

Contribution of Crops Production for Food

Security in Indonesia

2nd International Conference on

Plant Science & Physiology

June 26-28, 2017 Bangkok, Thailand

Theme: Advancement in botanical research

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Market Analysis

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ABRAHAM MASLOW'S HIERARCHY OF NEEDS



- (1) What We Eat Tomorrow? : "Lower Class" = "Poor"
- (2) Where We Eat Tomorrow?: "Middle Class"
- (3) Who We Eat Tomorrow?: "High Class"

SELF - ACTUALIZATION

Truth, Justice, Wisdom, Meaning

ESTEEM

Self-Respect, Accomplishment,

SOCIAL

Love, Friendship

SAFETY

Financial Reserves, Job Security,
Health Security, Physical Safety

PHYSIOLOGICAL

Air, Food, Water, Sleep



Maslow's Hierarchy of Needs





HUMAN RIGHTS DIMENSION OF FOOD SECURITY



The right to food is recognized in the 1948 Universal Declaration of Human Rights (Art. 25) as part of the right to an adequate standard of living, and is enshrined in the 1966 International Covenant on Economic, Social and Cultural Rights (Art. 11).



HUMAN RIGHTS DIMENSION OF FOOD SECURITY



It is also recognized in specific international instruments such as the Convention on the Rights of the Child (Art. 24(2)(c) and 27(3)), the Convention on the Elimination of All Forms of Discrimination against Women (Art. 12(2)), or the Convention on the Rights of Persons with Disabilities (Art. 25(f) and 28(1)).



HUMAN RIGHTS DIMENSION OF FOOD SECURITY



The Economic, Social and Cultural Rights Committee of the UN Commission for Human Rights authoritatively stated in its General Comment 12 that “**The right to adequate food is realized when every man, woman and child, alone or in community with others, has physical and economic access at all times to adequate food or means for its procurement.**”



Where are the world hunger people?



There are people in the world so hungry, that God cannot appear to them except in the form of bread.

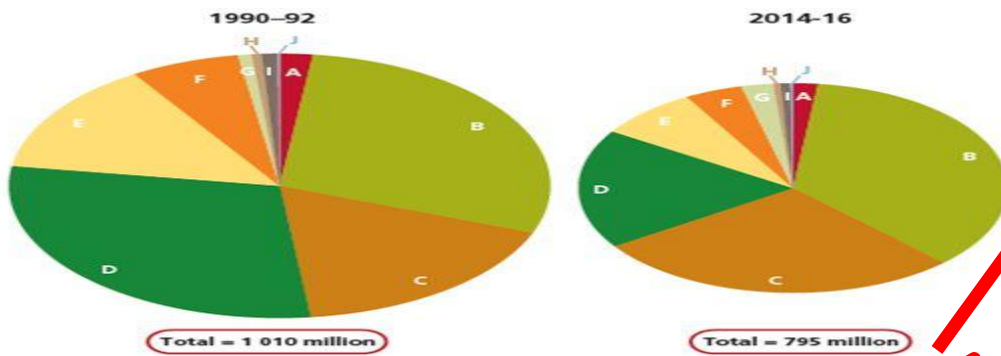


Mohandas Gandhi
Indian Leader
1869 - 1948

QUOTEID.COM

Changing distribution of world hunger: 1990-92 and 2014-2016 (2)

Numbers and shares of undernourished people by region



	Number (millions)		Regional share (%)	
	1990-92	2014-16	1990-92	2014-16
A Developed regions	20	15	2.0	1.8
B Southern Asia	291	281	28.8	35.4
C Sub-Saharan Africa	176	220	17.4	27.7
D Eastern Asia	295	145	29.2	18.3
E South-Eastern Asia	138	61	13.6	7.6
F Latin America and the Caribbean	66	34	6.5	4.3
G Western Asia	8	19	0.8	2.4
H Northern Africa	6	4	0.6	0.5
I Caucasus and Central Asia	10	6	0.9	0.7
J Oceania	1	1	0.1	0.2
Total	1 011	795	100	100



Agriculture Development in Indonesia



The variety of staple foods consumed by Indonesians was diverse; the four main staple crops were **rice** (53.5% of diet), **cassava** (22.2% of diet), **maize** (18.9% of diet), and **potatoes** (4.99% of diet).

Table 1. Production of major cereals and tubers in Indonesia (2004-2013: 000 mt).

Cereals	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	10 year average	average annual growth rate (%)*
Paddy	54,088	54,151	54,455	57,157	60,328	64,399	68,469	65,757	69,058	71,280	61,714	3.15
Maize	11,225	12,524	11,609	13,268	16,317	17,630	18,328	17,643	19,387	18,512	15,646	0.13
Cassava	19,425	19,321	19,987	19,968	21,757	22,039	23,918	24,044	24,177	23,937	21,859	2.41
Sweet Potato	1,902	1,857	1,854	1,867	1,882	2,058	2,051	2,198	2,483	2,387	2,058	2.70

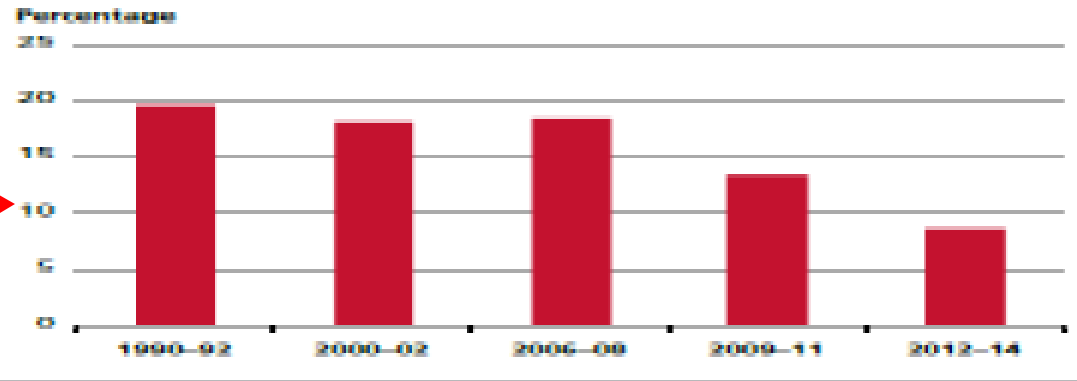
* Average annual population growth was 1.38 percent over the same period

Source: Statistical Yearbook of Indonesia 2014, BPS

The Government of Indonesia through the Ministry of Agriculture has launched the 2017 Indonesia achieve self-sufficiency in **rice**, **corn** and **soybeans**, and after that followed by other food such as meat, beef cattle, sugars and many other things.



Where are the ASEAN hunger people?



Source: FAO.

Access to food in each ASEAN country can be seen from the prevalence of undernourishment indicators. Referring to data from FAO (2015; Table 4), only **Brunei Darussalam** and **Malaysia** have a prevalence of undernourishment rate less than **5%**, which means they are close to eradicating hunger. Over the last 10 years, the prevalence of undernourishment rate in **Indonesia** has halved from 18.8% in 2005 – 2007 to **7.6%** by 2014 – 2016. Among the other ASEAN member states, **Lao PDR, Myanmar,** and **Cambodia** have a high prevalence of undernourishment rate range of **14.2% - 18.5%** by 2014 – 2016. Almost all member states of ASEAN have made good progress towards meeting the international goal towards reducing the number of undernourishment people.

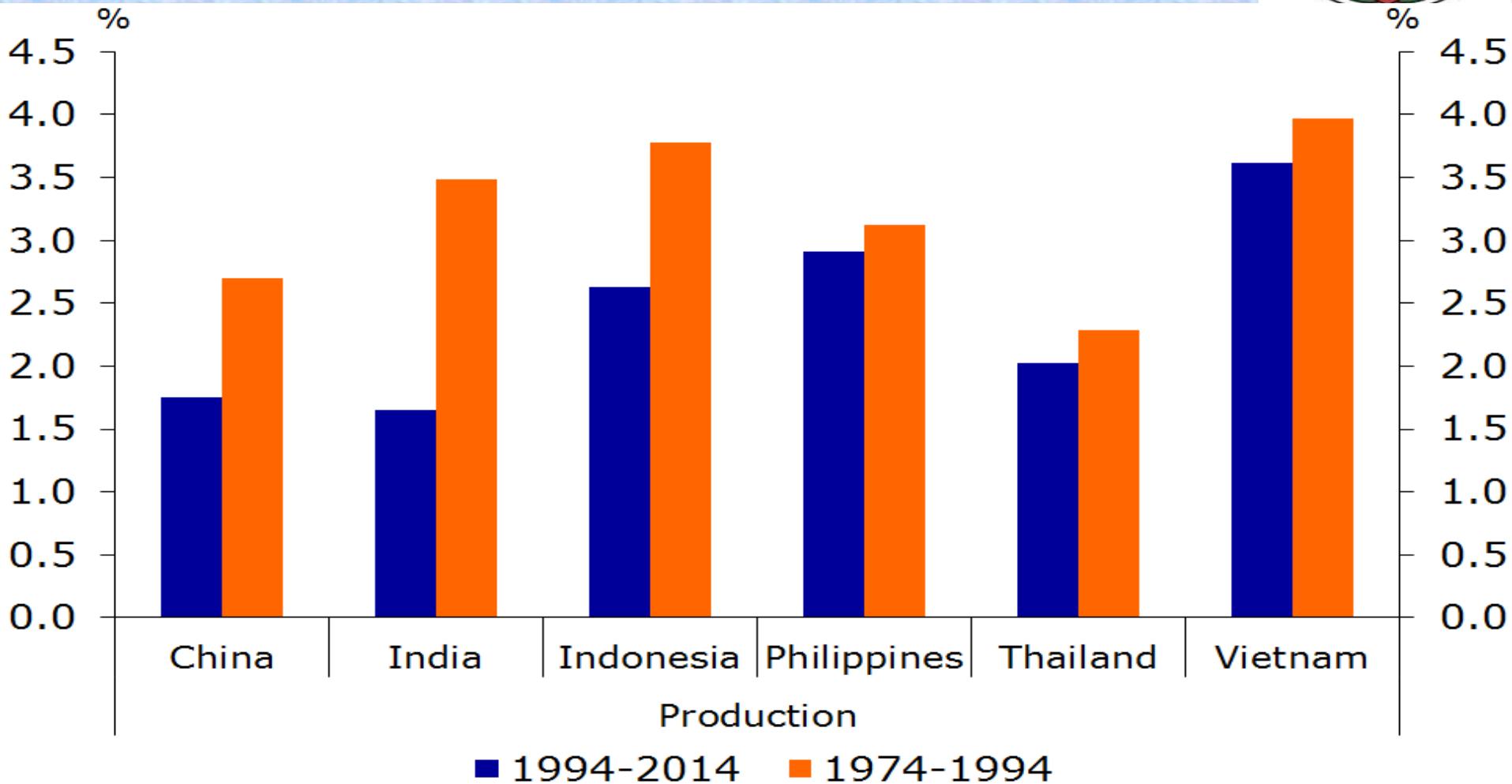
Table 4. Prevalence of undernourishment rate in ASEAN Member State (%).

No.	Countries	2005-07	2006-08	2007-09	2008-10	2009-11	2010-12	2011-13	2012-14*	2013-15*	2014-16*
1	Brunei Darussalam	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2	Cambodia	19.6	18.0	17.5	17.1	17.0	16.8	16.4	15.7	15.0	14.2
3	Indonesia	18.8	18.5	17.7	15.9	13.5	11.1	9.3	8.1	7.6	7.6
4	Lao People's Democratic Republik	20.9	25.0	24.7	24.2	22.0	21.4	20.1	19.4	18.9	18.3
5	Malaysia	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
6	Myanmar	33.7	30.1	26.4	23.0	20.2	18.0	16.5	15.3	14.9	14.2
7	Philippines	16.4	15.0	13.8	13.0	13.0	13.4	13.5	14.0	13.9	13.5
8	Singapore	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
9	Thailand	11.7	10.4	9.7	9.5	9.3	8.9	8.0	8.1	7.9	7.4
10	Viet Nam	18.6	17.0	16.0	15.6	14.5	13.6	13.0	12.3	11.8	11.0

Source: FAOSTAT (2015)



Growth in cereal production and yield in selected Asian countries



(**SOURCE:** <https://economics.rabobank.com/publications/2016/february/asia-pacific-agricultural-perspectives/>)



Table. 2. Export shares of top five exporters on globally trade grains (Bren d' Amour *et al.*, 2016).

Maize		Rice		Wheat	
Country	Share	Country	Share	Country	Share
United States	50%	Thailand	27%	United States	21%
Argentina	13%	Vietnam	16%	France	13%
Brazil	7%	India	14%	Canada	13%
France	7%	United States of America	10%	Australia	11%
China	5%	Pakistan	9%	Russia	8%
Top 5	82%	Top 5	77%	Top 5	66%

Cereal-based feed countries?



Figure 1. Major crop import flows trade dependent countries. Countries are colored to the crop they are importing. The color intensification signifies the import dependency ratio. Each country is linked to its supplier via an important arrow. The thicker the arrow, the higher the share exporting country has on the import volume of that country. (Bren d' Amour *et al.*, 2016).



Livestock Development in Indonesia



The **poultry industry** consumes approximately **83%** of Indonesia's animal feed. Aquaculture consumes 11% and the remaining **6%** is consumed by **cattle and swine**.

On average, livestock feed is composed of corn (50%), soybean meal (15-20%), corn gluten meal (3%), CPO (2%), fish meal (5%), rice bran (15%), wheat pollard (8%), and premix (0.6%). Based on data from the Indonesian Feed Producers Association (*Asosiasi Produsen Pakan Indonesia, APPI* – Table 2). Indonesian feed millers are heavily reliant on imported feed ingredients **“from top 5 exporters”**(Table 2).

Table 3. Sources of feed ingredients in Indonesia.

No.	Feed Ingredient	Sources	
		Local	Import
1.	Corn	90-95	5-10
2.	Fish Meal	5-10	90-95
3.	MBM	0	100
4.	Soybean Meal	0	100
5.	Rapeseed Meal	0	100
6.	Corn Gluten Meal	0	100
7.	Feed Additive	0	100
8.	Rice Bran	100	0
9.	Copra Meal	100	0
10.	Palm Kernel Meal	100	0
11.	CPO	100	0

↑ IMPORT
↓ LOCAL

Source: Indonesian Feed Producers Association (APPI)

(Henuk and Bakti, 2016)



Meat Consumption in Indonesia

0.111kg/

capita/year

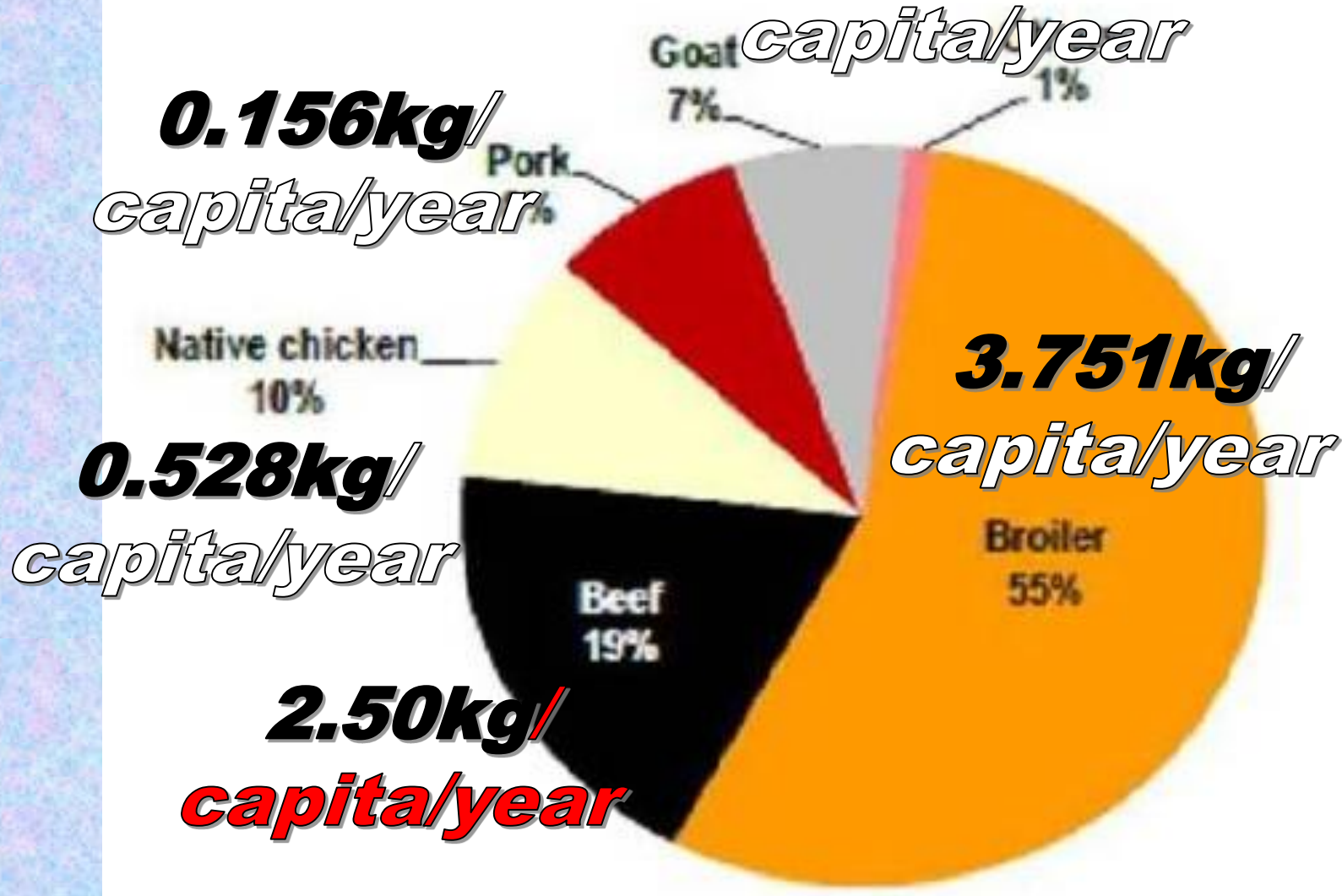
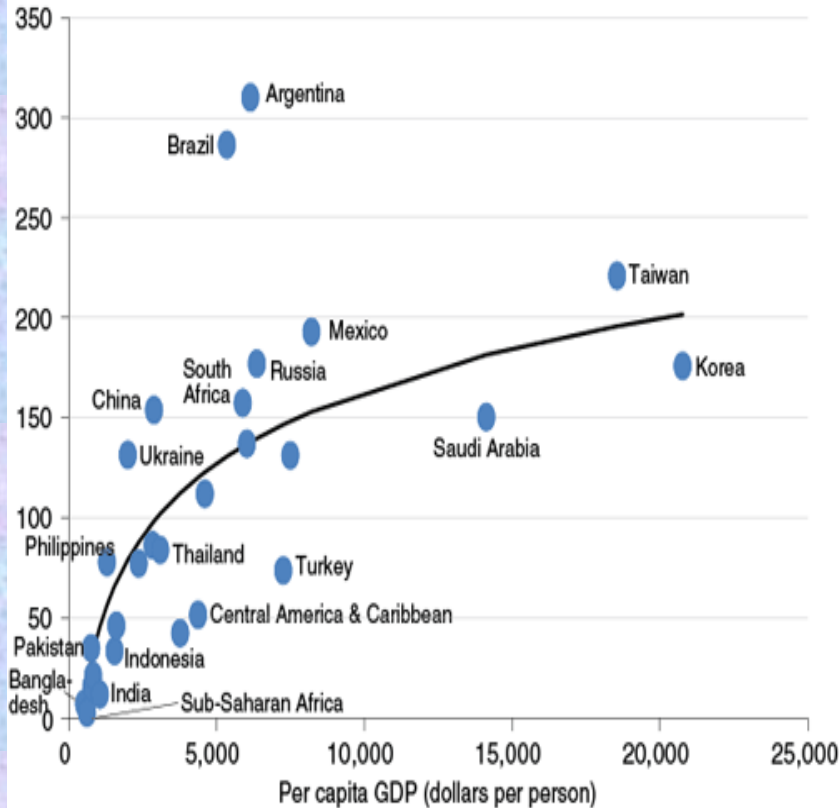


Figure 3a. Indonesia's total meat consumption from livestock (kg/capita/year; Ballo et al., 2016; Wea, et al., 2016)

Meat consumption generally increases with higher income

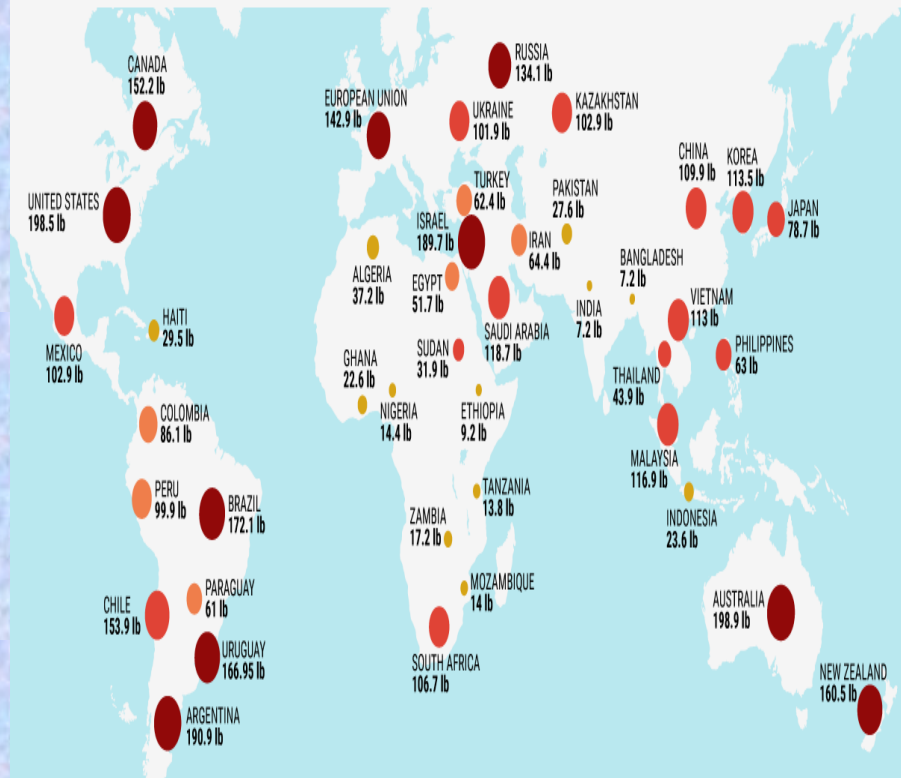
Per capita meat consumption (kg per year)



Note: Data are 2009-11 averages for selected developing countries. Logarithmic growth curve based on both developing and developed countries. GDP = Gross Domestic Product. Source: USDA, Economic Research Service using *USDA Agricultural Projections to 2022* and supporting data.

How much meat people eat around the world, per capita

0-50 LB/PER CAPITA 51-100 LB/PER CAPITA 101-150 LB/PER CAPITA 151-200 LB/PER CAPITA



SOURCE: OECD (2015), Meat consumption (indicator). doi: 10.1787/1a290f0d0-en (Accessed on 24 September 2015)

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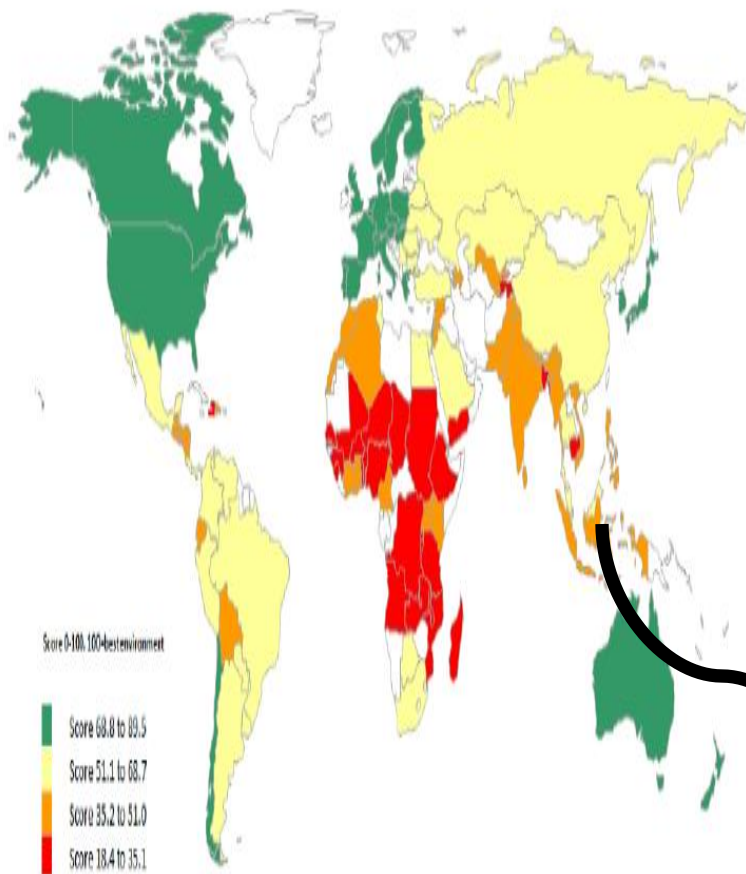
Meat consumption generally increases with higher income of consumers in low- and middle-income countries (TPS, 2013; Gould and Friedman, 2015).



Food security indicators consisted of affordability, availability and quality and safety, and **Indonesia** ranked **65/100**, **49/100** and **76/100** respectively in 2015 (**FAO, 2015**). Data from Global Food Security Index (**EIU, 2015**), reported that **Indonesia** is in **“Moderate Environment”** with overall rank **74/105** with overall score: **46.7/100**; Table 5).



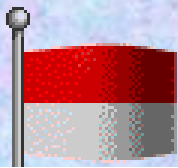
Table 5. Global food security index of Indonesia (2012 – 2015).



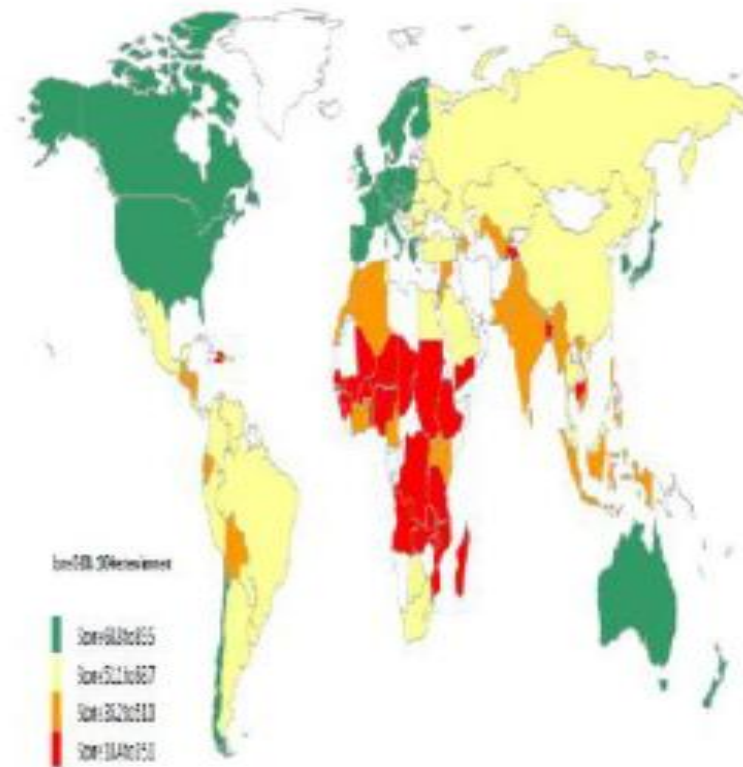
Weighted total of all category scores (0-100 where 100 = most favourable)

Country	Rank				Score			
	2012	2013	2014	2015	2012	2013	2014	2015
United States	1	1	1	1	89.5	86.8	89.3	89.0
Singapore	..	16	5	2	..	79.9	84.3	88.2
Germany	10	11	8	8	83.0	81.7	83.7	83.9
France	4	3	10	9	86.8	83.7	83.4	83.8
United Kingdom	20	20	16	15	79.0	77.3	81.6	81.6
Israel	22	17	17	19	77.7	78.4	80.6	78.9
Japan	16	18	21	21	80.7	77.8	77.8	77.4
South Korea	21	24	25	26	77.8	71.1	73.2	74.8
Malaysia	33	34	34	34	63.9	64.5	68.0	69.0
Brazil	31	29	33	36	67.6	67.0	68.1	67.4
South Africa	40	39	46	41	61.7	61.0	61.1	64.5
China	38	42	42	42	62.5	60.2	62.2	64.2
Russia	29	40	40	43	68.3	60.9	62.7	63.8
Thailand	45	45	49	52	57.9	58.9	59.9	60.0
Vietnam	55	60	67	65	50.4	48.6	49.1	53.4
India	66	70	69	68	45.0	44.4	48.3	50.9
Philippines	63	64	65	72	47.1	46.9	49.4	49.4
Indonesia	64	66	72	74	46.8	45.6	46.5	46.7
Congo (Dem. Rep.)	105	107	109	105	18.4	20.8	24.8	30.1

Source: Economist Intelligence Unit, Global Food Security Index 2012-2015.



Source: Economist Intelligence Unit



Score 80-85

Score 65-75

Score 50-60

Score 35-45

Score 15-25

Map 1. Overall food security rankings in Asia and Pacific by income level in 2016 (Score, 0 – 100 where 100 = best).

Rank and score of global food index of Indonesia from 2012 to 2015 as follows: 64, 66, 72, 74 and 46.8, 45.6, 46.5, 46.7 respectively. Indonesia is in “Moderate Environment” in 2016 with overall rank 13/23 in Asia and Pacific by income level with overall score of 50.6/100.



Conclusions



The four main staple crops in Indonesia were **rice** (53.5% of diet), **cassava** (22.2% of diet), **maize** (18.9% of diet), and **potatoes** (4.99% of diet).

Indonesia has achieved the MDG hunger target, by reducing the proportion of undernourished people from 19.7% of the population in 1990–92 to 8.7% in 2012–2014.

Rank and score of global food index of Indonesia from 2012 to 2015 as follows: 64, 66, 72, 74 and 46.8, 45.6, 46.5, 46.7 respectively. Indonesia is in “Moderate Environment” in 2016 with overall rank 13/23 in Asia and Pacific by income level with overall score of 50.6/100.



“USU-2010” for “ARCAP”

Thank You
(Terima Kasih)



TOBA LAKE (“Monaco of Asia”)

