads to a few noteworthy observations.

- Even when more nutritious/healthy foods are affordable, this does not directly translate into a healthy food choice. This in part helps explain the research results that CARICOM populations were generally ‘over-fed’ on sugars, sweeteners and fats and oils, contributing to increasing incidence of CNCDS;
- There are alternative choices along the spectrum of healthy-unhealthy food options, hence even though an ideal nutritious choice may not be possible, consumers can opt for the option that offers balance between nutrition and price. i.e., ‘the best of the worst’.

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<sup>73</sup> These terms are generic concepts used to disaggregate demand for the purpose of examining how food pricing could affect decisions on purchasing for nutrition because demand is both willingness (essentially expected utility) and ability (purchasing power).

Box #13: Matrix of Simplified Decision-sets Surrounding the Nutrition-Affordability Decision		
ATB	WTB	Consumer Decision
1. When more nutritious foods are priced high		
Does not exist (i.e. nutritious food is not affordable)	Exists (i.e. there is desire to buy the more nutritious food)	Choose the unhealthy/low nutrition food choice Choose a lower-priced but comparably nutritious alternative
	Does not exist (i.e. there is no desire to buy the more nutritious food)	Choose to consume an unhealthy food choice
Exists (i.e. nutritious food is affordable)	Exists	Choose to consume the more healthy food choice Choose a lower-priced but comparably nutritious alternative
	Does not exist	Choose the unhealthy/low nutrition food choice
When nutritious foods are priced low		
Does not exist	Exists	Choose the unhealthy/low nutrition food choice Choose a lower-priced but comparably nutritious alternative
	Does not exist	Choose the unhealthy/low nutrition food choice Choose a lower-priced but comparably nutritious alternative
Exists	exists	Choose to consume the more nutritious food choice Choose a lower-priced but comparably nutritious alternative Choose the unhealthy/low nutrition food choice
	Does not exist	Choose the unhealthy/low nutrition food choice Choose a lower-priced but comparably nutritious alternative
Source: Compiled by Brent Theophille		

In utilizing the concept of an affordable nutrition index (ANI), it is possible to establish a nutrition-focused basis to consider food prices amongst alternatives. The ANI was introduced at the American Dietetic Association's October Food and Nutrition Conference and Expo and was billed as the first and only tool that assesses food's nutritional profile and cost value to create a nutrition-value-per-dollar score. It was shaped by recommendations in the U.S. Dietary Guidelines for Americans and calculates a food score based on nine essential nutrients to encourage (protein, fibre, iron, calcium, potassium, magnesium and vitamins A, C and E) and three nutrients to limit (saturated fat, added sugars and sodium). Where the healthy alternatives may not necessarily be available, affordable or acceptable, it is expected that unhealthy foods will be the usual choice.

In such situations, healthier alternatives can be promoted as an important feature in FNS policy initiatives, program planning (e.g. school feeding programs) and communication on FNS;

- Purchasing decisions are also considered under social behaviour. For instance, the purchase of high-end goods conveys social acumen/class. This is particularly so among higher income segments (lower-middle to upper income segments). However, when consumers do not have adequate information about the intrinsic quality of the product, price/cost is used as a quality cue.<sup>74</sup> As a consequence, it is often argued that price has a positive influence on expectation of quality: the higher the price, the higher the expectations of quality. However, there are usually many quality cues in the marketplace. Studies on this behaviour typically found a diminishing relationship between price and expected quality, i.e., consumers are aware of the fact that price alone does not convey quality and are receptive to other signals.
- It appears more likely that consumers will choose to buy an unhealthy/low nutrition food choice than make a decision to purchase the more nutritious food choice. The WTB/ATB analysis showed the latter decision-set occurring only once, when both the ATB and WTB existed. In contrast, and even when both the ATB and WTB exist, the likely decision appears to always be to purchase an unhealthy/low nutrition food. This suggests that in addition to actions that encourage purchasing healthy foods, alternatives which offer a comparable or slightly less nutritious 'bang for the buck', option are essential.

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74 V. A. Zeithaml. "Consumer perceptions of Price, Quality and Value, A Means-End Model and Synthesis of Evidence". *Journal of Marketing*, 52, 3(1998): 2-22, accessed at <http://www.jstor.org/discover/10.2307/1251446?uid=3739600&uid=2&uid=4&uid=3739256&sid=21102516532607>

## • Price Considerations and the N/A decision

Nutrition research suggests that price, in addition to factors, such as, taste, preferences, health concerns and habits, significantly affects dietary and purchasing habits. Early studies using price as a purchasing cue, often viewed price perception as a one-dimensional construct.<sup>75</sup> Low prices were seen as favourable, while high prices were deemed unfavourable.<sup>76</sup> These theories were based on the notion of the economic rationality of the consumer. Other studies counteract that high prices are not necessarily unfavourable and that consumers can make irrational choices in buying higher-priced products instead of lower-priced ones.<sup>77</sup> From these and other studies, the following conclusions were made:

- an observed price may vary depending on the individual: i.e., one person can judge the price as cheap, another as expensive, still someone else might be price neutral.
- consumers differ on price perception: a high level of product information, knowledge and familiarity will lead to a higher inclination to purchase the product.
- a person's quality consciousness, i.e. the ability and willingness to perceive quality differences, also factors into their perception of the product and the price.<sup>78</sup>

There is no doubt that food pricing is very influential in food purchasing decisions. Importantly, there is need to understand what makes the price acceptable to the consumer when the purchasing decision is driven by nutrition. An acceptable price is one that does not act as a disincentive or discouragement for the consumer to purchase the item. But where is the line drawn between prices at a bargain versus being too cheap, and premium versus exorbitant pricing? This essentially relies on the perceived value or quality of the product. Wilms and Mils (1993) found in their 'Analysis of Price and Non-price Factors Influencing the Adoption of Compact Fluorescent Lamps by European Households', that "an 'acceptable cheap' price is perceived as a bargain price for the product. For prices higher than 'normal' or lower than 'bargain', consumer interest declines rapidly. Lower prices can evoke doubts about product quality and higher prices are seen as too much money to consider buying."<sup>79</sup>

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75 G. Padula & B. Busacca. "The asymmetric impact of price-attribute performance on overall price evaluation." *International Journal of Service Industry Management*. 16(1) 2005: 28-54  
16(1):2854. <http://faculty.unibocconi.eu/giovannapadula/>

76 A. Steptoe., T. M. Pollard & J. Wardle. "Development of a measure of the motives underlying the selection of food: the food choice questionnaire". *Appetite* 25 (1995): 267-284 , accessed at <http://www.ucl.ac.uk/hbrc/diet/SteptoeandWardleFCQ.pdf>

77 H. J. Leavitt. Experimental findings about meaning of price. In publication: B. Taylor & G. Wills (eds.) 1969. Pricing strategy. Stables Press Ltd, London. 37-43.  
<http://www.jstor.org/discover/10.2307/2350772?uid=3737576&uid=2&uid=4&sid=47698905987387>

78 D. R. Lichtenstein, N. M. Ridgway and R. G. Netemeyer. Price Perceptions and Consumer Shopping Behaviour: A Field Study." *Journal of Marketing Research* 30, (2)1993: 234-245, accessed at <http://www.jstor.org/discover/10.2307/3172830?uid=3737576&uid=2&uid=4&sid=47698906576417>.

79 W. Wilms and E. Mills. "Analysis of Price and Non-price Factors Influencing the Adoption of Compact Fluorescent Lamps by European Households." *Proceedings of Right Light* (2) 1993:



For branded and premium products, consumers are willing to pay more based on perceptions of quality, taste and other intrinsic values. However, if these attributes are not readily identified in the product, or if the product can be substituted, then the higher price premium is viewed as excessive or overpriced. However, nutrition is noted as a recognizable quality difference, which is often not properly factored into “cheap food” interventions (The Economist 2011).<sup>80</sup>

- **Nutritional Considerations and the N/A decision**

In recent years, food products with a higher health-related value have become an increasingly important consideration for all food industry stakeholders. As people become more health conscious, especially in light of the prevalence of CNCDS, there has been an increased demand for healthier and more nutritious food options.

The current obesity epidemic is helping to drive demand for more nutritious food options. Many consumers are now seeking natural, organic, unsweetened, low -fat -carb, -sodium, -sugar, -cholesterol dietary options. This shift in consumer interests has in turn prompted food processors to increase the nutritional content of their product offerings, often as noted previously, through the fortification process. However even with these supply and demand factors in place, affordability of healthier, more nutritious food is still considered to be a challenge to many consumers.

From the consumer perspective, while many may wish to pursue a healthy diet, budgetary constraints are major hindrances - especially for low-income families. Often times, and if feasible, these persons will try to include at least one nutritionally beneficial option in their purchases, usually in the form of cereal or fresh produce. For the more health conscious individual, such purchases would include a greater number of these items, such as more wholesome starches i.e. brown rice, wheat flour, as well as cereals, grains, fruits and vegetables and fresh juices. It should be noted however that there are some consumers who do not weigh nutritional considerations in their purchasing decisions at all, because of limited disposal income. Hence for them, food purchases are essentially a means to survival, i.e., belly full!

The following candid perspectives of key food industry stakeholders can serve to enhance understanding of the food producer/ supplier thinking on how the above considerations can influence pricing and consumer response in Caribbean societies:

- Consumers are becoming more nutrition-conscious and as a result, food producers have sought to increase the nutritional content of products as a means of adding value and consumer appeal. However, this act of boosting product worth contributes to a relatively higher price. Any improvements in the nutritional value of the product are considered more as a selling point and less as a means of improving consumers’ dietary needs.

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563-581, accessed at <http://evanmills.lbl.gov/pubs/pdf/wilms-mills-r12.pdf>

80 The Economist. 2011. Quality, not Quantity: Why small doses of vitamins could make a huge difference to the world's health. Cited: August 13th 2012. < <http://www.economist.com/node/18440801>>

- While there are some persons who are becoming more health conscious, nutritional content is not a major factor in their purchasing plans of the average consumer - especially as it pertains to considering the nutritive value of locally grown foods.
- The health food industry has its own market of core consumers who purchase healthy foods because of either specific health or dietary needs, or who are committed to maintaining a healthy lifestyle (for one or more reasons), and not necessarily for the general public. Given that marketers are aware of this, these foods are priced according to the intrinsic value-added nutritional content that this specific segment is responsive to.

There is also a view that healthy food is not necessarily expensive if consumers plan their meals and track their food purchases. Interviews with consumers, several producers and marketing managers revealed that most persons consider buying healthy as being able to afford processed products labelled 'light', 'low-sugar' or 'no salt' as well as brown rice, wheat flour, whole grain pasta, soy products, etc.

Vitalis asserts that ground provisions such as locally grown sweet potatoes, yams and cassava can be substitutes for many of these starches. Even natural juices of mango, golden apple, tamarind, sorrel and the like can be substituted for processed beverages. If persons replaced their food purchases with more locally produced fruits and vegetables –which are comparably more affordable than processed foods labelled 'healthy', then this would significantly reduce consumer spending for nutrition. This would be a viable alternative for low-income households.

- **Non-Content Considerations and the N/A decision**

In addition to price and content value, marketers often use packaging to encourage potential buyers to purchase the product. Packaging refers to all materials and products used for the containment, protection, handling, delivery and presentation of goods from the producer to the end-user.<sup>81</sup> It can be very simple or it can add value to the product thereby helping to position the product in the consumer's mind. A glance at supermarket shelves proves that packaging does play a crucial role; it is what first attracts a consumer.

Lasco Barbados representative Mr. Forde asserts, that even at the right price, if the customer does not notice the product then he/she would not buy it. He adds that by first attracting the customer to the product, other selling tools are then engaged, i.e., price, nutritional content, etc. For this reason, packaging and labelling go hand in hand.

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<sup>81</sup> S. Srivastava. "Packaging Becoming Significant Marketing Tool". Business Standard, September ,11, 2008, accessed at <http://www.business-standard.com/india/news/packaging-becoming-significant-marketing-tool/334023/>

Never underestimate the importance of packaging. Marketers often measure consumer brand perceptions and ignore the pack. Yet we know from the way that consumers react to unbranded products, that packaging plays a huge role in reinforcing consumer perceptions. Packaging helps to drive the way consumers experience a product. Yet, we spend little time researching the connections between packaging and the direct experience of the product.<sup>82</sup>

The jury is still out as to whether providing nutrition information labels will truly affect consumer decision-making. Notwithstanding, the issue of deceptive labelling and inaccurate information is being closely monitored. However, it is clear that simply offering healthier food options is not enough. There are several other important factors (knowledge about the product, price, nutritive value, consumer perception, etc.,) that must influence the food purchasing and consumption choice. There is need therefore, to reconcile import strategy with FNS goals and in particular, aspects of accessibility (economic) and utilisation, which are perhaps the most significant contributing factors to sustainable FNS.



82 Jan Hofmeyr and Butch Rice. Commitment-Led Marketing: The Key to Brand Profits is in the Customer's Mind. New York, USA, Wiley & Sons Ltd, 216. Cited with permission granted 16 December, 2013 from John Wiley & Sons Ltd. UK.

## Annex I

HS NOMENCLATURE 2012 EDITION	
SECTION I - LIVE ANIMALS; ANIMAL PRODUCTS	
Section Notes.	
1	Live animals.
2	Meat and edible meat offal.
3	Fish and crustaceans, molluscs and other aquatic invertebrates.
4	Dairy produce; birds' eggs; natural honey; edible products of animal origin, not elsewhere specified or included.
5	Products of animal origin, not elsewhere specified or included.
SECTION II - VEGETABLE PRODUCTS	
Section Note.	
6	Live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage.
7	Edible vegetables and certain roots and tubers.
8	Edible fruit and nuts; peel of citrus fruit or melons.
9	Coffee, tea, maté and spices.
10	Cereals.
11	Products of the milling industry; malt; starches; inulin; wheat gluten.
12	Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruit; industrial or medicinal plants; straw and fodder.
13	Lac; gums, resins and other vegetable saps and extracts.
14	Vegetable plaiting materials; vegetable products not elsewhere specified or included.

## HS NOMENCLATURE 2012 EDITION

### SECTION III

ANIMAL OR VEGETABLE FATS AND OILS AND THEIR CLEAVAGE PRODUCTS; PREPARED EDIBLE FATS; ANIMAL OR VEGETABLE WAXES

15	Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes.
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### SECTION IV

PREPARED FOODSTUFFS; BEVERAGES, SPIRITS AND VINEGAR; TOBACCO AND MANUFACTURED TOBACCO SUBSTITUTES

Section Note.

16	Preparations of meat, of fish or of crustaceans, molluscs or other aquatic invertebrates.
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17	Sugars and sugar confectionery.
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18	Cocoa and cocoa preparations.
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19	Preparations of cereals, flour, starch or milk; pastry cooks' products.
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20	Preparations of vegetables, fruit, nuts or other parts of plants.
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21	Miscellaneous edible preparations.
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22	Beverages, spirits and vinegar.
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23	Residues and waste from the food industries; prepared animal fodder.
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24	Tobacco and manufactured tobacco substitutes.
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[http://www.wcoomd.org/en/topics/nomenclature/instrument-and-tools/hs\\_nomenclature\\_2012/hs\\_nomenclature\\_table\\_2012.aspx](http://www.wcoomd.org/en/topics/nomenclature/instrument-and-tools/hs_nomenclature_2012/hs_nomenclature_table_2012.aspx)



Part IV

# Options Forward

## Thinking and Acting Strategically

This concluding section represents the ideas and opinions of the Editor combined with the conclusions and recommendations from the three main authors and the literature reviews.

It is clear! The parameters and dynamics of human health linked to nutrition, via food intake, have moved beyond the traditional FNS definition. The complexities and inter-connectedness of the issues that affect and impact food, nutrition and human health should no longer be defined or addressed according to discrete and compartmentalised elements or pillars. The long-lasting adverse impacts of the 2007-2009 food, fuel and financial crises on the food system, also increased the incidence of hunger. This signals, that 17 years later, the 1996 WFS definition of food security needs more innovative and strategic thinking and approaches to the how food and nutrition is understood and addressed.

This discussion was approached from a different perspective; not on usual four-pillar FNS definition, but from one which integrally connects hunger, nutrition and human health and places food and its intake, at the centre of the F&N concept. The resulting conclusion is that essentially, the hunger and nutrition challenge boils down to three core issues and associated intervention points, namely:

1. the Product itself: i.e., the nutrient quality of the food and consumer knowledge about nutritional value of foods available for consumption;
2. the Pathways: i.e., the production and distribution processes that supply and make healthy foods available, accessible and acceptability to the purchaser (consumers);
3. the Purchaser: i.e., the individual or households who make consumption decisions and food purchases, whether driven by capacity to purchase, strong health consciousness or lifestyle choices.

These three core issues - the 3Ps: Product-Pathways-Purchaser - could possibly become the new frame of the F&N concept. Indeed, the 3Ps more effectively capture the importance of a linked and complete food system, commonly understood through the value chain's 'farm-to-fork' tagline.

Although discussed individually in this CIPO, the proposed 3Ps are neither unrelated nor disconnected. They are absolutely and integrally linked to each other, with complex interactions that make F&N a multi-dimensional and multi-sectoral human development challenge. Using this 3Ps approach to understand and discuss nutrition security, the importance of food in human health and the role of the food system, can also provide a convenient framework to guide interventions aimed at tackling specific issues directly, within broad F&N goals and objectives.





# Critical Control Points in F & N

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## Issue 1: the Food Product

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### *What is 'healthy' food*

Food is essential to good health. Health depends heavily on the intrinsic qualities of a food product. Such intrinsic qualities are captured in the word 'nutrients'. Given this fact, it stands to reason that a core critical control point for F&N is the determination and thereafter, the effective communication of 'healthy' food to consumers. In this regard, and from a Caribbean perspective, the following are necessary and urgent interventions:

- Clarify what is 'healthy foods'
- Establish and promote nutritional guidelines
- Use Nutrition Panels on Food Packaging

- **Clarify what is 'healthy food'**

Modern societies have become used to an ever-widening array of products offered as 'food', several with questionable nutritional value. The New Zealand Ministry of Health Food and Nutrition guidelines suggest that a food can be deemed to be healthy if it:

- enables consumers to manage their health, through providing the correct nutritional components to support a "healthy" lifestyle (it must meet National Dietary Guidelines); and
- provides identifiable ingredients which target diseases of concern to the individual and their health, i.e., if it has specific healthy attributes which will enable the consumer to treat a specific health problem.<sup>83</sup>

In short, the differentiation between healthy and unhealthy food is based primarily on the inherent nutrient content and value to human health. This is determined through food research to identify the presence and density of macro and micro nutrient content. Food quality and safety thus become issues if they compromise the inherent nutrients at all stages of the food chain.

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83 New Zealand Parliamentary Council Office, Goods and Services Tax (Exemption of Healthy Food) Amendment Bill (New Zealand New Zealand Legislation, 2010), 1, accessed at <http://www.legislation.govt.nz/bill/member/2010/0140/latest/whole.html>.

Food research is also central to the work on nutritional guidelines. At the country level, this research is usually undertaken by government Produce Chemistry Labs or private facilities. However, in the Caribbean, not all Produce Chemistry Labs have the capacity to undertake the analysis and generate nutrient information on foods, to inform nutrition-led policy. In Jamaica, the Scientific Research Council (SRC) provides services related to analytical Tests in food and water and nutritional labelling. The SRC also provides consultancy services in support of the food safety systems of agro-processors for the local and certainly the exporter markets. This includes development of a Glycaemic Index (GI) Database of Jamaican Foods being established for the development of low GI products for diabetic and health conscious people. The focus is to provide data on the anti-oxidant potential of the different foods. Research Topics Average

The new US Food and Drug Administration (FDA) rules which took effect from January 2012, requires all processed foods entering the US to be tested by an accredited laboratory. Over the 2011 period, the SRC took steps to achieve such accreditation from the local accreditation body, Jamaica National Agency for Accreditation (JANAAC) to meet the tightened US regulations.<sup>84</sup> The region also has the additional services in food content testing provided by the Caribbean Industrial Research Institute (CARIRI) Food Laboratory which undertakes general food analysis, fats and oils research, nutritional analysis and labelling and contaminants and preservatives.<sup>85</sup>

In the interim, the region continues to draw from food nutrition research and guidelines from the US, Canada and/or the Europe. For example in Canada, there a number of state and private agencies involved in nutrition research, including:

- Agriculture and Agri-Food Canada (AAFC) through its Food Research and Development Centre's Industrial Program, provides direct access to sophisticated equipment and a versatile research and development environment to agri-food companies in order to assist with small-scale food processing and testing needs, and to foster innovation in the area of food research.
- The Pacific Agri-Food Research Centre (PARC) in Agassiz, British Columbia, where major research is conducted on understanding the linkages between food, nutrition and health, securing and protecting food production, and balancing the activities of agriculture with the goal of a sustainable environment.
- The Guelph Food Research Centre (GFRC) which specializes in studies on food safety and quality and the development of functional foods that contain health-giving properties. Researchers are also studying ways to help the agri-food industry reduce processing costs and add value to agricultural commodities for both food and non-food uses.

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<sup>84</sup> Scientific Research Council: <http://src.gov.jm/>

<sup>85</sup> [www.cariri.com/index.php/analytical-chemistry/food-laboratory-services](http://www.cariri.com/index.php/analytical-chemistry/food-laboratory-services)

- **Establish and promote nutritional guidelines**

To make informed food choices, individuals need credible information about nutritional needs for a healthy body. Therefore nutrition guidelines are a next logical step to 'bring to life' food research and to educate consumers. Such guidelines:

- identify nutrient-dense foods and their macro- and micro- nutrient qualities, with special attention to the presence of nutrients that address common micro-nutrient deficiencies;
- offer a range of optimal portion sizes and effective food combinations and interactions for a healthy daily diet;
- provide information about food safety concerns associated with production, storage, handling and preparation of food that compromise nutrient content and expose consumers to food-borne illnesses;
- emphasize food as a primary source of nutrients, with use of supplements only as needed and recommended by a nutritionist or medical professional.

Other complementary information should include (a) enhancing awareness and educating on the issue of nutrient supplementation, especially in situations where food and diet choices and health profile limit/exclude utilization/intake of recommended foods, and (b) establishing the link between foods consumed, physical activity and a healthy lifestyle to ensure users would make the same association.

Nutritionists suggest that to be effective, strategies to promote nutritional guidelines should take a positive stance, emphasising benefits, rather than focussing primarily on the dangers of food choices. Elements of such a strategy should include:

- analysing and matching nutritional profiles with key health profiles/conditions (e.g., for diabetics), population groups/ (e.g., infants and children, pregnant and nursing mothers, the elderly and physically inactive), and alternative lifestyle options (e.g., vegetarians, raw foodists); food intake recommendations, based on both locally produced and imported foods;
- building nutritional profiles for foods most commonly produced and consumed locally. This recognises the need to maintain strong links with the local/regional food system;
- making available nutritional profiles of similar and/or substitute imported foods to provide the consumer with all necessary information for better decision making.

- **Place Nutrition Panels on Food Packaging**

Nutrition panels help consumers make informed food choices. They can provide a range of information on the average amount of energy (in kilojoules or both in kilojoules and kilocalories), protein, fat, saturated fat, carbohydrate, sugars and sodium (a component of salt) in the food. They also provide information on specific nutrients on which 'health' claims are made. For example, if a food had a 'good source of fibre' claim, then the amount of fibre in the food must be shown in the nutrition information panel.

Food labels also help to protect public health and safety by displaying information such as 'use by' dates, ingredients, certain allergens, instructions for storage and preparation, and advisory and warning statements. The issue of food allergens is growing in concern as the research advances on the links between food consumption and rising CNCDs. (Box #14).

A few foods may not require a nutrition information panel. These include, for example, some herbs or spices, mineral water, tea and coffee (because they have no significant nutritional value), foods sold unpackaged and foods made and packaged at the point of sale, e.g. bread made and sold in a local bakery. However, if a nutrition claim is made about any of these foods (for example, 'good source of calcium', 'low fat'), a nutrition information panel must be provided. Foods in small packages (100 square cm or less or about the size of a larger chewing gum packet) are also not required to have a nutrition information panel.<sup>86</sup>

Nutrition labels are commonly found on pre-packaged food and beverage products, in a variety of presentations. These include complete nutrition content (type and number) per serving size and percentage daily requirement, promotional health benefits of the product, whether the information appears on front-of-pack (FOP) or back-of-pack (BOP). To be useful, food content labels must satisfy placement and information needs. They must also be clear and easily readable (font size) and written in language that can be understood by the average consumer.

Despite the food labelling controversy, there is general agreement that for health and safety purposes, consumers need to know the contents of food consumed. This 'need to know' debate has also extended to processes by which food is produced. Nutrition labels alone will not guarantee that consumers will make the healthy choice. They need to be complemented by public health nutrition education programs which seek to influence consumers to make more healthy choices, more frequently.

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<sup>86</sup> © Food Standards Australia New Zealand. July 2012 <http://archive.foodstandards.gov.au/consumerinformation/labellingoffood/nutritioninformation5591.cfm>

## Box #14: FYI ~ Food-related Allergies

CNCDs we don't hear much about!

In 2009, Caribbean countries expressed concerns over the increasing incidences of CNCDs through the Liliendaal Declaration. Obesity, diabetes, hypertension and cardio-vascular diseases were prioritised as serious food-related health concerns. However, there is a CNCD that is increasing, but which is not receiving as much attention as the usual suspects – i.e., food allergies and food-related conditions.

Food allergies are when your body (the immune system) overreacts to a protein in specific food or reacts abnormally to specific foods. Symptoms can occur when coming in contact with just a tiny amount of the food. Eight foods are responsible for the majority of allergic reactions: cow's milk, eggs, fish, peanuts, shellfish, soy, tree nuts and wheat. Food allergy reactions can be life-threatening; there is no treatment to cure a food allergy. The best way of preventing an allergic reaction is to identify the type of food that causes the allergy and then avoid it in future.

Food related conditions, commonly referred to as food-borne illnesses, occur as a result of harmful effects of food to the body due to toxicity (e.g. residual amounts of agro or other chemicals on the food), food intolerance and/or pharmacological reactions.

Collectively, food allergies and food-related conditions produce a wide range of ailments which include gastronomical problems such as “leaky” or permeable gut. This condition, which causes food to be introduced prematurely into the bloodstream, can be a precursor to asthma, cancer, autism and other conditions.

The above provides a strong case for widening the food and nutrition discussion in order to more effectively sensitize consumers on the potential harm of foods and food constituents that are not always well-labelled.

Sources:

- 1) Kevin Bonham, 'Allergic to Science—Proteins and Allergens in Our Genetically Engineered Food' May 30, 2013 in Scientific American, Guest Blog, accessed at <http://blogs.scientificamerican.com/guest-blog/2013/05/30/allergic-to-science-proteins-and-allergens-in-our-genetically-engineered-food/> *(NB: views expressed are those of the author and are not necessarily those of Scientific American)*
- 2) Food Allergy, an Overview, American Academy of Allergy Asthma and Immunology (AAAAI), accessed at <http://www.aaaai.org/conditions-and-treatments/allergies/food-allergies.aspx>,
- 3) R. Mesnage, E. Clair, S. Gress, C. Then, A. Székács, and G.-E. Séralini. Cytotoxicity on human cells of Cry1Ab and Cry1Ac Bt insecticidal toxins alone or with a glyphosate-based herbicide. *Journal of Applied Toxicology* 33(7) 2013: 659-699



## Critical Control Points in F & N

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### Issue 2: Food System

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#### *Making healthy foods accessible*

#### **Issue 2: Food System - making healthy foods accessible**

Understanding what makes a food healthy is necessary, but by no means sufficient to ensure a healthy choice. Under normal circumstances, individuals are the ones who make that choice, not policymakers or governments. However, a general perception in the Caribbean, is that the so-called ‘healthy foods’ are relatively more expensive and therefore, inaccessible to most ordinary citizens.

Undoubtedly, access is a fundamental limiting factor to achieving F&N objectives. For individuals and households whose access to healthy foods is compromised or constrained on an on-going, or even periodic basis, then their capacity to make a healthy choice do not exist. As indicated previously, accessibility has to be understood as the interplay and interactions in the food system of the following elements.<sup>87</sup>

- **Availability**

That is, the physical presence or absence of a specific food in a specific location. Production decisions, stockpiling capacity and supply system stability all influence the types, supplies and final price of all food products, including ‘healthy’ foods. Food, produced under contemporary agriculture systems (using GM and intensive agri-chemical use), is already under immense scrutiny for safety and health impacts. Therefore, producing more ‘healthy foods’ will require direct interventions in the production process, i.e., from seed/animal genetic material, to farming, harvesting, fresh marketing or food manufacturing. A ‘healthy’ label means that the food must consistently meet a number of regulations and industry requirements. Of course, these add to production costs and ultimately increase the price of food. Often these additional costs are the main challenge in convincing private sector producers to incorporate nutrition and health considerations. Such healthy foods must also be available all the time; i.e., food security. Hence interventions will also be needed to assure continuous food supplies, whether through a well balanced mix of local/regional production, stock-piling capacity and/or extra-regional imports.

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<sup>87</sup> Corinna Hawkes and MarieT. Ruel, Value Chains for Nutrition, paper presented at the Leveraging Agriculture for Improving Nutrition Health conference, New Delhi India. February 10–12, 2011.

- **Affordability**

That is, whether all households, especially poor and marginalized, are able to afford the available food. In determining food price, Russell emphasized the importance of production and marketing costs *vis-à-vis* the purchasing power of the individual/household. Beyond just production costs on farms and manufacturing, Russell also pointed to hidden value chain costs attached to a food product. These hidden costs, which also increase as a product moves higher up the value chain, are mostly absorbed by the consumer. In short, therefore, decisions taken along the food production-distribution chain are a major factor determining accessibility of healthy foods, through its affordability dimension. In this regard, the private sector - food producers and retailers who drive the food system - has an important role to play in managing chain costs and thus enabling more consumers to afford healthy foods.

Governments also take actions to make food more affordable to consumers. In some instances, these actions affect some of these value chain costs, such as, reducing or removing taxes on food to lower prices. Such action is usually a response to rising food prices. The example of Trinidad is used to illustrate. (Box 15).

#### Box #15: 'Freeing Up' Food in a post 2007-2009 Crisis in the Caribbean

A common government response to the crisis was to manipulate the tax regime to affect the prices of final consumer products and inputs into farming and providing income support to consumers. This action alone underscores the central role of imports in the food system.

Barbados had, since 1997, already granted VAT exemptions to a number of goods, including chicken, fish, milk, butter, eggs, fresh fruits and vegetables, rice, flour, cornmeal, cereal, cooking oil, shortening and margarine, bread, yeast, water, sugar, salt, tofu, soya milk and soya chunks in an attempt to keep certain essential items affordable, especially for those in the lower income bracket.

In late 2012 the Trinidad and Tobago Government removed the 15% VAT on food items (excluding alcohol and "luxury goods") in an effort to lower food prices and curb food-price inflation which impacted in excess of 4,000 supermarket items. Based on the assessment that over 70% of goods on grocery shelves are imported, removal of the VAT was expected to bring significant relief in the face of soaring food prices. However, the Government was careful in emphasising that the VAT-free measure was *'was not necessarily meant to remain in perpetuity but the intention was to build domestic food security, and then when the local food production sector had reached that comfortable mass then the system would be re-evaluated'*. The plan to build this 'comfortable mass' was defined in the 'Agriculture Now' unveiled by the Ministry of Food Production in 2012 as the National Food Production Plan to 2015. Agriculture and Food Security ranked second on a list of five strategic priorities for the 2011-2014 Trinidad and Tobago Medium Term Plan.<sup>(1)</sup>

(1) Ministry releases VAT-free list By Carla Bridglal Story Created: Nov 10, 2012 at 10:04 PM ECT [http://www.trinidadexpress.com/news/Ministry\\_releases\\_VAT-free\\_list-178495351.html](http://www.trinidadexpress.com/news/Ministry_releases_VAT-free_list-178495351.html)



## Critical Control Points in F & N

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### Issue 3: The Purchaser

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#### *Making the right choice!*

As indicated, on average, food purchasing and consumption decisions are not always or even frequently guided by nutritional considerations. Price, taste, marketing and convenience, all influence food preferences. (Box #14) this does not diminish the fact that an individual - the consumer - has a responsibility to make more informed purchasing decisions in favour of nutrition and health.

- **Acceptability**

That is, whether the available foods are acceptable by the consumer. Having exceptional health properties are not enough to convince consumers to make the healthy choice. The traditional approach of 'it is good for you' used to entice consumers, especially the young, is really not sufficient or even the best strategy. More serious attention needs to be placed on ensuring that healthy foods satisfy the same cravings that drive consumers to the 'unhealthy options', i.e., taste, attractiveness and convenience.

Campaigns to 'reduce food miles' and 'buy local' typically extoll the health benefits of consuming foods as close to their natural state as possible, i.e., local farm output. However for this to have the desired impact, the offer and presentation of fresh produce must be acceptable to consumers. For the average Caribbean household, fresh produce, with remnants of soil and suspicious dark spots or cavities, are a relatively less attractive choice compared to their washed, peeled, cut/sliced/cubed, packed, pre-cooked chilled/frozen versions. Consumers will typically avoid the risk of purchasing 'fresh' where the extent of spoilage is only known at the food preparation stage. While consumption of fresh produce may be desirable, and even affordable, the manner in which they are made available may not be acceptable to the discerning consumer. This acceptability factor is very well recognised among processed food and beverage producers, evident in the increasing offerings of minimally transferred fresh produce through pre-cut single or mixed vegetable chilled packs and other forms of seal wrap.



The interplay of these aspects of ‘accessibility’ together influences production and stockpiling of food, purchasing power, perceptions and food preferences. Given the above discussion, it is worth reiterating that the ‘acceptability’ dimension must be an important consideration in efforts to promote healthier food choices, especially those seek to drive greater use of local/regional food products.

Consumers today are more sensitized and informed about the importance of ‘*reading behind the price and package*’. That is, reading and understanding nutrition information, where provided. In this situation, the axiom ‘*when in doubt, leave out*’ [of the shopping basket], is very applicable, since not all foods are packaged, and not all packaged foods have nutrition labels. If a health-conscious consumer is uncertain about whether a particular food item is of nutritional value, such as *fruit cups in heavy syrup*, the nutritionists’ advice is to replace or substitute with fruit in their fresh form, i.e., the pineapple, orange, papaya, mango, melons, etc.

In eating for nutrition, i.e., moving beyond mere health conscious to lifestyle changes, consumers will need to:

- inform themselves or be kept informed and aware of the health benefits or potential harm from foods – fresh, raw and processed –that form the cornerstone of their daily food intake. For several food items promoted as healthy and wholesome, a closer look at the ingredients and nutrition label will reveal at least 10 grams of sugar in one small item, half of the recommended daily intake. Also increasingly, there are warnings about consumption of fresh vegetables and raw foods (such as sushi) which may have high bacterial loads.
- invest in some level of meal and food purchasing planning, especially in the Caribbean where several local foods are highly seasonal and perishable;
- set aside some time to track prices of regular food purchases and compare unit prices to determine the best value for the grocery dollar. Higher prices should never be taken as absolute indication of the nutrient value of the product. Product health claims can be checked against the nutrition label, if one exists;
- observe and be aware of pricing and marketing strategies designed to influence consumers towards certain items using easier shelf placement (between knee and shoulder height), and bundling of items.



**Cocoa,  
whether in powder,  
liquid form or in  
an energy bar,  
is a popular  
ingredient in 'meal  
replacement'  
offerings**

#### **Box #16: Food for Thought - Convenient Nutrition Editor's perspective**

The convenience factor has complicated the 'food for nutrition' challenge. Cash rich and time poor consumers are increasingly looking for 'instant' options to match busy lifestyles. Just as today's consumer thrives on 'instant communications', so too, they are expecting food to deliver 'convenient health'. If this is indeed the case, then the observation by one regional food manufacturer that *'any improvements in the nutritional value of the product are considered more as a selling point and less as a means of improving consumers' dietary needs'* aptly sums up the nutrition challenge and the disconnect between food production and nutrition.

It appears that it is this notion of 'convenient health' that has spurred such rapid growth in the global health and wellness food market which seems to be catering for all forms of nutrition – in a can, bottle, supplement or some other offering.

Recall the USDA's advice that food should be the primary source of nutrients. Recall also, the growing health problems associated with food allergies.

Is nutrition a convenience?  
Isn't nutrition a necessity for quality life?

## Options Forward

### Framing Nutrition Interventions

The ultimate goal driving interventions in nutrition is to enhance human development, through healthy lifestyles. Hunger eradication and specifically, nutrition is central to this goal. Hungry and ill citizens cannot work to produce goods and services. The direct costs of hunger include loss of productivity, lost and medical care required to treat those suffering from malnutrition both over and under, and associated diseases.<sup>88</sup>

Working towards and achieving consistent and sustained progress in the goal of eradicating hunger, will yield positive results for meeting the MDGs. This is especially with respect to what the WHO<sup>89</sup> describes as reducing the prevalence of chronic degenerative diseases, metabolic syndrome and obesity, related to food issues. In keeping with the approach of this discussion, the *raison d'être* for nutrition interventions can be understood as *'to ensure that nutrient-dense food products are readily accessible to drive consumers to make healthy food choices, particularly those in greatest need.'* Since through food research, we know what constitutes a healthy food and there is a general perception, that healthier foods are more expensive, then interventions to produce healthy foods are a must!

In characterising the status of FNS in the Caribbean, the 2011 RFSNP Action Plan concluded that *"Individuals have ultimate responsibility for their own health, but governments, international partners and other agencies can play a critical role in making healthier diets more affordable and accessible, especially for poor and vulnerable groups. . . .This is a matter for public policy and is a major plank of the RFNSP and the Action Plan"*.<sup>90</sup> In particular, the statements that *'the food industry should be mobilised to reduce the fat, sugar and salt content of processed foods'*, and that *'this industry could reduce portion sizes and re-orient current marketing practices towards innovative, healthy, and nutritious food choices'* are clear acknowledgments of the urgency for nutrition interventions in the food system.

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88 Janice Meerman, "Making Nutrition a National Priority: Review of Policy processes in Developing Countries and a Case-study of Malawi" Nutrition Requirements and Assessment Service of FAO (2008), accessed at [http://www.foodsec.org/fileadmin/user\\_upload/eufao-fsi4dm/docs/malawi\\_case\\_study.pdf](http://www.foodsec.org/fileadmin/user_upload/eufao-fsi4dm/docs/malawi_case_study.pdf)

89 World Health Organization, "Food and Nutrition Policy and Plans of Action," Report for the WHO-FAO Inter-country Workshop Hyderabad, India, December 2007 17-21, accessed at [http://www.searo.who.int/LinkFiles/Publications\\_SEA-NUT-175.pdf](http://www.searo.who.int/LinkFiles/Publications_SEA-NUT-175.pdf)

90 Draft Regional Food and Nutrition Security Action Plan (RFNSAP) 2012 – 2016, 15 October 2011, CARICOM Secretariat.

These policy documents also have several references which point to the need for nutrition interventions, such as:

- Promotion of healthy Caribbean diets and optimal nutrition, especially at all stages of the education system;
- Supporting a healthy start – Good nutrition and safe food during the first five years of life;
- Ensuring a safe, healthy and sustainable quality food supply;
- The availability and affordability of healthy foods, such as fruit and vegetables, should be improved and the supply of energy-dense and nutrient-poor foods should be reduced.

The RFSNP Action Plan (2011) Component 3: Food Utilization/Nutritional Adequacy, speaks directly to the promotion of healthy Caribbean diets and optimal nutrition, making maximum use of locally grown, nutritious foods to reduce significantly the incidence of CNCDS. Among the actions defined for immediate attention in Phase 1, organised along the traditional 4-pillar FNS definition, included:

- Program Component 1: Food Availability: Identification of the supply of selected priority commodities in each Member State and linking food producers/suppliers to markets;
- Program Component 2: Food Access: regional transportation to reduce distribution costs and improve the movement of food commodities across the Region, including agreeing on appropriate nutritional targets at national and regional levels;
- Program Component 3: Food Utilization, which specifies several nutrition-driven interventions, including, influencing food tastes and preferences in schools and other government affiliated institutions.

With few exceptions, it is the private sector that makes production decisions, based on what sells, all the time, i.e., a safe bet! For the Caribbean, market signals for safe foods and especially healthy foods, are ambiguous and at best, weak. Private sector food producers ability to incorporate nutrition into food production decisions is affected by lack of credible information, incentives and support structures to enhance competitiveness. The relative indifference of the consumer population towards healthy foods dampens demand for and/or willingness to pay for such healthy foods. Governments will therefore have to intervene through policies and regulations to directly or indirectly impact food supply or prices, their safety and nutritional composition, and/or the information consumers receive about food. These will influence the food choices consumers make and, ultimately the nutritional quality of their diets.<sup>91</sup>

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91 K. Ralston. How Government Policies and Regulations Can Affect Dietary Choices. In America's Eating Habits: Change & Consequences, *Agricultural Information Bulletin 750(1999)* 331-370. Washington, DC US Department of Agriculture, accessed at <http://www.ers.usda.gov/publications/aib750/aib750q.pdf>

## Adopting the 3Ps

Nutritious Food + Product + Efficient Pathways + Enabled Purchaser = Nutrition Security. This captures the connected 3Ps, i.e.,: strong and consistent consumer demand (Purchaser) for healthy food must exist to drive the private sector to produce and distribute foods (Pathways) that meet the requirements of nutrition for health (Product). There deliberately should be no ordering among the 3Ps. Also, the same ordering cannot be applied to all interventions. The principles for determining intervention using the 3Ps must be guided by:

- a clear understanding of the specifics and objective of the nutrition intervention, i.e., need to increase utilisation and consumption of micro-nutrients, i.e., Vitamins C and D, among children and youth;
- strategic planning, based on whether these micro-nutrients are accessible. i.e., are the food sources (fruits, vegetables, legumes, fish) adequately supplies, affordable and in forms acceptable to target group.

For example, if the demand already exists and is strong among the affected target group, then the starting point could be shifted to either the Pathways or the Product, depending on where the gap is greatest. Only through such clear and strategic analysis can the dynamics among the 3Ps and policy interventions be defined.

In moving forward, there are some lessons that need to be learned to avoid further policy failure. These are highlighted below.

### ***a food and nutrition policy focus must go beyond just producing more food, to producing more healthy food!***

Generally, interventions have been designed to simply produce more food. Except for safety and ‘wholesomeness’ requirements, there has been no explicit requirement that foods produced must meet a minimum nutrition standard. Private sector food producers cultivate and or package/process plant and animal products to meet one basic goal – profitability. In situations where private sector face constraints to competitiveness, government intervenes to partly mitigate and create a more enabling environment for business viability.

Governments in industrialised countries, such as the US and in Europe, have and continue to provide subsidies and other incentives to ensure that their farm and food manufacturing firms stay in business. In the US, producer subsidies include direct payments to farmers or food producers for growing or not growing certain crops and market-loss payments which are distributed when prices fall as a direct result of economic changes. Government producer support also includes safety net programs (such as the distribution of food stamps) and the school feed programs which serve to provide a guaranteed market for food products, limiting producers’ vulnerability to economic downturns.<sup>92</sup>

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92 Ken Cook. Government’s Continued bailout of agribusiness. Environmental Working Group Farm Subsidy Database.

***food quality and safety drivers from farm to fork,  
must be guided by, and grounded on nutrition principles!***

There have been a number of strategic actions, which though not explicitly targeting healthy foods, could enhance production of healthy food options through impacts on quality and safety. Specifically, interventions to support development and enforcement of adherence to food safety standards on the farm (Good Agricultural Practices (GAPS)), in processing facilities (Hazard Analysis and Critical Control Points (HACCP), Good Manufacturing Practices (GMPs), for food handling, storage, distribution, and in food service establishment and mobile food vending.

However, while these efforts seek to ensure that foods produced, processed, prepared and served for consumption, are safe, safety cannot be seen as equal to nutrient density.

These first two lessons above have a direct relation to the issue of food research and nutritional guidelines. To date, and quite apart from articulating national food and nutrition security policies, there has been virtually no tradition in the Caribbean, of nutrition-led food production policies. Perhaps this was due to the lack of food research linked to food production and agriculture policy formulation. To reiterate, nutrition information, generated through food nutrition research, helps a consumer to make a healthy choice. (Box #17). There have been efforts to define nutrition research priorities for the Caribbean (Box #18). Undertaking such research would be a key step in converting to a nutrition-led food system policy.

**Box #17: FYI ~ Nutrition Research**

“The importance of applied nutrition has never been greater, nor its research scope broader”

The science of human nutrition and its public health applications have dramatically evolved over the past 25 years. Through major advances in molecular and cell biology, including the evolving field of nutritional “omics”, epidemiologic and nutritional assessment methods, intervention capabilities and policy research, the roles of diet and nutrition in affecting global health have never been more apparent! The pace of advance speaks well to the potential for nutrition interventions to prevent disease and improve the quality of life worldwide. At the same time, our more complex and interlinked global, regional and national food markets offer unprecedented challenges to understand causal networks, and learn where, among whom, when and how to intervene to protect the nutritionally vulnerable. The importance of applied nutrition has never been greater, nor its research scope broader.

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<http://www.jhsph.edu/research/centers-and-institutes/center-for-human-nutrition/>

### Box #18: List of Research Priorities for Food and Nutrition

Research Topics		Avg. Score %
Sub-Priority – Nutritional Deficiency Diseases		
1	Breast feeding, infant feeding and young child feeding practices	16.2
2	Anaemia in young children and pregnant women	15.1
3	Food choices	15.1
4	Nutrition in pregnancy	14.8
5	Food consumption surveys	14.7
5	Malnutrition in children – risk factors, interventions and long term effects	14.6
6	Analysis of school meals	14.5
7	Dietary guidelines	14.4
9	Nutrition status	14.4
10	Supplementation programs for vulnerable groups	13.4
11	Micronutrient status	12.0
12	Osteoporosis	10.6
Sub-Priority – Obesity and Co-Morbidities		
1	Nutrition and physical activity in schools	17.9
2	Prevalence of obesity and co-morbidities	16.3
3	Healthy eating and lifestyles in children	16.2
4	Food consumption surveys	15.4
5	Multi-sectoral approaches to obesity management	15.4
6	Economic cost associated with obesity and co-morbidities	15.2
7	Work place wellness	15.0
8	Risk reduction strategies	15.0
9	Management of obesity	14.9

<b>Box #18: List of Research Priorities for Food and Nutrition</b>		
Research Topics		Avg. Score %
10	Impact of nutrition on co-morbidities	14.6
11	Risk factors for obesity and co-morbidities	14.6
12	Breast feeding and infant obesity	14.4
13	Review of legislation and trade policies	14.2
14	Body mass index and growth charts – development and use	13.4
Sub-Priority – Food Security		
1	Strategies for household food security and availability of healthy foods	15.3
2	Food consumption surveys	15.2
3	Food labelling	14.8
4	Food safety (imports, GMOS, food handlers, pesticide residues, heavy metals)	14.4
5	Local food production	14.3
6	Nutritional status surveys	14.0
7	Value of Caribbean foods	14.0
8	Role of trade policies	13.5
9	Supplementation of vulnerable groups	13.1
10	Impact of biotechnology	10.8
Source: Health Research Agenda for the Caribbean, 2011. Caribbean Health Research Council. St. Augustine, Trinidad And Tobago, <a href="http://www.chrc-caribbean.org">http://www.chrc-caribbean.org</a>		



### **Government actions to influence pricing of food should affect 'body-fuel' and belly-full' foods differently**

Fiscal measures, such as, lowering or zero-rating taxes on imported inputs and equipment (farm and processing), are intended to reduce food production costs and hence final consumer food prices. These measures are driven more by the structure of the farm sector and the imperatives of market-led agricultural diversification, than by need for healthy food policy. However, manipulating fiscal policy can serve to make unhealthy foods more expensive and healthier options relatively more accessible. Taxes on unhealthy foods serve to prompt food manufacturers to produce healthier foods by altering the content of existing products or developing new ones to maintain market share.<sup>93</sup> Since consumers are responsive to price, taxes on unhealthy foods that increase the effective price to consumers may be effective in discouraging and lowering their consumption.<sup>94</sup> Under this initiative, governments would impose taxes on foods which are known by scientific examination to contribute most to unhealthy diets and incidences of CNDCs. A number of countries have already imposed taxes on unhealthy foods as consumer-oriented fiscal strategies to facilitate consumer spending on healthier foods.

In Finland and Denmark, food with high sugar content is subject to a special tax. Austria has a similar tax on foods high in saturated fat while France imposes a special tax on chocolate and other candy. As in the experience of Trinidad (see box #15) whether Whether VAT freeing food items was guided by nutrient-dense foods for a healthy daily diet, is unspecified. A quick scan of the list which included items such as, cakes and muffins and their mixes, essences and food colourings and sweetened biscuits - would suggest that the answer is no! The release did indicate however, that "determination of the final list of items was a very complex process, which involved careful, detailed and collaborative review of the food items in common use by the majority of our local households". Generally, the impact of policies and regulations on dietary choices will depend on how the policy affects the cost of producing commodities, how those costs relate to final retail prices, how responsive consumers are to price changes and how the policy directly influences the consumers' preference for the product.<sup>95</sup>

Government fiscal interventions, though necessary in some instances and for some periods, could also lead to unplanned and undesired outcomes, such as, exceeding their intended range of application (target group) and otherwise become abused and expensive if they are too widely available, and inadvertently, creating conditions for black markets to occur when there is strong demand for the prohibited product.<sup>96</sup> (Box #19).

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93 Madore O. "The impact of economic instruments that promote healthy eating, encourage physical activity and combat obesity: literature review". In Brief, Parliamentary Information and Research Service, Library of Parliament, Canada, 2007 [www.parl.gc.ca/information/library/PRBpubs/prb0634-e.htm](http://www.parl.gc.ca/information/library/PRBpubs/prb0634-e.htm)

94 Cash S., Sunding D. and Zilberman D. "Fat taxes and thin subsidies: prices, diet, and health outcomes". *Acta Agriculturae Scandinavica, Section C – Economy*. 2005; 2:167–74. [www.ingentaconnect.com/content/routledg/sagc/2005/00000002/F0020003/art00002](http://www.ingentaconnect.com/content/routledg/sagc/2005/00000002/F0020003/art00002)

95 See Rachel Nugent and Felicia Knaul, *Fiscal Policies for Health Promotion and Disease Prevention in (Disease Control Priorities in Developing Countries. 2nd edition. Washington (DC): World Bank; 2006) 211-25* <http://www.ncbi.nlm.nih.gov/pubmed/21250297> (accessed March 30 2012)

96 Edgar Feige "Defining and estimating underground and informal economies: The new institutional economics approach," *World Development*, Elsevier, vol. 18 No.7, July 1990) 989

### Box #19: FYI ~ The Challenge of Change – Nutrition in Schools

United States (US) Healthy Schools Campaign to combat childhood obesity led by First Lady Michelle Obama, which radically altered school meals to reflect USDA Updated nutrition standards for school food. These updated standards restrict school cafeterias from offering students more than 850 calories per day<sup>(1)</sup>. As a result, high sodium, high sugar, and high calorie foods such as corndogs, hamburgers, pizza slices were replaced with a wide variety of fruits and vegetables, with more whole-grain meal options to be phased in over time. In several schools however, there were various reports about students 'smuggling' junk food into school and even selling to their peers. This response to the campaign fuelled a black market for junk food leaving many school food directors frustrated with the process and even supporting calls to reinstitute the old school menu.<sup>(2)</sup>

This example clearly illustrates the powerful, yet intangible element of the accessible concept – that of acceptability. However, In this case, the black market could have minimized - if not prevented - using a phased-in approach. Instead of completely overhauling the menu with new healthy items, existing menu options could have been prepared using healthier ingredients and/or cooking methods e.g. baked instead of deep fried, flour-based foods to be replaced with whole wheat and sodas with fruit juices or flavoured water.

(3) CBS Local. "LAUSD Students Roundly Reject Healthier School Lunch Menu" (Los Angeles January 2012) <http://losangeles.cbslocal.com/2012/01/19/lausd-students-roundly-reject-healthier-school-lunch-menu/> (accessed 24 September 2012)

(4) See Education Action Group Foundation Inc. "Wisconsin Students Boycott Skimp Michelle Obama Lunch Menu" (USA 2012) <http://eagnews.org/wisconsin-students-boycott-skimpy-michelle-obama-lunch-menu/> (accessed 24 September 2012\_



**Variety and colour – make children ask for more!**  
**Bland and boring – make children run to the door!**

***policy interventions to influence nutrition cannot just be about replacing and or substituting imported foods for local supplies!***

The FAO study cited previously, confirmed that an area of policy interest for the region is a carefully targeted strategy of competitive import replacement.<sup>97</sup> The choice of sectors and projects must be guided by clear criteria, including its viability to replace a major food import item (i.e. in light of existing consumer tastes and production processes), whether it is already widely produced within at least two Member States and, if possible, regionally traded, whether it exhibits potential competitiveness in terms of price, taste and quality vis-à-vis imported substitutes and value chain characteristics whereby public investment can potentially result in competitive and productive increases. The study was clear of the potential scale of resources required and the degree of opportunity costs that may be incurred in terms of neglecting other national/regional investment priorities. Given this, and as argued by some in the region, including Ian Ivey,<sup>98</sup> food and nutrition security cannot be premised, built or even sustained on the local/regional food production. This is a valid point since already, the major food manufacturers in the region rely heavily on imported raw materials and ingredients to maintain and build capacity and enhance competitiveness. Further, decades have passed as the region still attempts to create an efficient inter-regional transportation and distribution network to move and market agricultural products within the region. This should be cause for pause, in policy decisions on FNS built mainly on local/regional food systems. The real costs of import replacement go beyond just government producer incentives.

Until domestic food systems can satisfy needs in the diversity and quantity that they are demanded, imports will continue to be an important source of 'food' in the region. In this regard, an issue that really needs to be understood and addressed is that of influencing consumers to demand and purchase less of the products that nutritionists have branded as unquestionably 'empty calories' and purchase more the nutrient-dense imported food options, where these are not as readily and consistently available from local/regional sources.

***decisions and practices of private sector food producers and supplies will influence tastes, food preferences and food purchasing choices***

The drivers of the food system - i.e., private sector food producers and retailers – are an indispensable ally with an important role to play in enabling most of the populations to access and afford healthy foods. They can either manipulate prices, or use options not related to food prices (non-price options). Russel noted that to impact the prices of food products, food producers and retailers could:

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97 Ibid: Silva, Best and Tefft (2011)

98 I. Ivey. Concept Paper "New Thinking about the Challenges and the Best Approach for Developing FNS Solutions in the Caribbean Region." February 2012.

- i. use 'more-bang-for-your-buck' pricing aimed at motivating customers to buy more of a particular healthy food option. Consumers could be attracted by 'value pack, 'super pack', 'discount bundle', two-for-one discounts, half-price promotions, etc. etc., which would provide more volume/quantity for a discounted price and generate some cost savings. Or, consumers could be rewarded for such purchases with the opportunity to obtain a product of choice after meeting some threshold purchase of the particular food item/bundle.
- ii. offer rewards for purchases of healthier foods:— this is similar to the Magna Rewards points system. Individual or associations of Supermarkets, food and beverage manufacturers or some other private or public partnership arrangement could collaborate to extend the Magna and Credit Card rewards/points type service, such as a 'Nutri' Card, for a selected category of healthy food items. Consumers who accumulate points would benefit from some type of reward scheme or voucher, similar to those that exist for general purchases. This system should be designed to have application at food retailing/supermarkets as well as food service establishments, and as well, skewed towards purchases of local/regional food products.

Further to enhance access to healthy food products, private sector could also explore non-price options that encourage and enable consumers to seek out and select healthier food options, such as:

- i. *priority shelf placement to healthier food options*:- The location of items within the store can influence the purchasing habits of consumers. Hence if retailers are genuinely supportive of the 'healthier eating' thrust, they would be open to the consideration of placing healthy food options: (a) in the high traffic lanes/areas of the store; (b) at "end of aisle" promotions, and/or (c) in convenient visual spots, and at the average 'eye level' of the shopper;
- ii. *healthy impulse buying by*: (a) placing ready to eat fruits and vegetables at the check-out counter; and/or (b) placing healthier items very close to, or with other similar items or 'necessary' items;
- iii. *use of shelf talkers/shelf labels*:- Decide what type of shelf talker you want to use in the store. Examples include stickers and laminated labels to slip into the shelf. Incorporate the wholesome, healthy colours of green and brown into the labels and display them prominently so that they are well recognized in the store. Determine the location where the shelf talker will be most visible. This may mean that you move the targeted food to a different location in the store.
- iv. *use of nutrition information/promotional posters*:- There are many options for poster design that can help to identify, promote and guide consumers to healthy foods within stores. In utilizing posters for promotion, careful consideration must be given to the target audience and the message to be relayed. Such posters will be of particular importance for foods that do not currently include an ingredients or nutrition label, such as fresh fruit and vegetables. In fact, such promotional material could even include 'tear off' recipe pads.

These and similar consumer-oriented actions could influence and enable a shift towards healthy choices and enhance affordability and access. Food retailers who make nutrition-based decisions may stand a better chance of retaining and building customer loyalty. However, retailers will have to make the difficult decision of sacrificing some short-term profits for longer-term customer loyalty and business success. Costs associated with introducing such nutrition-based food retailing include costs of additional staff time in managing in-store strategies, bundling healthy packages, continuous promotions, among others.

Already, several retailers face loss and wastage of the ultimate healthy choice –fresh fruit and vegetables- due to their high perishability. Exploring innovative avenues and options to convert unsold fruit and vegetables left-back on shelves after two to three days could also provide mutual benefits to both retailer and consumer. Some options could be to cut, cube, puré and freeze these perishables (either in-store or through out-sourcing to some community-based women or youth in agriculture group) and package them for sale as a smoothie, shake, sorbet or baby food ingredient pack. This is neither a far-fetched or inconceivable option, since in several major supermarkets in Trinidad, imported chilled bottled smoothies and frozen smoothie packs are on regular offer. In fact, an incentives system could be developed to encourage and reward ‘green’ supermarkets that are willing to adopt this initiative, i.e., contributing to food security by reducing food wastage.

The incentive could, ostensibly, support issues related to quality control, packaging and promotion, under a national FNS policy that targets both farmers (food production) and consumers (nutrition). It could also increase income generating opportunities for at risk and marginalised women and youth in surrounding communities and simultaneously tackle nutrition and health, food wastage and community development through corporate responsibility.



Instead of one ‘imported and waxed’ apple a day to keep the doctor away, add variety and season-up your palate. Why not whip up a wholesome and body-fueling drink from a mix of readily available, fresh and nutrient-dense local fruits which are usually left to spoil in supermarkets, such as the papaya, banana, pineapple, mango and others when in season. Buy in bulk and freeze for your own homegrown and home-made smoothies.

***‘you can lead the horse to the water,  
but you can’t make it drink’***

This saying is an appropriate one to close these lessons learnt for nutrition policy and interventions. While governments may promote and provide information on healthy foods and private sector may produce affordable healthy foods, the final decision to purchase, prepare and consume is the individual’s. Governments cannot directly determine what people eat. But Government can have oversight in influencing the kinds of consumption choices or food utilization decisions that are most critical to nutritious eating and enhancing health. Such interventions that seek to change consumer perceptions about food and consumption preferences really boil down to ensuring acceptability and once achieved, to enabling affordability.

Research from The Netherlands provides some interesting insights into consumers’ perspectives on pricing strategies aimed at stimulating healthy eating habits and discouraging unhealthy food choices. (Box #20). This study also revealed that residents of deprived neighbourhoods viewed price as a chief factor in food choice. Price was also determined to be a proficient tool to stimulate healthier food choices. Still, consumers indicated that significant effects could only be achieved by combining price with information and promotion techniques. Overall, pricing strategies which focused on encouraging healthy eating were considered to be more constructive than pricing strategies that focused on discouraging unhealthy eating.

<b>Box #20: Responses towards the nine specifically asked pricing strategies.</b>	
<b>Pricing strategy</b>	<b>Consumer Response</b>
<i>... targeting healthy foods</i>	
1. Provide allowance for low-income groups designed to purchase healthy food	Responses were mixed; Some believed extra income would encourage greater purchases of healthy foods; others believed extra income would be spent on non-food items. There were mixed views about whether the allowance should apply only to low-income groups. Some thought that high-income consumers should also be stimulated to purchase more healthy food.
2. Make specials on healthy foods more frequent	The majority of participants was in favour of this strategy and indicated that it would reduce the barriers to buying healthy foods.
3. Provide a healthy food discount card exclusively for low-income groups	General enthusiasm to providing both a general discount card and a card specifically designed for low-income groups. Noted wide and common use of several discount cards, hence introducing a special low-income card would be easily acceptable. An important feature would be to make it valid in all main supermarkets. Some participants stated that the amount of the provided discount should be significant; others disagreed and stated that every little helps:
4. Offer small presents, extras or saving stamps with healthy food items	General positive response; A view that this strategy would work primarily for families with children, noting that children have a large influence on what products are bought and are tempted by appealing products, mainly snacks.

**Box #20: Responses towards the nine specifically asked pricing strategies.**

Pricing strategy	Consumer Response
5. Subsidize healthy foods	General response that it is a fair strategy, as opposed to taxes on unhealthy foods. Subsidies stimulate all consumers to buy higher amounts of healthy foods, while taxes only affect low-income consumers and are regressive in this sense. Similar to discounting, a subsidy on healthier foods could reduce the barrier to buying these products. Noted that a subsidy is superior to an allowance for low-income groups since a subsidy would apply to everyone and lowers prices directly in the supermarket.
6. Offer premium cutback on health insurance	Mixed reactions to allocation of an insurance premium cutback to clients who have a dietary pattern according to dietary guidelines. Consensus was that it is unworkable and unverifiable.
<b>. . . targeting unhealthy foods</b>	
7. Increase taxes on unhealthy food items	General negative responses; most judged the measure as too excessive, some noting that such measures would be appropriate in places mostly visited by children, such as schools and sports canteens. There was a view that levies are patronizing (compared to subsidies) and only effective in creating more tax revenue. Several views that it would result in opposite effects and would make unhealthy foods more attractive (forbidden fruits). Another major issue was the regressive nature of this measure (e.g., it only affects low-income groups). Some explicit views that their own consumed quantity of unhealthy foods would not decrease due to higher prices, since the persistent appealing characteristics of these foods would continue to tempt.
<b>. . . targeting both healthy and unhealthy foods</b>	
8. Make healthy food items cheaper and unhealthy food items more expensive	General positive response; Many believed that making unhealthier foods more expensive would reinforce the measure to discount only healthy foods. Noted that this strategy would steer consumers towards a healthier food selection, but would still leave the choice to the consumer. If people wish to eat unhealthy then they pay for it; instead, they can choose cheaper healthier options. Products that should be made cheaper were: basic products (rice, potatoes, bread); all the foods that are recommended in the nutrition table; wholegrain products; fresh products; fruits and vegetables; meat; and dairy products. Furthermore, the majority of the participants argued that healthier options of comparable products should become cheaper relative to the unhealthier option (e.g., making wholegrain bread cheaper compared to white bread).
Source: Waterlander WE, de Mul A, Schuit AJ, Seidell JC, Steenhuis IH. "Perceptions on the use of pricing strategies to stimulate healthy eating among residents of deprived neighbourhoods: a focus group study" (International Journal of Behavioural Nutrition and Physical Activity 2010) 7:44. <a href="http://www.biomedcentral.com/content/pdf/1479-5868-7-44.pdf">http://www.biomedcentral.com/content/pdf/1479-5868-7-44.pdf</a>	

## Conclusion

The reduction in Caribbean under-nutrition in the last five decades should not lead to complacency and to the dangerously false conclusion that there is no urgency to focus on nutrition in the region. Results from CFNI surveys showed a decline in early childhood under-nutrition during the last decade, but it also revealed the rapid increase in obesity. Obesity prevalence in all age groups has increased to the point where it is now the most important underlying cause of death in the Caribbean. Over the years, CFNI conducted numerous studies on the status of nutritional deficiencies and excesses and on various interventions which successfully impacted on food insecurity and obesity.<sup>99</sup>

Moving forward, in addition to the lessons highlighted above, key pointers to guide in the design and implementation of fully-participatory Nutrition Policy should include processes aimed at:

- i. specifying the focus of interventions: the focus of the intervention must be clear and unambiguous. Once defined, the process for delivering the intervention must create effective demand and promote sustainable development of the key practices. Lessons from West Africa show that a behaviour change strategy that promotes small “doable”, culturally appropriate actions that most families can afford can be effective.<sup>100</sup>
- ii. designing small and well-defined high impact nutrition actions: the most common reasons for ineffectiveness in nutrition programs are spreading resources too thinly across beneficiaries, targeting foods with minor health benefits, choosing inappropriate beneficiaries, and encountering excessive costs in distributing resources. This underscores the importance of design considerations and country conditions in creating effective and efficient nutrition programs, including food subsidy.<sup>101</sup>
- iii. identifying and coordinating multiple government sector responsibilities and budgetary resources: a multi-sectoral approach, with key sectors, such as, agriculture, water and sanitation, social welfare, education, women and child development, is essential for effective nutrition interventions. The 2010 RFNSP calls for inter-Governmental linkages and coordination as an essential strategy for effective governance of FNS interventions.
- iv. engaging and empowering stakeholders: advocacy and communications are critical to create awareness among the decision makers of the nutrition issues and opportunities, to broker strategic public-private-sector-civil society partnerships and to manage an effective roll-out process.

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99 F. J. Henry. Food and Nutrition Research in the Caribbean. West Indian Medical Journal. 61(4) 2004: 337-338 accessed at [http://caribbean.scielo.org/scielo.php?script=sci\\_arttext&pid=S0043-31442012000400009](http://caribbean.scielo.org/scielo.php?script=sci_arttext&pid=S0043-31442012000400009)

100 Republic of Malawi. 2009. National Nutrition Policy and Strategic Plan. <<http://www.moafsmw.org/ocean/docs/Key%20Documents/National%20Nutrition%20Policy%20Strategic%20Plan%20%20Final%2009.pdf>>

101 Rachel Nugent and Felicia Knual. “Fiscal Policies for Health Promotion and Disease Prevention.” In Disease Control Priorities in Developing Countries. 2nd edition., Dean T. Jamison, Joel G. Breman, Anthony R. Measham, George Alleyne, Mariam Claeson, David B. Evans, Prabhat Jha, Anne Mills and Philip Musgrove. Washington (DC): World Bank; 2006) 211-225, accessed at <http://www.ncbi.nlm.nih.gov/pubmed/21250297>



## What YOU can DO!

As an individual, YOU HAVE A RIGHT to safe and healthy foods at all times. It is YOUR RESPONSIBILITY to make the healthy choice!

- ▶ identify some basic 'must have' healthy foods for you and your family;
- ▶ read food labels, especially the ingredients and the 'Best by' dates;
- ▶ exercise great caution in preparation of fresh foods, especially leafy vegetables, as they may be hosts to harmful parasites and high levels of chemical residues

But if YOU DON'T HAVE access or the means to choose and consume healthy FOOD ALL, OR MOST OF THE TIME, then YOU ARE AT RISK of food insecurity and under-nutrition!

If YOU are:

- ▶ a farmer or food processor, then you can choose to produce more efficiently and to offer surplus or lower grade but healthy produce to charitable organizations that supply meals to the vulnerable;
- ▶ a food retailer, distributor or food service (restaurants, fast food chains, etc) processor, then you can decide to waste less. A high percentage of food is lost every year at the retail level, especially by consumers and food services.
- ▶ a manufacturer/supplier of inputs to the food producers/distributors, then you have a responsibility to produce contribute to the efficiency of the food system. An important source of waste and high food prices is packaging, especially biodegradable plastics which contain foods in all forms.
- ▶ a Policy Maker, then it is your job to identify the: (a) vulnerable and design policies that to ensure that they get at least one wholesome meal per day; (b) food system 'losses and wastage' and design policies to reduce wastage.
- ▶ a civil society activist or philanthropic organization, then you already know the value of providing food, a most basic human need and right! You need to work more closely with governments, food producers and retailers to ensure that systems are in place to feed the hungry.

Source: In a Nutshell "Food, Nutrition and the Vulnerable", Issue #19 September



# **The Power of School Feeding:**

Bringing children into school and out of hunger



### School feeding in in Dominica

(Photo courtesy Helen Francis-Seaman)

*“Almost every country in the world for which we have information, seeks to feed its school children. Based on a sample of 169 countries, we estimate that at least 368 million children are fed daily when they are at school. The region with the largest number of beneficiaries is South Asia, followed by Latin America and the Caribbean (LAC). These numbers illustrate the near-universal recognition of the importance of school feeding.” However, “the coverage of school feeding programs is lowest in countries where the need is the greatest.”*

'State of School Feeding Worldwide'  
Published in 2013 by the World Food Program,  
Via C.G. Viola, 68-70, Rome 00148, Italy

## Introduction

Hunger and health issues have traditionally been targeted at the most vulnerable – infants and children. As a result, school feeding programs are presented as a key policy instrument for simultaneously tackling child health and early education. These programs must also meet other development goals, including incorporating locally produced foods in school meals.

This special paper on School Feeding programs highlights issues related to:

- ▶ Why School Feeding?
- ▶ What is School Feeding exactly?
- ▶ School feeding grows in the Caribbean!
- ▶ What's on the Menu?
- ▶ Behind the Scenes!
- ▶ Who Pays?
- ▶ How 'Home-Grown' is School Feeding?
- ▶ Feeding the Future – jumping hurdles!

The information presented was extracted from papers of CIPO's main contributing authors, provided by:

- Onyeka Campbell, Communication Specialist, Antigua
- Mrs. Pamela Guiste, Programme Coordinator, School Feeding Program, Ministry of Education, Dominica.
- Ravena Gildharie, Journalist, Guyana
- C. Helen Robertson, Director, School Feeding Unit, Ministry of Education, Jamaica
- The National Schools Dietary Services Limited (NSDSL), Ministry of Education, Trinidad and Tobago

These were supplemented with information obtained from online media reports, as referenced.

The paper ends with some information on Brazil, which is publicized as having one of the world's most successful school feeding programmes in the world, providing nutritious food to more than 45 million children.

- ▶ Brazil – a successful school feeding experience.

## Why School Feeding?

The literature on nutrition research confirms that nutritional deprivation has disastrous consequences on child health. This is especially so, in the critical period from conception to two years. However, among the simple and cost-effective measures to reduce under-nutrition, include improved maternal nutrition and care, breastfeeding for the first six months of life, adequate complementary feeding and micronutrient intake in the following 18 months and during early childhood.

The 2000-2015 Millennium Development Goals (MDGs) placed nutrition at the top of its agenda. School feeding is an essential and indispensable part of meeting: MDG 1 - to halve to hunger and poverty; MDG 2 - enhancing educating; MDG 3 - gender equality; and MDGs 4 and 5 - reducing child mortality and improving maternal health.

The Power of School Feeding: <i>bringing children into school and out of hunger</i>	
1. Nutrition	Improved micronutrient and macronutrient intake enhance nutrition and lead to better child health, increased learning and decreased morbidity for students.
2. Education	School meals help to get children, especially girls- into school and keep them there, through increasing enrolment and reducing absenteeism.
3. Gender & reaching other vulnerable children	School feeding makes a proven positive contribution to gender equality. It especially promotes access to school for disadvantaged girls, boys, orphans and other vulnerable children such as those affected by HIV/ AIDS.
4. Value transfer	School feeding works as a safety net that transfers significant level of value to households with school-age children. The school feeding value transferred frees up resources within households, averting negative coping strategies and allowing investments in productive assets.
5. Platform for wider socio-economic benefits	School feeding when linked to agricultural production, local food procurement and processing, has significant economic development and spin-offs. It can serve as a platform for Essential Package interventions - water, sanitation, nutrition, health and hygiene education, school gardens, improved environmental technologies and practices.
Source: Fighting Hunger Worldwide, Feed Minds, Change Lives: School Feeding, the Millennium Development Goals and girls' empowerment. <a href="http://wfp.org/school-meals">wfp.org/school-meals</a>	



***A hungry child does not grow well, cannot learn as well, and faces many health risks.***

'State of School Feeding Worldwide (2003) World Food Program, Via C.G. Viola, 68-70, Rome 00148, Italy

## What exactly is School Feeding?

School feeding (SF) describes the provision of meals or snacks at school to reduce the hunger of children during the school day. It also includes:

- take-home food rations, provided as economic incentives to families (or foster families, or other child care institutions) in return for a child's regular attendance at school.
- food provided to adults or youth who attend literacy or vocational training programs.
- food for pre-school activities with an educational component.
- any one or more of the following at-school meals: breakfast, mid-morning snack, lunch, or dinner (WFP, 2004).

School feeding programs (SFP) act as a source of income transfer for participating families and as reinforcement of inadequate family diets where necessary. An example is the Government of Jamaica-World Bank funded Program of Advancement through Health and Education (PATH) which provides funds to assist with nutritional support for 220,000 beneficiaries among the most needy and vulnerable in the society.

### Caribbean School Feeding

Records show school feeding from as early as:

- 1926, in Jamaica, initiated by an unnamed charitable group in corporate urban Kingston based on the generosity of local and international donors;
- the mid-1930s, in Barbados, from a Government policy decision to provide cooked lunches for all children in all Government Primary Schools;
- the 1940s, in Trinidad and Tobago, with the Milk and Biscuit Program funded by the World Health Organization (WHO), and in Grenada, where the government made use of prison farms to produce basic food items, e.g., ground provisions, vegetables and eggs, to supply government-run institutions, including schools.

More recent SFPs were introduced in:

- 1991 - Dominica, with support from the World Food Program, as part of a wider program for human development.
- 2006 - Guyana, with the introduction of a Hot Meals program in hinterland regions, supported by the World Bank Global Partnership for Education Catalytic Fund.
- 2006 - Antigua and Barbuda, providing a healthy and nutritious meal to students in a few government primary schools, established with support from Trinidad and Tobago's National Schools Dietary Services Limited (NSDSL).



### School feeding - Saint Lucia

Nutritionally adequate, tasty and satisfying meals and snacks are used as a pull factor or 'magnet' in Caribbean SFPs to ensure school attendance.

(Photo courtesy Lisa Hunt)

## School Feeding Grows in the Caribbean

The WFP concluded that “school feeding programmes are widely implemented by governments of the region with an annual investment of approximately US\$4.3 billion to provide school meals to around 85 million children” in Latin America and the Caribbean (LAC).<sup>1</sup>

By 2000, virtually all countries in the Caribbean offered some form of school feeding. This is evidence of the importance placed on investing in human development and in particular, the critical stages of early child health and education. Examples of the rapid growth of Caribbean SFPs are seen in:

- ▶ Antigua & Barbuda: starting with 'a few schools', by 2012, the SMP had expanded to 18 schools nation-wide at the primary, junior and secondary levels, serving 315,500 students.
- ▶ Barbados: from 6 schools serving 1,600 students in 1963, the SFP settled at 101 schools in 2001, dominated by Government's primary (69) and nursery (10) schools. Between September and December, 2011, the number of students served averaged 25,623.
- ▶ Dominica: Of the 34 schools participating in the SFP in 2012, 23 were fully sponsored by the government of Dominica; 8 sponsored by a Swiss agency, and 3 supported by Community NGOs. The Dominica Grammar Secondary Sol (secondary level) operates its own canteen and also makes available meals to those who are economically deprived. In total, the SFP provides meals to over 2,500 students, of ages 3½ as (pre-schoolers) 12 (primary level) and over (secondary school students up to 18 years).

<sup>1</sup> <http://reliefweb.int/report/world/85-million-children-receive-school-meals-latin-america-and-caribbean>

### Grenada: Beyond Rural and Primary

What started as school feeding in government primary schools in rural areas is now a wider program that includes several non-governmental and denominational schools.

Working together, the Ministries of Health, Education and Agriculture's Food & Nutrition Council determined the need to start SFP as early as day-care centres. This expansion has facilitated participation of ninety-one (91) institutions around the island, including Day Care Centres, Pre-primary, Primary and Secondary Schools, in school feeding.

In 2012, the program employed one hundred and sixty (160) cooks stationed at the schools nation-wide, feeding an estimated 9,500 children daily. Of this 65% are rural based and 35% are in various establishments in the capital St. George's.



#### School feeding - Grenada

Primary school children enjoy a school meal at a well-set class table converted into a dining table.

Source: Ministry of Education, Jamaica



## What's on the Menu?

School meals have changed since the early simple offerings of milk and biscuits/cookies, hops bread with cheese, Bulgar (a cereal to prepare porridge), or white rice and beans (as in Grenada).

School meals must now cater a variety of items that meet the basic requirement of reducing hunger of children during the school day. For example, the energy content of meals for the primary school child in Dominica contains approximately 250Kcal/day for Kindergarten to Grade 2 students. From Grade 3, students receive approximately 500kcal per day. The meals offer an estimated 1/3 of the daily protein requirements for every child, distributed during approximately 180 days per year.

SFP meal planning appears to operate in a similar manner in Caribbean programs. A typical SFP meal consists of:

1. one source of animal protein, including fish, chicken and goat prepared in different ways – stewed, baked, fried, curried.
2. a carbohydrate source, i.e., staples, such as, rice, green bananas, yams, sweet potatoes or pasta.
3. a fat source.
4. fruit e.g., fresh or in juices, (citrus and other fruits such as guavas, golden-apples, carambola, passion fruit), and/or
5. vegetables, e.g., pumpkin, callaloo, carrot, cabbage.

In most schools, soup is prepared at least once a week. Water, bottled or in a standardised cup, custom made for different age groups, may accompany all the meals.

### Jamaica - School Meals Programme

The Ministry of Education's School Feeding Unit administers the School feeding programme. The school meals menu is managed through a standardized menu aimed at 70% of the Early Childhood cohort and PATH beneficiaries. The menu includes:

- (1) The Nutribun component, which provides a snack comprised of milk and a baked solid (bun, rock cake, bulla, and spice cake or cheese bread) to an estimated 136,000 children.
- (2) Cooked food component, which provides breakfasts to early childhood cohorts and traditional lunches to approximately 175,000 students across 636 schools.

Recently, the MoE took a decision that only rice will be purchased centrally and sent to schools. Schools now receive funds to do their own purchasing of commodities.



#### School feeding - Jamaica

School children enjoying a 'Nutribun snack'

Photo courtesy School Feeding Unit, Jamaica

# School Feeding Menus



## Barbados: The BSMP Menu Plan for Term 2 (five (5) week cycle; January to March (2012)

Centre: Harbour

Month: January to March, 2012

Supervisor: Ms. J. Mapp

Week	Monday	Tuesday	Wednesday	Thursday	Friday
<b>Fruit of the Month: Orange ~ Vegetable of the Month: Banana (Sic)</b>					
1 6 11	Savoury chicken loaf, corkscrew pasta, peas and carrots, banana	Grilled turkey/ ham & dressing, salt roll, lettuce, melon slice	Fried fish fillets, salt roll, lettuce and cucumber salad	Hobo stew, dumplings &/or sweet potato, iced orange cup-cake	Chicken pelau, diced carrots, pineapple slices
2 7 12	Macaroni and cheese pie, peas and carrots, apple	Chicken fillet and dressing, whole-wheat bun, banana	Beef-stew and vegetables, creamed potato, orange half	Chicken wieners and dressing, hot-dog roll, chopped lettuce, melon slice	Fried steak fish, lentils & rice, grated carrots & raisin salad, fruity coconut bread
3 8	Cottage pie, mix-vegetables, peach half	Fried fish fillets, salt roll, lettuce, orange half	Cheese paste/ slices, salt roll, tomato slices, banana	Meat balls in creole sauce, macaroni, beans and carrots, ice-cream	Beef stew and vegetables, cou-cou or creamed yam, coconut bread
4 9	Macaroni and cheese pie, peas and corn, banana	Chicken wieners and dressing, hot-dog roll, chopped lettuce, apple	Creole corned-beef, corkscrew pasta, mixed vegetables, cherry coconut slice	Fried fish fillets, split peas and rice, cabbage and apple slaw, orange	Chicken and potato mix, diced carrots, iced orange cup-cake
5 10	Herbed corned-beef, macaroni, mix-vegetables, orange half	Tuna salad, salt roll, sliced tomato, ice-cream	Chicken pelau, diced carrots, raisin cup-cake and icing	Cheese slices or paste, tennis bun, lettuce, melon slice	Shepherd's pie, peas and corn, pumpkin bread

Source: J. Broomes

## Behind the Scenes

School meals are prepared in either Government owned/ managed facilities or in privately contracted kitchens.

- ▶ Antigua: in 2012, school meals were prepared in one Central Kitchen and School Meals' Centre, which shuttles meals to the 18-schools through a fleet of four (4) trucks. The packaged lunches are delivered warm to participating primary (18) schools in the 4 school zones.
- ▶ Dominica: In addition to government facilities, meals are prepared by parents (voluntary or paid) in both school and home/community kitchens certified as food handlers by the Ministry of Health. Parents also distribute meals at lunch time.



### Meal Preparation - Trinidad

Meals being prepared and packed by a local caterer

Photo courtesy Francilla Stewart

### Barbados - Meal Preparation & Distribution

The Barbados School Meals Program (BSMP) was introduced in July 1962 by the Ministry of Education and Culture. To cook and distribute lunches, 3 strategically located Kitchen Centres fully owned and operated Government kitchens were established:- The Westbury Centre, St. Michael (central), St. Clement's Centre, St. Lucy (north) and St. Christopher Centre, Christ Church (south). These BSMP Kitchen Centres are equipped with modern equipment and adequate space for the comfort and normal functioning of workers. Food health and safety assurances require:

- wearing of recommended apparel when preparing, transporting and distributing foods such as uniforms, hairnets, gloves, aprons and closed shoes.
- avoiding of strong scents (perfumes, colognes, etc.), nails, nail-polish and make-up.
- sanitizing of all utensils, trays and containers which have to come into contact with the food whether at the preparation, transport or distribution stage.
- storing the food at appropriate temperatures in insulated bins at transport.

Daily, schools are provided with forms to record the previous day's servings and indicate number of meals needed for the following day. This provides the information on total number of meals daily. Meals are prepared and packed in insulated containers to transport food under good hygienic conditions. Each School Meals Centre is allocated a fleet of 2 to 4 vans depending on the number of meals to be served. Each van is allocated 1 driver and 2 or 3 general workers responsible for the loading and unloading of the lunch containers. On arrival at the school, the containers are checked against the amounts requested.

For ease of distribution, Barbados is divided into 8 zones, each sub-divided into routes which comprise of a number of schools. Meals must be delivered before the specified school lunch hour of 12:00pm to 1:00pm.

## Who Pays?

Initially, school meals were financed by donors, such as, the St. Vincent De Paul Society, a Catholic Organization, the Eastern European Community, (in Grenada) and the WFP (in Barbados, Dominica and Grenada). With the gradual withdrawal of donor support, Governments have become fully responsible for meeting direct and indirect SFP costs. For example, in Trinidad and Tobago, the program is fully funded by the Government, with meals provided at no cost to children. In 2009, the National Schools Dietary Service Limited (NSDSL) provided over 27,000,000 meals in 854 pre, primary, secondary and technical/vocational schools in Trinidad at a cost of TT \$253.7M (roughly US\$40M).

- ▶ Dominica: meal supplies are supplemented by donations from private sector, teachers, parents, and from school funds. In some schools, there is a stipulation for students to contribute EC\$20.00 (US\$7.40) per month.
- ▶ Grenada: the MoE's annual estimated budget of EC\$3.5M (US\$1.3M) is often inadequate to ensure that all schools maintain a daily nutritive meal. To supplement the cost, primary school students are asked to contribute a minimum of EC\$1 (US\$0.37) per meal while secondary school students contribute EC\$2 (US\$0.74).
- ▶ Jamaica: Initially, Government provided of a feeding grant of J\$450.00 (US\$4.00) per year per child for the beneficiaries of the traditional cooked lunch and a nutrition subsidy of \$250.00 (US\$2.00) per year for recognized basic schools. Students are required to contribute J\$30 (US\$0.25) and J\$150 (US\$1.30) per lunch meal, and J\$2.00 (US\$0.17) for the nutribun. The combined MoE subsidy and students' contributions cover in part, the cost of cooks, fuel, meat and vegetables and other items. Breakfast and lunch are provided at no cost for 70% for Early Childhood students aged 3-8 years, including PATH beneficiaries in this age group. Lunch is provided for Grades 4 to 13 (age 9-18 years) for PATH beneficiaries, an estimated 40% of the population (approximately 141,500 students) and for an additional 39,000 vulnerable students not covered by the PATH Programme.

### The Cost of School Meals

Where government budgets are insufficient to cover the cost of providing daily meals, children are required to contribute, albeit a negligible amount, towards their meals. Though small, the student's required contributions, present a challenge for a number of households. Hence the general policy has been that children coming from conditions of extreme poverty are not required to make a financial contribution.

Whoever pays, rising food prices in a region with a high consumption of imported foods, have implications for the ability to maintain the nutrition integrity of the menus, and as well, to forge sustainable linkages between the content of school meals and local production of food stuff.



## How home-grown is school feeding?

The WFP promoted the need to connect and link school feeding to local agriculture since *'using locally sourced food means school feeding programs benefit not only children, but also farmers, communities and rural economies'*.

Almost all Caribbean countries emphasize the need to encourage children to grow their own food by establishing and supporting school gardens, as part of their objectives for school feeding. However, for a number of reasons, and not only related to food prices, imported food stuff comprises a relatively large share of meals in local school feeding programs.

- ▶ Antigua and Barbuda: volume, shelf life and food safety requirements and the need to keep operations economical, make the Antigua SFP menu still largely dependent in imported produce. The policy, however is that as far as possible and economical, school meals must incorporate locally produced food products, such as, provisions, chicken, vegetables, fish and fruits obtained from local fishermen, farmers, local bakers and in some cases, parents and students who raise poultry or grow kitchen gardens as school projects. These produce are required to meet the recommended caloric and nutrient content. The 2013 Antigua and Barbuda Zero Hunger Initiative reinforced the need to forge and sustain linkages with domestic food production, specifically, with the special program of backyard and school gardening to increase the amount of food provided by Family Farming/ Smallholder agriculture.
- ▶ Barbados: unavailability of locally produced fruits and vegetables means that the share of locally produced goods in the BSMP ranges from 15% to 30%. However, the policy does require that local content should constitute 60% of foods used. Supply of locally produced goods is monitored via the Barbadian Government's "SmartStream System". This system is based upon goods supplied by individual suppliers rather than individual commodities or crops. Using SmartStream's Funds Control application, the BSMP now efficiently records commitments and allocations electronically, automatically restricting expenditures, and safeguarding against over-expenditures.

### 'Local produce too costly for school feeding budget'

**"At least 150,000 meals are prepared a day by the program, but it is not mandated to and does not use a majority of locally produced goods as local produce is sometimes too expensive. While the vegetables used are 100% local, the meats are 50 to 60% imported. Before the spike in food prices during the last two years, the program used all local chicken, but that could not be afforded now."**

Ingrid Herrera, CEO, National School Dietary Services Ltd. July 2010, By Aretha Welch, July 7, 2010



<http://www.trinidadexpress.com/business/97912684.html>

**In October 2011, the cost of meals was roughly: \$7.50 (US\$1.20) for Preschool lunch; \$8.15 US\$1.30) for Regular Lunch and \$6.00 (US\$0.95) for Breakfast.**

## Community-Based School Feeding - The Guyana Story

In hinterland communities in Guyana, children travel long distances by boat or on foot to get to school. These children are, in most cases, not sent to school with proper meals or have nothing at all to eat. Supported by the World Bank Global Partnership for Education Catalytic Fund, Guyana launched its community-based 'hot meals' school feeding programme in January 2006. An important objective was to establish a healthy linkage between communities and schools. The Ministries of Education and Health, collaborated to train community members to organize, manage and operate the school feeding initiative and to train cooks, mostly parents and members of the community, in meal preparation to ensure that each child receives a balanced diet. The Ministry of Education also provided funds for the establishment of fully-equipped community kitchens constructed by the villagers themselves and for the women to purchase produce for meal preparation. In 2012, a meal was estimated to cost of G\$175 per child.

Photos courtesy Ravena Gildharie, Guyana



**Women roasting peanuts grown in the hinterland community of Aranaputa used in preparing nutritious snacks which they deliver to school children in their community.**

Apart from onions and garlic, salt etc., used as seasoning, the programme encouraged use of locally grown foods and limited use of imported foodstuff. The purchase of agricultural produce from within the community created a reliable and steady market for farmers. Farmers supplied fresh fruits, such as, cherries, guavas, pineapples, mangoes, grapefruits and organs, among others, for juices and ground provisions, such as, cassava, eddoes, plantain, yams, sweet potatoes and vegetables such as bora, pumpkin, squash, balanger etc., for lunch preparations. Commodities not produced in the hinterland, such as rice, chicken and other meats were obtained from coastal regions. Expansion of school feeding programs also stimulated an increase in community farming, including small school kitchen gardens with students engaging in rearing chickens and growing cash crops to supply the programme.

The community-based school feeding program has had positive impacts on school attendance and assured students in hinterland regions a daily nutritional meal acceptable to cultural traditions. For example, 'farine' a cassava dish a highly favoured among indigenous peoples, and often consumed with 'Tasso' (dried beef), formed part of the meals served to students. The programme also improved diet diversity and frequency of food consumption in participating community schools. It has also enhanced community nutrition as the women who prepare the food are also allowed access to one meal.

In addition to the 'hot meals' programme, what started out as a pilot initiative in 2004 to provide nutritious snacks to school children in 7 schools and 1,400 students, has since grown to 42 schools in 2012, serving 4,000 students located in Region Nine, closer to Guyana's border with Brazil. Since 2010, G\$45 million has been allocated to that programme annually. Women groups formed specifically for this purpose, buy farmers produce, which they process to prepare snacks for the schools. The main snack served is peanut butter/cassava sandwich along with a fresh fruit juice.

## Feeding the Future - Jumping Hurdles!



As a vehicle capable of simultaneously meeting multiple human development goals, school feeding programs are now essential to nurturing a healthy, educated and productive generation of future work force, innovators, entrepreneurs and leaders, among others. However, as recognised by Caribbean countries, a number of hurdles need to be overcome to achieve efficiencies and expand impact. Among the major hurdles include:

▶ resetting taste buds:

Almost all SFPs in the Caribbean lament the fact that school children 'do not like local foods'. Increasing consumption of root crops, fruits and vegetables has been described as an uphill struggle. This is compounded by the fact that foods labelled 'unhealthy' are easily accessible to students from school cafeterias and vendors camped outside school gates. Recall that 'food acceptability' is an important aspect of FNS.

Often, school cafeterias are full of sugar-based snacks. This has promoted calls for closer monitoring of school cafeterias and SFP meals, as a means to 'control' items that should be allowed for consumption in schools. However, mechanisms and actions to limit access to less desirable food products, including the policy and legislative frameworks, have not been introduced in the Caribbean.

▶ resourcing SF programs:

Government budgets in most Caribbean countries are usually inadequate to support direct and indirect costs and as seen, donor support is not infinite. Adequate resources are necessary to purchase food, as well as to maintain the infrastructure and services to store, prepare and transport meals and dispose of associated waste.

*The WFP confirmed what countries have been saying – that the costs of school feeding are high for most low-income countries'.<sup>2</sup> The WFP advised that 'Interim funding solutions (including multilateral, bilateral and food aid contributions) are needed to support governments with school feeding, but countries need to include school feeding in the national budget as early on as possible.'*

<sup>2</sup> World Food Programme (WFP); Learning from Experience - Good Practices from 45 Years of School Feeding. [http://toolkit.ineesite.org/resources/ineecms/uploads/1038/School\\_Feeding\\_Quality\\_Standards\\_Programme.PDF](http://toolkit.ineesite.org/resources/ineecms/uploads/1038/School_Feeding_Quality_Standards_Programme.PDF)



Even with the challenges, the goal in the Caribbean is to eventually expand and administer National SFPs.

- Antigua & Barbuda will expand coverage of school meals program under the Zero Hunger Challenge, Antigua & Barbuda Plan of Action 2013-2014. This will ensure that school children consume healthy school meals and are making more healthy choices away from school.<sup>(3)</sup> Indeed, the plan specifies an expansion to ensure 90% student coverage.

► regularizing guidelines and standards:

SF is generally guided by nutrition science, particularly with respect to the needs of early childhood. However, the combination of rising food prices and inadequate resources for staffing and tools to plan, manage and monitor operations and performance, have inadvertently enabled schools to administer SF according to their own interpretation and their situational context.

In addition to the implications for meeting the development objectives of health and education, lack of standards could also compromise the menu offered, and social development of students as most schools are not equipped with proper dining facilities to accommodate basic etiquette training. Countries have already taken steps to modernize their SFPs, including:

- Jamaica: through a two year project funded by Japan through the Inter-American Development Bank, which has enabled the government of Jamaica to move closer to the implementation of a national school feeding policy. Among the specific objectives included the need to modernize and upgrade the SFP's managerial tool kit and organizational structure.
- Trinidad and Tobago: by engaging field staff to monitor the kitchens of caterers on a daily basis, especially adoption of the international grading system Hazard Analysis Critical Control Point (HACCP). This is an effort to ensure and maintain a high level of quality assurance.



<sup>3</sup> <http://www.zerohungerchallengelac.org/ab/doc/PlanOfActionFinal230113.pdf>

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## Brazil - a Case of Successful School Feeding

Extracted from "The Local Food Revolution in Brazil's Schools", by Kei Otsuki, Al Jazeera  
March 1, 2013, <http://www.thesolutionsjournal.com/node/1178>

Among developing countries, Brazil's reforms have led the way by creating an enabling environment for small-scale farmers to access markets and to participate in tendering, while arranging distribution channels for their products.

The growing evidence of health problems coupled with poor diet and eating habits is prompting people to rethink how to source food in public institutions like schools. This rethinking has brought nutrition and sustainability front and centre, leading to initiatives that seek to promote the local sourcing of fresh agricultural produce for school meals. Such programmes are designed to enhance the production and distribution capacity of local farmers' co-operatives, actively involve citizen-consumers in negotiations with local authorities and ultimately create an institutional framework that fosters deliberative engagement and guarantees the quality of food used. Local production coupled with local consumption also reduces the ecological footprint associated with food procurement, which contributes to green, ongoing social and economic development.

More specifically, Brazil has met four internationally set goals for more sustainable food-procurement systems: (1) creating a market for small-scale farmers; (2) changing market structures so that a larger proportion of the market price goes to local farmers; (3) promoting a stronger role for local farmers in the supply chain through reducing the relevance of intermediaries in the purchasing process; and (4) ensuring that small-scale farmers produce a sufficient supply of good-quality products to enable them to respond to market demand.

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These interventions rely on a system of standardisation and distribution, and co-operation among a wide range of participants in the food chain in order to ensure transparency and accountability. This mechanism of participation is what characterises quality-oriented food procurement in Brazil.

Because of the widely accepted notion that food is a basic right, the federal government today acts as a duty-bearer who monitors the transparency of the School Feeding Committees and their compliance with federal guidelines. In this way, the entire food procurement operation must become accountable to both producers and consumers and open spaces in which more sustainable and locally supportive practices are generated. The case of school food procurement in Brazil demonstrates how strengthening the relationship between civil society and government can drive a new type of economy, namely a green economy that focuses on the quality of production and consumption.

The school meal is “***not an expense but an investment***”, which should give the country and the world significant returns in the future.

Central de Abastecimento e  
Serviços Auxiliare (CEASA)



## The Bottom Line

A healthy diet - defined as meeting one's daily nutritional needs - is fundamental to wellbeing, good health and productive life.

Regardless of who YOU are, WE are all CONSUMERS of food. But not all of us have the capacity to exercise our right to safe and nutritious food on a regular basis!

There are several factors that are under-mining the possibilities for a healthy diet.

Economic and social inclusion (affluence) is causing a large number of Caribbean populations to be 'over-fed' on empty calories. For these, Bob Marley's lyrics come to life: "dem belly full, but dey hungry".

Economic and social exclusion (poverty) also prevent a large number of Caribbean populations from meeting their daily nutritional requirements. For these, Bob Marley's lyrics also come to life: "a hungry man is an angry man".

For both, over- and under-consumption of certain foods lead to a common inevitable outcome – malnutrition.

Source: In a Nutshell "Food, Nutrition and the Vulnerable", Issue #19 September 2012, CaRAPN

## Parting Words

In today's inter-connected world, human health, via nutrition, can no longer be 'pillarized'. Sure, the traditional 4-Pillar definition of FNS served a purpose, and was necessary to enable early understanding of a complex and dynamic aspect of human well-being. Since then, interventions to arrive at healthy households, communities and populations, through policies, programs and projects, have been built on the traditional 4-Pillar FNS definition.

There is need to rethink and revamp the practice of 'pillarizing' interventions in dealing with FNS issues. This has resulted mainly in disjointed actions with limited and un-sustained benefits. Research on Caribbean nutrition and health has shown that CARICOM populations have become more obese since the 1990s, increasingly fed on imported 'empty calories', either as a final consumer processed product, or through intermediate inputs for food and beverage manufacturing. The data also revealed a worrisome trend; that the gap between female and male obesity has narrowed significantly in the 2000s compared to the 1990s. Levels of non-communicable diseases are now extreme, reflected in the significant increases in government expenditures on health over the last decade.

A key missing link is the 'integrator', i.e., the concept or mechanism connects these pillars, so that actions and interventions to assure FNS complement and enhance each other. Recently, in regional policy dialogue, there was suggestion of adding a 5<sup>th</sup> Pillar - Governance - to the FNS definition. Will the Governance pillar become the integrator?

The bottom line is that F&N is about three things: (1) the product (i.e., the food that we consume); (2) the person (i.e., the one who purchases (ready to eat) prepares (cooks and serves, etc.), and consumes that food product; and (3) the pathways (i.e., the processes and systems from production to distribution that channels and connects the food product to the person.

Demand is a key driver of the types of food products available and also of the nature of the processes that deliver them to the consumer. Consumers - i.e., the individual person or household, drive such demands, influenced by a number of inter-related factors, as previously discussed. This implies that any fundamental and sustained shifts in F&N must be grounded on changing the food consumption decisions of individuals. The individual/household therefore must not only need, but also want to make the healthy choice. Associated with this, is that the individual/household must also have the capacity to access the healthy choices. This means therefore that more healthy food products must be available, in terms of its physical supply (quantity – production and stockpiling), must be affordable, to enhance the ability to purchase (prices and income) and must be acceptable to the consumer (quality, presentation, taste, etc.).

The axioms: *'you can lead a horse to the water, but you can't make it drink'* or *'build it and they will come'* are very relevant to interventions for F&N, based on promoting expanded food production, 'eat what you grow' campaigns and even in the design of school feeding programmes.

#### **About CIPO #4**

'Belly full' does not mean that every man, woman and child is well fed. They may be satisfying their universal human right to food, but not necessarily meeting their human needs of the right to adequate nutrient-dense food. Why? Because the region is described as having experienced a 'nutrition transition', where obesity is now the new form of malnutrition. Over-consumption of high sugar, high-sodium and high-fat processed foods is defining a new kind of hunger for 'body-fuel' foods as the base of nutrition. Food and nutrition is a complex, inter-twined concept which in today's world, needs to be understood differently; i.e., that the hunger and nutrition challenge boils down to three core inter-related issues: the product itself (i.e., the food and its inherent nutrient qualities), the food purchaser (i.e., the one who makes the decision on what he/she will buy and consume) and the pathways that link them (i.e., the production and distribution processes that supply the foods). The goal should be that every man, woman and child should be able to exercise their right to both make and meet their healthy food choices.



#### **About IICA**

The Inter-American Institute for Cooperation on Agriculture (IICA) is the specialized agency of the Inter-American System for agriculture. Its mission is to encourage, promote and support member countries in their efforts to achieve agricultural development and rural welfare by means of international technical cooperation of excellence. It leverages its innovative, purposeful, inclusive, transparent and environmentally responsible institutional characteristics to support member country efforts to achieve a more competitive, inclusive and sustainable inter-American agriculture and create opportunities to reduce hunger and poverty among producers and rural dwellers.



#### **About CTA**

The Technical Centre for Agricultural and Rural Cooperation (CTA) is a joint international institution of the African, Caribbean and Pacific (ACP) Group of States and the European Union (EU). Its mission is to advance food and nutritional security, increase prosperity and encourage sound natural resource management in ACP countries. It provides access to information and knowledge, facilitates policy dialogue and strengthens the capacity of agricultural and rural development institutions and communities. CTA operates under the framework of the Cotonou Agreement and is funded by the EU.