

FOOD for Thought:

food security, food safety, food ethics ?

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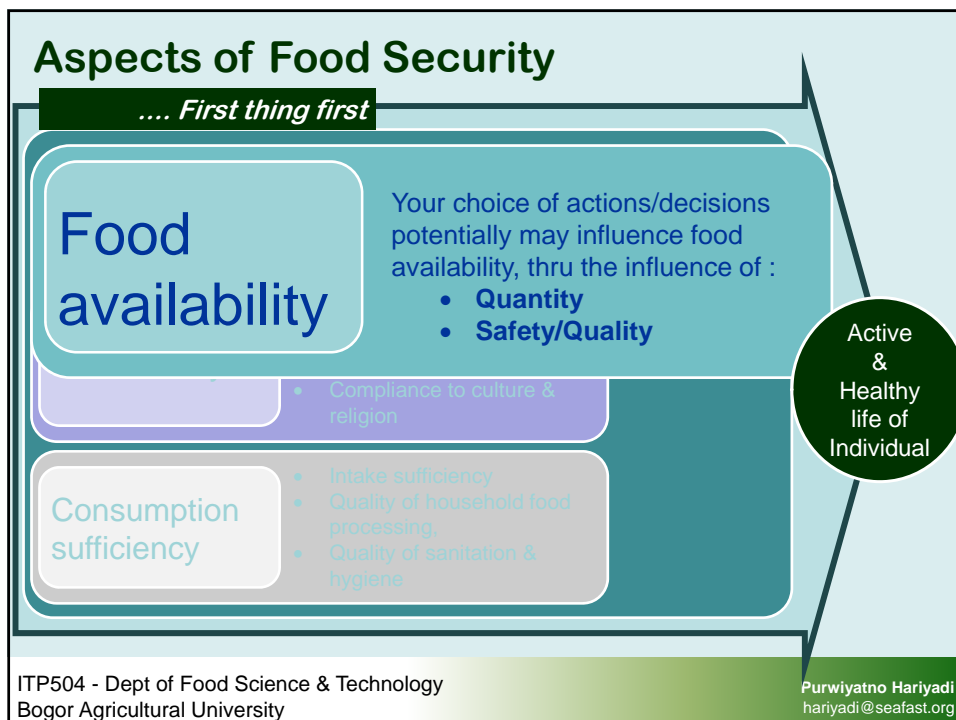
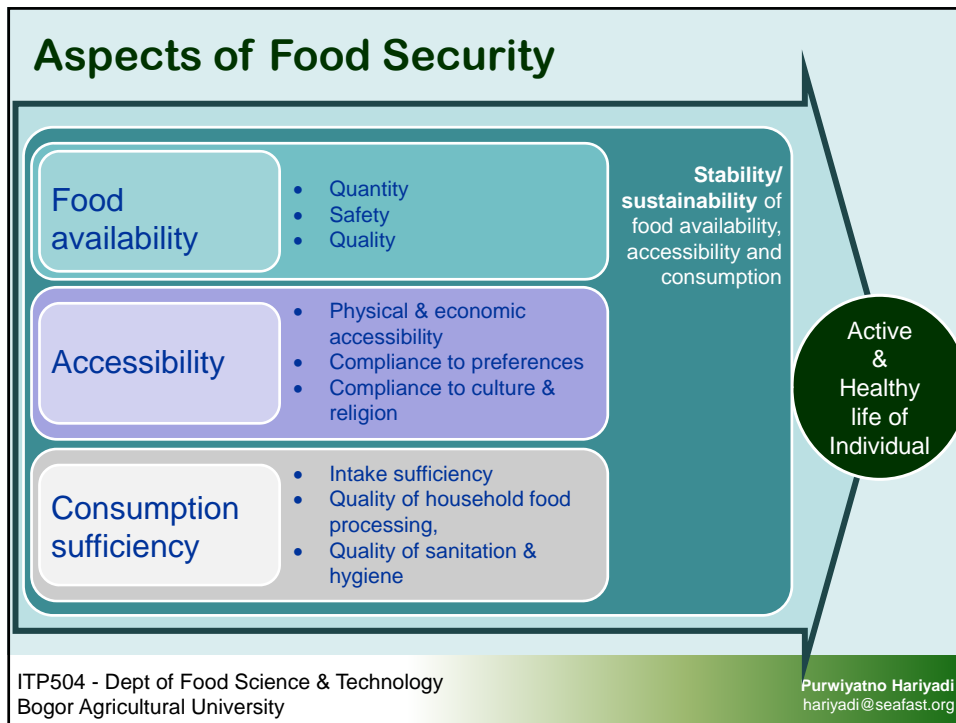
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World Food Summit of 1996:

Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.

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Food Security - Food Quantity

.... Facts (1)

Food availability • Quantity



- Estimated 925 million hungry people in the world.
- The world population is expected to reach 9.1 billion by 2050.
- Food production will need to nearly double by 2050 in developing countries.
- About 40% world's arable land is degraded to some degree and will be further affected by climate change.

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Food Security - Food Quantity

.... Facts (1)

The Challenge: How to Double Global Food Production and Reduce Environmental Damage?



Image: Kevin Van Aelst
(<http://www.scientificamerican.com/article.cfm?id=can-we-feed-the-world>)

- Food production will need to nearly double by 2050 in developing countries.
- About 40% world's arable land is degraded to some degree and will be further affected by climate change.

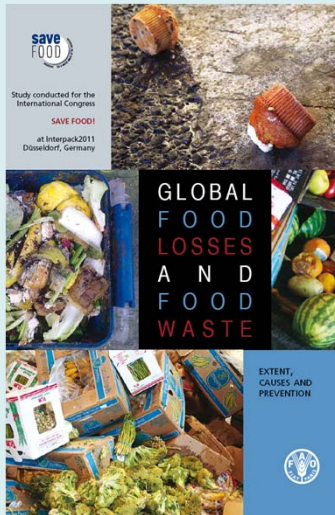
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Food Security - Food Quantity

.... Facts (2)

Global Food Losses and Food Wastes, FAO, Rome, 2011



- Roughly one-third of food produced for human consumption is lost or wasted globally
→ about 1.3 billion tons/year.

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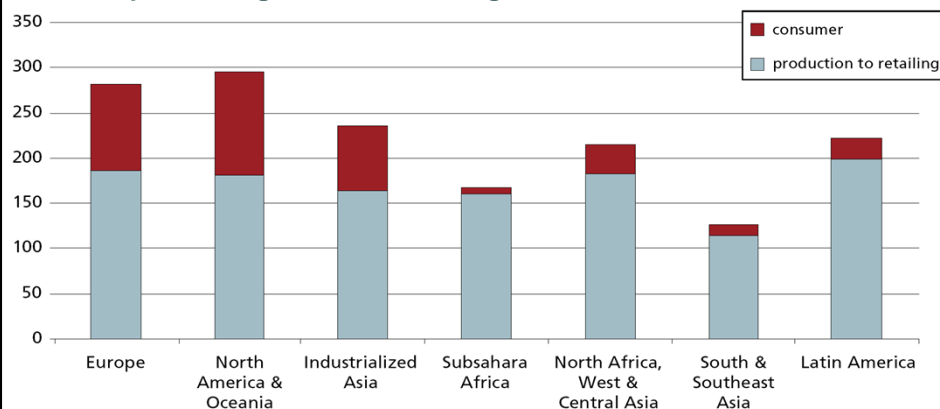
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Food Security - Food Quantity

.... Facts (2)

Global Food Losses and Food Wastes, FAO, Rome, 2011

Per capita food losses and wastes (kg/year), at consumption and pre-consumptions stages, in different regions



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Food Security - Food Quantity

.... Facts (2)

Global Food Losses and Food Wastes, FAO, Rome, 2011

Total food losses/wastes

- Europe and North-America = 280-300 kg/year
- Sub-Saharan Africa and South/Southeast Asia = 120-170 kg/year.

Characteristics of food losses/food wastes

- Industrialized countries: more than 40% of the food losses occur at retail & consumer levels.
- Developing countries: more than 40% of the food losses occur at post harvest and processing levels



Food waste at consumer level in industrialized countries (222 million ton) is almost as high as the total food production in sub-Saharan Africa (230 million ton).

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Food Security - Food Quantity

.... Opportunity (1a)

Increase food availability?
(decreased food losses and food wastes)

Characteristics of food losses/food wastes

- Industrialized countries: more than 40% of the food losses occur at retail & consumer levels.
- Developing countries: more than 40% of the food losses occur at post harvest and processing levels

Any thought?
What we can do about this? (as food scientist/technologist)

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Food Security - Food Safety

.... Facts (3)

Food safety have become increasingly important globally

1. → protecting the health of the consumer.
2. → meeting requirements for international trade.
 - This is especially important for many developing countries that export foods to the major trading blocks of the developed world, or that have the potential to do so.

Food Security - Food Safety

.... Facts (3)

Food safety have become increasingly important globally

1. → protecting the health of the consumer.
 - Food borne diseases are caused by various microorganisms: parasites, bacteria, and viruses.
 - The global incidence of foodborne disease (WHO, 2005) : 1.8 million people died from diarrhoeal diseases.

Food Security - Food Safety

.... Facts (3)

Food safety have become increasingly important globally

1. → protecting the health of the consumer.
 - CDC (2011) estimates that each year roughly 1 in 6 Americans (or 48 million people) gets sick, 128,000 are hospitalized, and 3,000 die of food borne diseases.

Food Security - Food Safety

.... Facts (3)

Food safety have become increasingly important globally

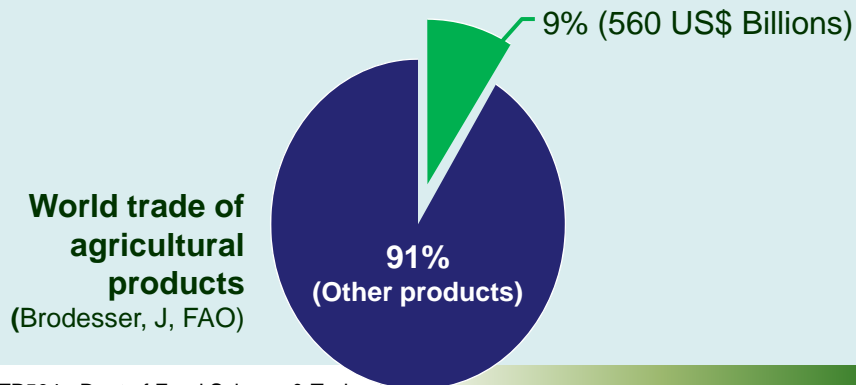
1. → protecting the health of the consumer
 - economic burden
 - USA (1997), diseases caused by the major pathogens alone are estimated to cost up to US \$35 billion annually in medical costs and lost productivity.
 - The re-emergence of cholera in Peru in 1991 resulted in the loss of US \$500 million in fish and fishery product exports that year.

Food Security - Food Safety

.... Facts (4)

Food safety have become increasingly important globally

2. → meeting requirements for international trade.



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Food Security - Food Safety

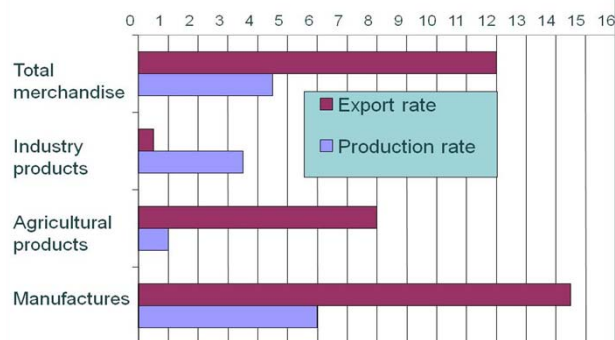
.... Facts (4)

2. → meeting requirements for international trade.

Percentage increase per year of world trade & production by main product groups

Already ~ 40% of all trade in food, agriculture, fisheries occurs between developing & developed countries.

(World Integrated Trade Solution Database
(<http://wits.worldbank.org/wits/gptad.html>))



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Food Security - Food Safety

.... Facts (4)

2. → meeting requirements for international trade.

Meeting Standards, Winning Markets

Trade Standards Compliance 2010



Meeting Standards, Winning Markets: Trade Standards Compliance (2010)

- Norwegian Agency for Development Cooperation and
- United Nations Industrial Development Organization (UNIDO)

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Food Security - Food Safety

.... Facts (4)

2. → meeting requirements for international trade.

Table 3. Number of EU rejections of food and feed products from Third Countries, 2002-2008

Country	Year							Total	Annual Average
	2002	2003	2004	2005	2006	2007	2008		
Iran	63	492	491	470	243	130	172	2,061	294.4
China	149	133	158	253	262	354	498	1,807	258.1
Turkey	141	200	180	198	250	294	302	1,565	223.6
India	60	119	110	137	86	111	157	780	111.4
United States	25	53	52	74	231	184	144	763	109.0
Thailand	143	85	45	117	85	92	103	670	95.7
Brazil	102	116	109	124	91	58	61	661	94.4
Vietnam	67	35	56	124	68	44	55	449	64.1
Argentina	11	42	46	57	75	47	58	336	48.0
Indonesia	39	36	70	58	43	25	14	285	40.7
Ghana	1	8	78	59	44	31	23	244	34.9
Egypt	9	40	33	24	30	35	48	219	31.3
Nigeria	1	7	15	30	28	49	25	155	22.1

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Food Security - Food Safety

.... Facts (4)

2. → meeting requirements for international trade.

Table 4. Number of US rejections of food products, 2002-2008

Country	Year							Total	Annual Average
	2002	2003	2004	2005	2006	2007	2008		
Mexico	1,804	1,502	1,581	1,735	1,477	1,270	1,066	11,926	1490.7
India	746	725	871	1,026	1,132	1,113	707	7,223	902.9
China	541	667	616	672	664	740	479	5,005	625.6
United Kingdom	377	288	325	245	369	430	1,262	3,767	470.9
Dominican Republic	263	266	535	415	663	512	77	3,121	390.1
Canada	414	543	551	284	246	238	361	3,014	376.7
Vietnam	428	332	478	350	300	378	306	2,939	367.4
Japan	755	241	192	147	285	203	319	2,448	306
Indonesia	138	269	331	214	313	374	250	2,159	269.9
Thailand	280	258	351	307	216	233	212	2,122	265.3
France	461	365	345	223	159	155	113	2,081	260.1
South Korea	297	344	285	205	112	166	287	1,938	242.3
Philippines	203	456	248	214	135	244	168	1,906	238.3

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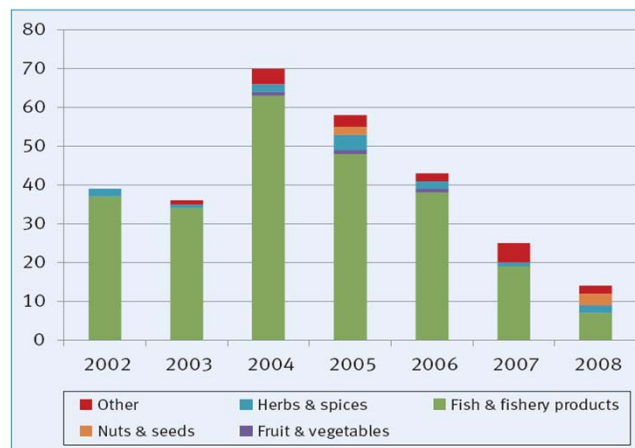
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Food Security - Food Safety

.... Facts (4)

2. → meeting requirements for international trade.

Number of EU rejections of food and feed exports from Indonesia, 2002-2008



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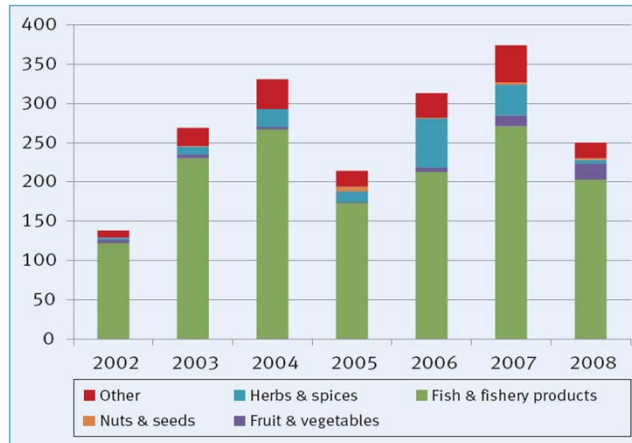
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Food Security - Food Safety

.... Facts (4)

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Number of US rejections of food and feed exports from Indonesia, 2002-2008



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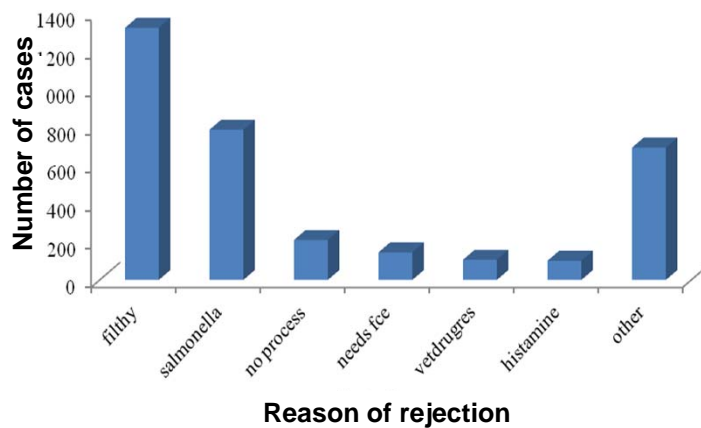
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Food Security - Food Safety

.... Facts (4)

2. → meeting requirements for international trade.

Reasons for rejection of Indonesian products by US-FDA (2002-2010;
www.accessdata.fda.gov/scripts/imp/ortrefusals).



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Food Security - Food Safety

.... Facts (4)

2. → meeting requirements for international trade.

→ Economic losses for developing countries

**Value of EU
rejections of fish
and fishery
products,
2004-2008
(US\$ million)**

Country	2004	2005	2006	2007	2008	Total
Indonesia	0.9	0.4	1.9	0.8	8.1	12.0
Australia	0.0	0.7	10.7	0.3	0.0	11.7
Vietnam	1.0	3.3	1.8	0.6	0.6	7.3
China	0.4	0.9	0.9	1.9	1.3	5.3
India	0.6	1.1	1.1	0.8	1.4	5.1
Bangladesh	0.4	0.3	1.4	0.5	0.8	3.4
Russia	2.0	0.8	0.1	0.1	0.0	2.9
Greenland	0.0	0.0	0.1	0.0	2.0	2.1
Other	4.9	4.1	4.9	6.2	2.3	22.5
Total	10.3	11.6	23.3	11.6	17.4	74.3

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Food Security - Food Safety

.... Facts (4)

2. → meeting requirements for international trade.

→ Economic losses for developing countries

**Value of US
rejections of fish
and fishery
products,
2004-2008
(US\$ million)**

Country	2004	2005	2006	2007	2008	Total
China	3.5	6.9	21.5	13.2	7.9	53.0
Vietnam	12.0	9.7	6.7	8.3	6.1	42.8
Indonesia	7.2	6.3	5.8	6.3	5.6	31.2
Bangladesh	6.3	3.8	1.0	0.8	1.9	13.8
India	3.5	3.8	2.0	1.8	0.5	11.6
Thailand	2.3	2.6	1.7	2.5	1.6	10.7
Honduras	0.0	7.9	0.2	0.0	0.1	8.2
Taiwan	1.9	1.3	0.9	1.6	2.0	7.7
Philippines	2.2	1.3	0.6	1.7	1.2	7.0
Mexico	1.7	1.2	1.0	0.6	0.7	5.2

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Food Security - Food Safety

.... Opportunity

Increase food safety?
(decrease economic losses and
increase welfare)



Any thought?

What we can do about this? (as food scientist/technologist)

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Food Security - Food Safety

.... Opportunity



Pergamon

Food Policy 26 (2001) 495-514

FOOD
POLICY

www.elsevier.com/locate/foodpol

Saving two in a billion: quantifying the trade
effect of European food safety standards on
African exports[☆]

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Any thought?

What we can do about this? (as food scientist/technologist)

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Food Security - Food Safety

.... Opportunity

Saving two in a billion: quantifying the trade effect of European food safety standards on African exports[☆]

Abstract

A growing concern over health risks associated with food products has prompted close examination of sanitary and phytosanitary standards in industrialized countries. This paper quantifies the impact of a new harmonized aflatoxin standard set by the EU on food exports from Africa. We employ a gravity model to estimate the impact of changes in differing levels of protection based on the EU standard, in contrast to those suggested by international standards. The analysis is based on trade and regulatory survey data for 15 European countries and nine African countries between 1989 and 1998. Our results suggest that the implementation of the new aflatoxin standard in the EU will have a negative impact on African exports of cereals, dried fruits and nuts to Europe. The new EU standard, which would reduce health risk by approximately 1.4 deaths per billion a year, will decrease these African exports by 64% or US\$ 670 million, in contrast to regulation set through an international standard. © 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Agricultural trade; Sanitary and phytosanitary measures; Food safety; Aflatoxins; Health risks

Any thought?

What we can do about this? (as food scientist/technologist)

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Thank You



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