

Cost/Benefit Analysis and Impact of Compliance and Non-compliance with Sanitary and Phytosanitary Requirement for CARIFORUM Countries

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Terms of reference – key technical tasks

- Review the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS) and related international standards (of the IPPC, Codex Alimentarius Commission and OIE)
- Assess the socio-economic costs of non-compliance and the benefits of compliance with implementing SPS measures, and the impact on the supply chain (i.e. small farmers, processors and exporters), to include:
 - the burden of the cost of compliance and non-compliance
 - loss of foreign exchange, income, employment and household consumption, particularly in rural area
- Project period: 1st September 2016 to 10th March 2017

Methodology

- Literature review
- Field visits (stakeholder interviews, data collection on costs and benefits of compliance):
 - Barbados
 - Jamaica
 - St Lucia
 - Suriname
 - Trinidad and Tobago.
- Develop and describe case studies (specific country/sector focus)
- Define baseline (i.e. current) and a “with standard” (i.e. enhanced SPS measures “SPS+”) scenarios
- Differentiate costs on the basis of private sector/ public sector and investment/operating
- Identify, document and quantify impacts (benefits) on trade and sector value added (model based on experience based-changes in trade volume and unit prices)
- Extrapolate identified costs and benefits within the case study sectors to all commodities at regional levels
- Disaggregate regional data to national/sector levels (on basis of trade volumes)

CARIFORUM trade in SPS sensitive products

Fishery products

**Other products of animal
origin**

**SPS sensitive products of
plant origin**

Live animals and plants

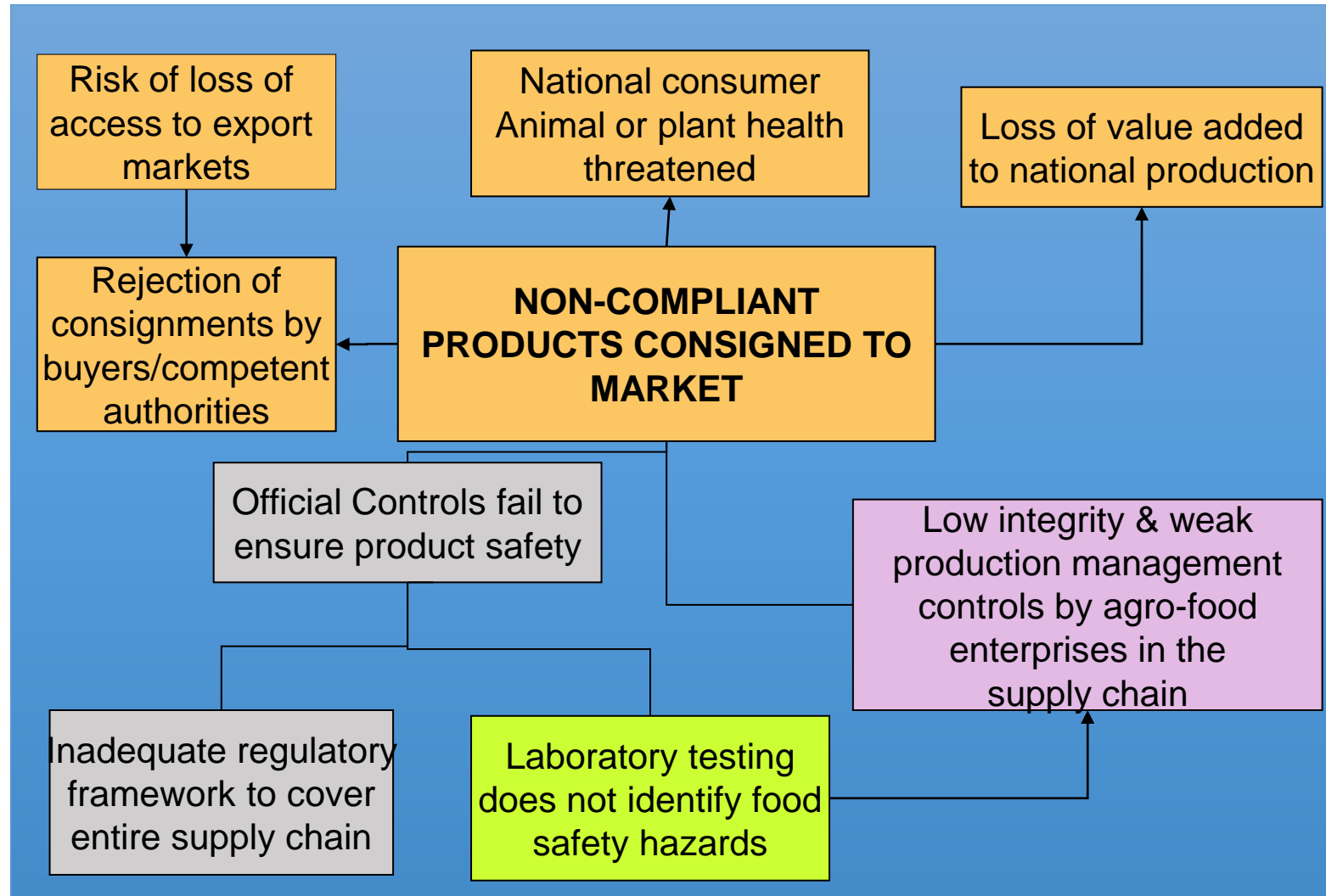
Other products

HS	Product label - US\$ million	Exported value in 2014	Imported value in 2014
	All products	36,198	46,948
HS	Agrifood products	3,427	7,455
'02	Meat and edible meat offal	19	661
'03	Fish and crustaceans, molluscs and other aquatic invertebrates	319	293
'04	Dairy produce; birds' eggs; natural honey; edible products of anim	34	701
'07	Edible vegetables and certain roots and tubers	154	259
'08	Edible fruit and nuts; peel of citrus fruit or melons	514	193
'09	Coffee, tea, maté and spices	49	86
'10	Cereals	322	1,112
'11	Products of the milling industry; malt; starches; inulin; wheat glute	155	285
'12	Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fr	13	157
'15	Animal or vegetable fats and oils and their cleavage products; pre	69	554
'16	Preparations of meat, of fish or of crustaceans, molluscs or other	34	280
'17	Sugars and sugar confectionery	364	344
'18	Cocoa and cocoa preparations	259	71
'19	Preparations of cereals, flour, starch or milk; pastrycooks' product	200	589
'20	Preparations of vegetables, fruit, nuts or other parts of plants	154	384
'21	Miscellaneous edible preparations	242	665
'22	Beverages, spirits and vinegar	504	767
			-
	Live animals and plants		42
'01	Live animals	16	25
'06	Live trees and other plants; bulbs, roots and the like; cut flowers a	7	27

CARIFORUM countries sanitary controls for fishery products: Regional indicators of status (December 2016)

Indicator	Value
No. of countries with CAs nominated for fishery products (=10/15)	67%
No. of countries authorised to supply the EU with:	
· fishery products = 7/15	47%
· aquaculture products = 3/15	20%
· live bivalve Molluscs etc. (e.g. conch) = 1/15	7%
No. of approved processing establishments + Cold stores	54
No. of approved freezer vessels + factory vessels	28
No. accredited laboratories	2
No. of food safety tests within accreditation scope	9

SPS PROBLEM TREE



Benefits of improved SPS compliance

Improved international trade conditions:

- Reduced rejects in international trade (0.2 to 1.8% of consignments from LDCs)
- Reduced transaction costs (removal of automatic detention, testing, certification requirements)
- Premium prices (removal of importer discounts)
- Extended access to markets (range of products/markets)
- Increased volume and unit value added of trade
- Reduced risk and increased investment in national production (leading to import substitution)

Improved national agricultural and public health conditions:

- Reduced frequency of incidents
- Reduced impact of incidents (lower cost of correction)
- Improved productivity (improved health of labour force, more efficient agriculture)

Costs of improved SPS compliance:

Cost type/sector	Public Sector	Private sector
Investment costs	Regulatory control capacity: <ul style="list-style-type: none">• Inspection system• Official control system• Laboratories• Training New public infrastructure (markets, landing sites, export facilities etc)	Upgrading facilities (hygiene, water supply) Record keeping systems HACCP development
Operating costs	Inspection costs (staff, transport) Sampling and testing Risk analysis (risk management, communication, assessment)	Higher skilled staff Implementation of monitoring and control systems (e.g.HACCP, traceability, sampling and testing) Certification

Three detailed case studies developed

Quantify costs and benefits derived from *ex post* studies of investment in compliance systems for:

1. Food safety in the fishery sector (costs and benefits based on Suriname's investments in SPS+)
2. Plant health and food safety in the fruit and vegetable sector (costs and benefits based on processed ackee for US market, Jamaica)
3. Animal health and food safety in the regional poultry sector (costs and benefits based on regional data – Caribbean Poultry Association, Dominican Republic, and Trinidad)

Assumptions: food safety in the fishery sector:

Baseline: Annual exports of US\$30m/year

Public sector costs of SPS + (upgrade)

	Cost (US\$ 1000)	Increase in annual operating cost
System upgrade (legal, certification, software)	90	0
CA facilities (office, vehicles, equipment)	750	15%
Laboratory (facilities, equipment, accreditation)	1,000	25%
TOTAL	1,840	

Private sector costs of SPS+ (upgrade)

	No. req.	Unit cost (US\$1000)	Total (US\$1000)	Increase in annual operating cost
Factory upgrades	1	250	250	10%
Landing sites	1	100	100	10%
Vessels/ farms	22	5	110	10%
TOTAL			460	10%

Fishery sector: SPS + Scenario cost benefit analysis (increased exports over 10 years)

- **Benefit:**
 - 10% increase in annual export value (=US\$30m)
 - No change in export volume (resource limited)
 - Increase in exports from US\$300 million to US\$330 million (SPS+)
- **Costs:**
 - Public sector US\$5.5 million
 - Private sector US\$920, 000
 - Total US\$6.4 million
- **Cost benefit ratio:**
 - 1: 4.7
 - (i.e. for every US\$1 spent on upgraded SPS system US\$4.7 worth of economic benefits are generated)

Assumptions: plant health and food safety in the fruit and vegetable sector:
Baseline: Processed ackee exports (US\$13.8m/year)

Public sector costs of SPS+ (upgrade)

	Cost (US\$ 1000)	Increase in annual operating cost
System upgrade (legal, certification, software)	40	0
CA facilities (office, vehicles, equipment)	15	15%
Laboratory (facilities, equipment, accreditation)	40	25%
Sector support	750	
TOTAL	845	

Private sector costs of SPS+ (upgrade)

	No. req.	Unit cost (US\$1000)	Total (US\$1000)	Increase in annual operating cost
Factory/ packing plant upgrades	10	114	1140	10%
Farms	5	29.5	143	10%
TOTAL			1,283	

Fruit and vegetable sector: SPS + Scenario cost benefit analysis (increased exports over 10 years)

- **Benefit:**
 - 4% increase in export price
 - 23% increase in export volume
 - 27% increase in export value (from US\$138 million to US\$156 million)
- **Costs:**
 - Public sector US\$2.9 million
 - Private sector US\$2.6 million
 - Total US\$5.4 million
- **Cost benefit ratio:**
 - 1:3.3
 - (i.e. for every US\$1 spent on upgraded SPS system US\$3.3 worth of economic benefits are generated)

**CARIFORUM
Broiler Chicken
(HS0207)
production and
trade in 2012**

Country	Production (tonnes)	Imports (tonnes)	Exports (tonnes)	Self-sufficiency P/(P+I)	Rank in region
Antigua and Barbuda	335	8,461	220	4%	
The Bahamas	6,362	7,026		48%	
Barbados	15,339	1,125	49	93%	5
Belize*	14,043	25		100%	6
Dominica	260	8,707	4	3%	
Dominican Republic	554,212	3,643	9,225	94%	1
Grenada	402	5,923		6%	
Guyana	30,338	2,207	9	93%	4
Haiti	7,577	76,011		9%	
Jamaica	101,382	39,415	244	72%	2
St. Kitts/Nevis	137	3,401		4%	
St. Lucia	1,501	10,424		13%	
St. Vincent & the Grenadines	467	6,482		7%	
Suriname**	10,142	18,206	152	36%	7
Trinidad & Tobago	65,150	19,038	493	77%	3
Total	807,647	210,094	10,396	80%	
Average	53,843	14,006	693	80%	

Source: CPA and Dominican Republic for Production; TradeMap for Imports. Includes *turkey and
**duck meat.

Assumptions: Animal health and food safety in the poultry sector:
Baseline: Average CARIFORUM country net imports US\$17.3m/year)

Public sector costs of SPS upgrade

	Cost (US\$ 1000)	Increase in annual operating cost
System upgrade (legal, certification, software)	60	25%
CA facilities (office, vehicles, equipment)	150	15%
Laboratory (facilities, equipment, accreditation)	400	25%
Sector support	1,000	
TOTAL	1,610	

Private sector costs of SPS upgrade

	No. req.	Unit cost (US\$1000)	Total (US\$1000)	Increase in annual operating cost
Factory upgrades	5	100	500	15%
Farm upgrades	20	50	1000	15%
TOTAL			1,500	15%

Poultry sector: SPS + Scenario cost benefit analysis (import substitution over 10 years)

- **Benefit:**

- Imports reduced from US\$173m to US\$92m
- US\$16.1m (value added on substituted imports = 20% of value)

- **Costs:**

- Public sector US\$3 million
- Private sector US\$3.6 million
- Total US\$6.6 million

- **Cost benefit ratio:**

- 1:2.4
- (i.e. for every US\$1 spent on upgraded SPS system US\$2.4 worth of economic benefits are generated)

SPS investment Costs and benefits over 10 years (CARIFORUM, all commodities)

	Over 10 years						
	No SPS+	SPS+					
Commodity	Trade US\$M	Public costs US\$M	Private costs US\$M	Total Compliance costs US\$M	*Trade SPS+ US\$M	Value added benefits US\$M	BC ratio
All Fishery products	3,186	58.3	9.8	68.1	3,505	319	4.68
All Fresh and processed fruit and vegetables	15,389	321.5	286.5	608	17,407	2,018	3.32
Others: Beverage, Cereals and Sugars	13,891	-	-	-	13,891	-	-
Total agrifood exports	32,466				34,803	2,337	
Net Meat and poultry imports (Imports-Exports)	7,797	134.2	163.87	298.1	3,622	724	2.43
Total costs and benefits		514	460	974		3,061	3.14

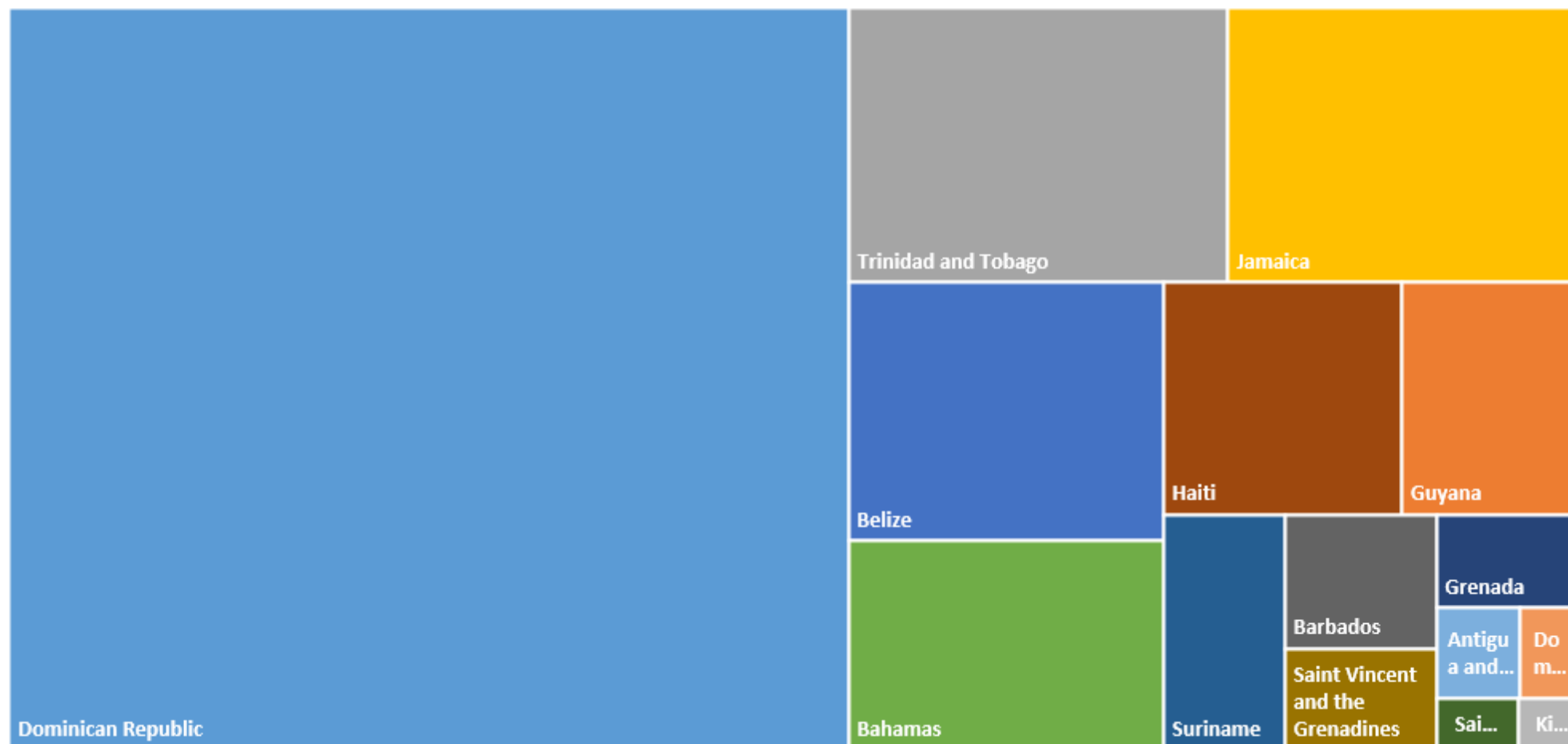
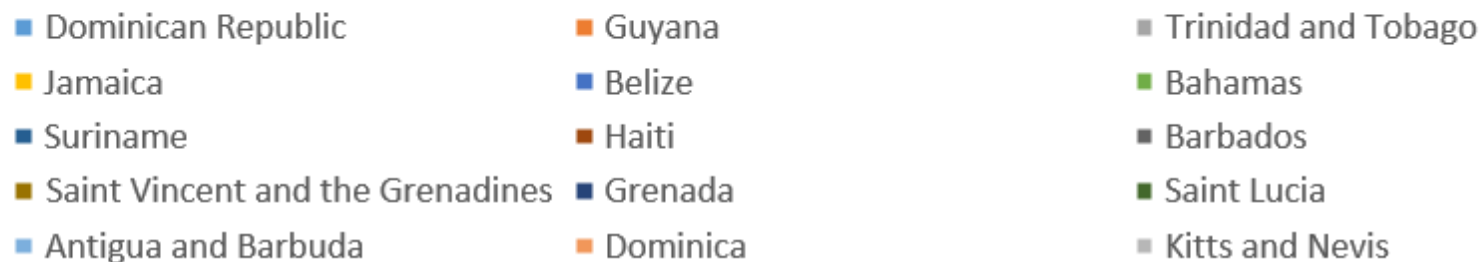
Annual SPS investment Costs and benefits (CARIFORUM, all commodities)

Commodity	SPS+		Multipliers		
			Public cost	Private cost	Benefits/yr
	Costs/yr US\$M	Benefits /yr US\$M	% trade	% trade	% trade
All Fishery products	6.812	32	1.8%	0.3%	10.0%
All Products of Animal Origin (imports-exports)*	29.812	72	1.7%	2.1%	9.3%
All Fresh and processed F&V	60.799	202	2.1%	1.9%	13.1%
SPS sensitive Fisheries and Agriculture	97.423	306	1.9%	1.7%	11.6%
Others: Beverage, Cereals and Sugars	-	-			
Total agrifood trade with *displaced poultry imports	97.423	306	1.3%	1.1%	7.6%

National costs and trade benefits (US\$M) of improved SPS compliance

Country	No SPS+ Trade	Public costs	Private costs	Total Compliance costs	*Trade SPS+ US\$	Trade Benefits	BC ratio
Dominican Republic	1,733	27	25	52	1,769	165	3.2
Guyana	494	2	1	3	495	11	3.9
Trinidad and Tobago	455	5	4	9	411	28	3.1
Jamaica	384	4	4	8	356	25	3.0
Belize	239	4	2	6	260	22	3.6
Bahamas	185	3	3	6	131	18	3.0
Suriname	151	1	1	2	139	8	3.3
Haiti	147	3	3	5	104	15	2.8
Barbados	125	1	1	2	104	5	2.6
Saint Vincent and the Grenadines	45	1	1	1	39	4	3.0
Grenada	39	1	1	1	34	3	3.1
Saint Lucia	36	<1	<1	<1	37	1	3.3
Antigua and Barbuda	21	<1	<1	<1	11	2	2.5
Dominica	15	<1	<1	<1	11	1	2.8
Kitts and Nevis	12	<1	<1	<1	8	1	2.5

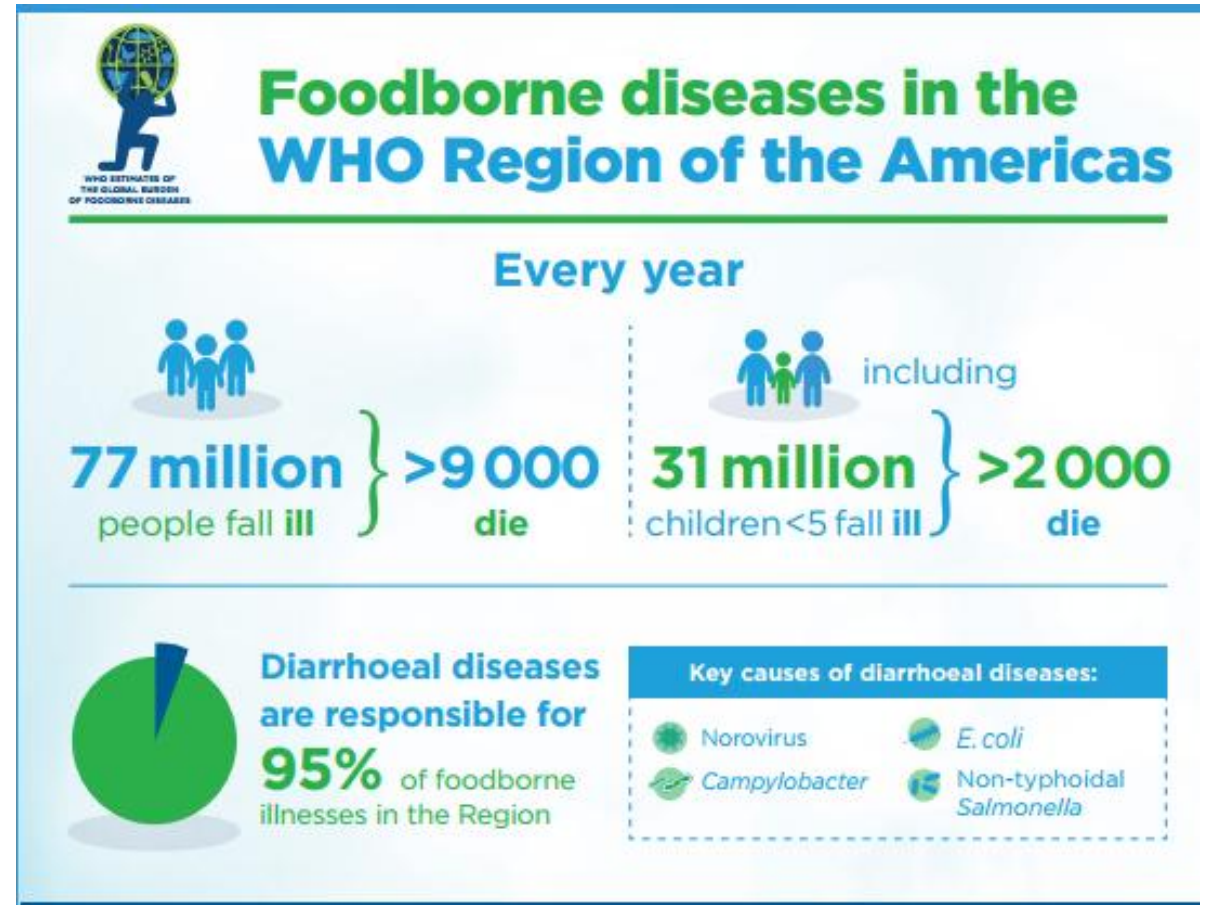
Trade benefits of SPS+ Regime in CARIFORUM countries



Costs of SPS non-compliance: Food safety risks

Public health impacts

- Reduced productivity
- Increased health care costs



Costs of non-compliance - weak SPS infrastructure: Food safety risks

USDA Economic Research Service estimated the cost of food poisoning from the top 15 hazards in the USA at US\$15.6 billion in 2013 (Hoffmann et al. 2015). Includes:

- Mortality
- Health care
- Loss of productivity

Pro rata by population, this suggests that the **current** cost of food poisoning to the domestic population of CARIFORUM countries could be in the region of US\$1.4 billion/year.

Potential risks to tourism: 28.7 million stopover arrivals in 2015 (Caribbean Tourism Organisation).



Costs of SPS non-compliance – domestic agriculture

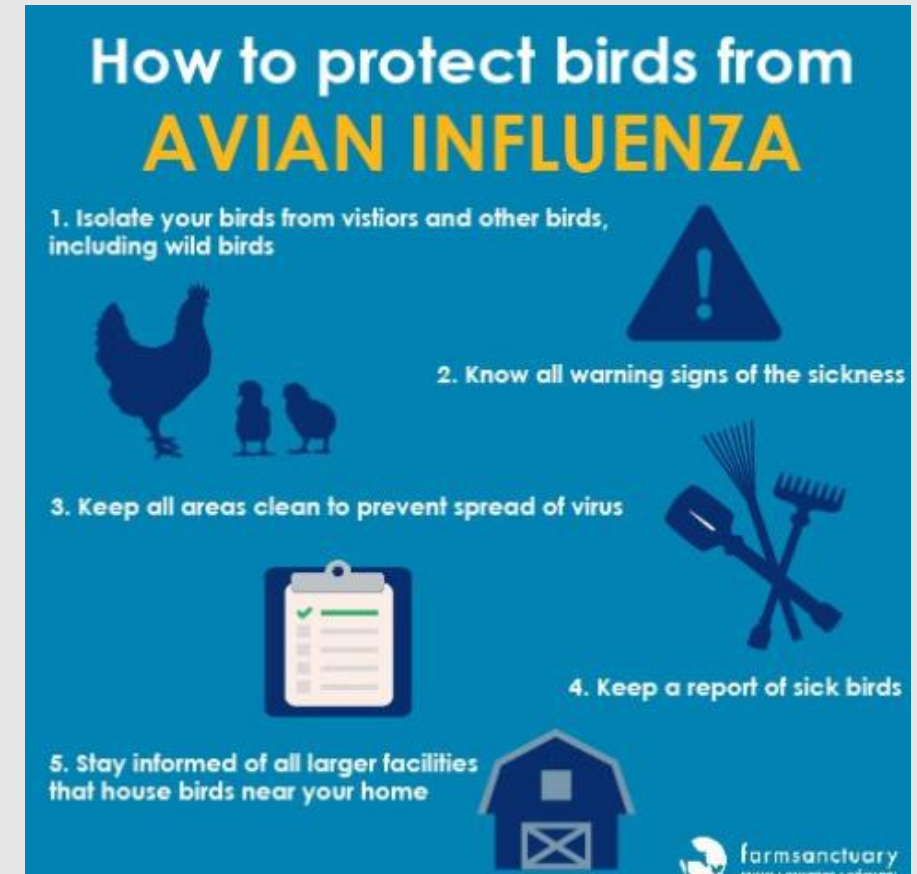
- Animal and plant health conditions:
 - Disease/pest risk
 - Reduced farm productivity
 - Higher risk investment environment
 - Reduced animal welfare



Costs of SPS non-compliance: animal health risks to agriculture

- E.g. CARIFORUM poultry sector
 - Regional production 800,000 tonnes (US\$1.00 billion)
 - Up to 65% of agricultural GDP
 - Employment direct >200,000 indirect >100,000
 - Net imports 200,000 tonnes

e.g. Belize 2014-15 Avian Influenza outbreak (estimated cost US\$ 3 million with SPS+ cf. sector value US\$110 million)



Costs of non-compliance: plant health risks

E.g. fruit export sector:

- Guyana and Suriname, DR, other countries
- Spread of non-native fruit fly
- Potential regional loss estimated to be c.US\$100 million from Carambola



Employment impacts

- FAO (2014) considered 29% of CARIFORUM population (c.8 million) as dependent on agriculture and fisheries in 2012
- Wide variation e.g.
 - 3% for Barbados and the Bahamas
 - 50% Haiti
- Majority are small (single/family operators)
- Implementation cost of SPS measures impacts disproportionately on small operators
- Need for support for establishing producer organisations (scale) and investments

Conclusions:

- Increased investment in SPS compliance of 2.4% of agro-food export trade value (US\$97.4 million/year) would deliver trade benefits of US\$306 million/year
- Compliance cost burden falls on public sector and private operators:
 - 1.3 % public (control systems, laboratories, subsidies)
 - 1.1% private (upgraded supply chain conditions/systems)
- Costs of current non-compliance due to SPS failure:
 - Food safety failure costs US\$1.4 billion/year
 - Finite probability of loss of agricultural sectors (poultry, fruit and vegetable, aquaculture) important for employment and food security

Recommendations:

Priority areas for policy should be:

- Risk based investment in strengthening official control systems for SPS sensitive commodities
- Ensure SPS official controls established for all sectors (import, export, domestic) to remove non-compliant operators (political will)
- Recognise minimum entry costs for national SPS control systems and establish regional service provision for:
 - Inspection support
 - Laboratory testing
- National government and donor finance for:
 - Strengthening of regional organisations e.g. CAHFSA & clarification of roles
 - Restructuring/consolidating national SPS competent authorities
 - Structural adjustment (upgrading) of enterprises in agri-food supply chain (SPS coherent agricultural and fisheries policies)