The State of Food Security and Nutrition in the World 2022

Professor Emeritus Kraisid Tontisirin

Senator and Former Chairman of the MU Council
President of Nutrition Development Foundation

A presentation at the 16th Nutrition Science Conference,
Faculty of Public Health, Mahidol University

10 November 2022

Presentation Outline

- Introduction
- Current situation of food security and nutrition
- Food and nutrition strategies and actions
- Linking food and nutrition with B-C-G Economy & Sustainable Development Goals (SDGs)
- Conclusion

Main factors for good health and quality of life

- Genetics
- Nutrition
- Mental well being
- Physical activity and exercise
- Avoidance of toxicants i.e. tobacco, alcoholic consumption and drug abuses
- Environments: physical, biological, social, economic and political

- Agriculture/
- Food supply/
- Service

Food → **Nutrition** → **Health**

- Promotion
- Protection
- Treatment

Nutrition is a link between food and health, regarding the fulfillment of energy, protein and micronutrient requirements and non-nutrients from food in human life course

Ultimate goals

Good nutrition & Well-being for all

Food security*: a major global challenge

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

*Source: FAO: World Food Summit 1996 modified in 2009

5 dimensions of food security*

- Food availability
- Food accessibility
- Utilization
- Sustainability & Stability
- Emergency

*Applied in ASEAN Integrated Food Security (AIFS) Framework

Food and nutrition challenges

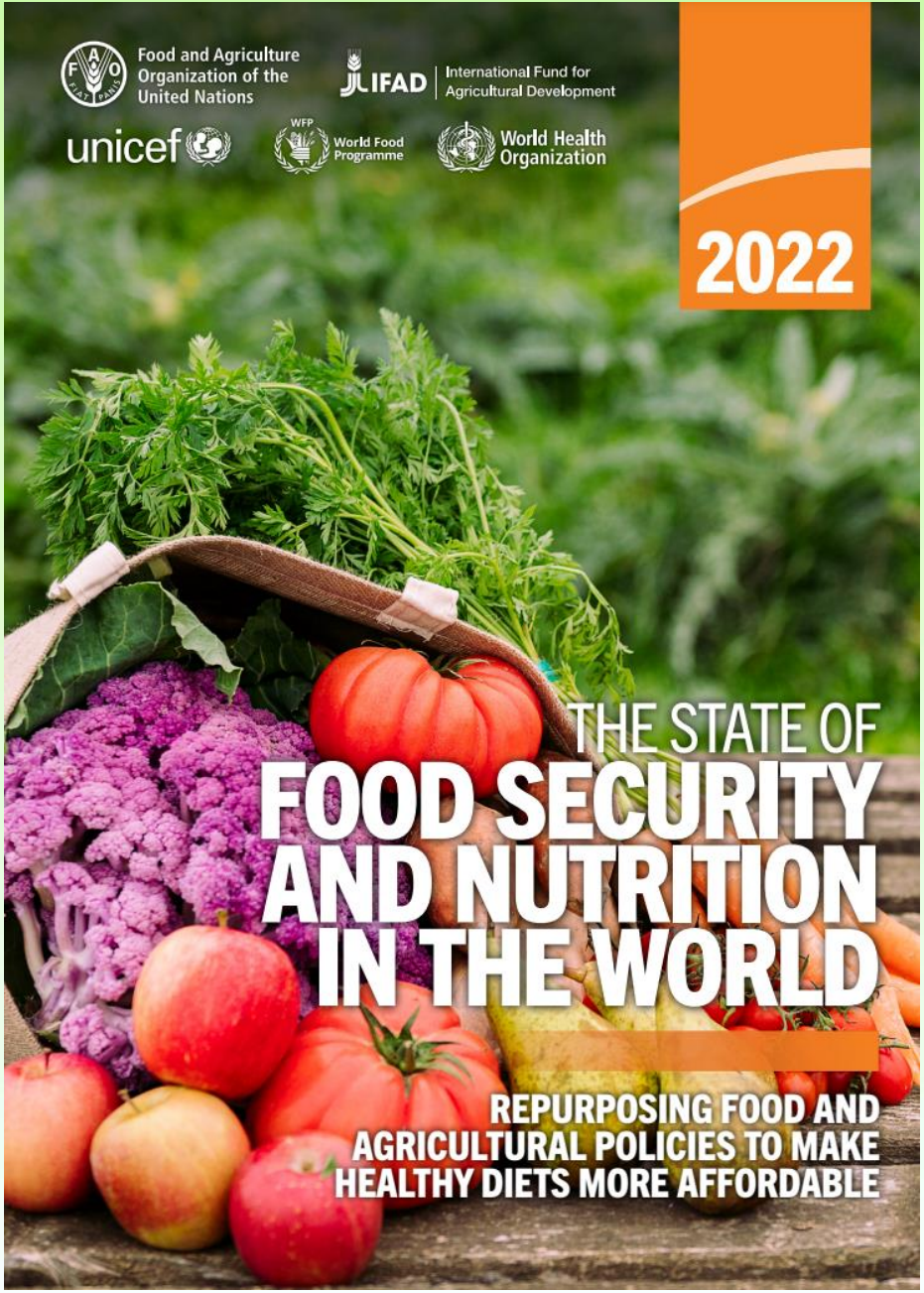
- **Continuing and persistent undernutrition**
  - **Undernourished (protein and energy deficiency) in children and adults: food insecurity**
  - **Micronutrient deficiencies: of iron, iodine, vit. A and others**
- **Overnutrition and diet related diseases**
  - **Overweight & obesity**
  - **Diabetes mellitus, high blood lipids, high blood pressure, cardio-vascular diseases**
  - **Cancers**
- **Food safety and quality**

Some Global features related to food, nutrtion and agriculture

- Around 700 million people are hunger and 132 m. more during COVID-19 pandemic
- 2 billion people do not consume enough vitamins and minerals
- 1.4 b. people are overweight & 675 m. obese
- Crops and livestock productions use over 70% of all water withdrawal, and 30% globally in food system
- Agricultural production accounts for 11 % of GHS emission, other parts in food system 5-10 % (Cr.OECD)
- Food loss & waste have been around 30 %

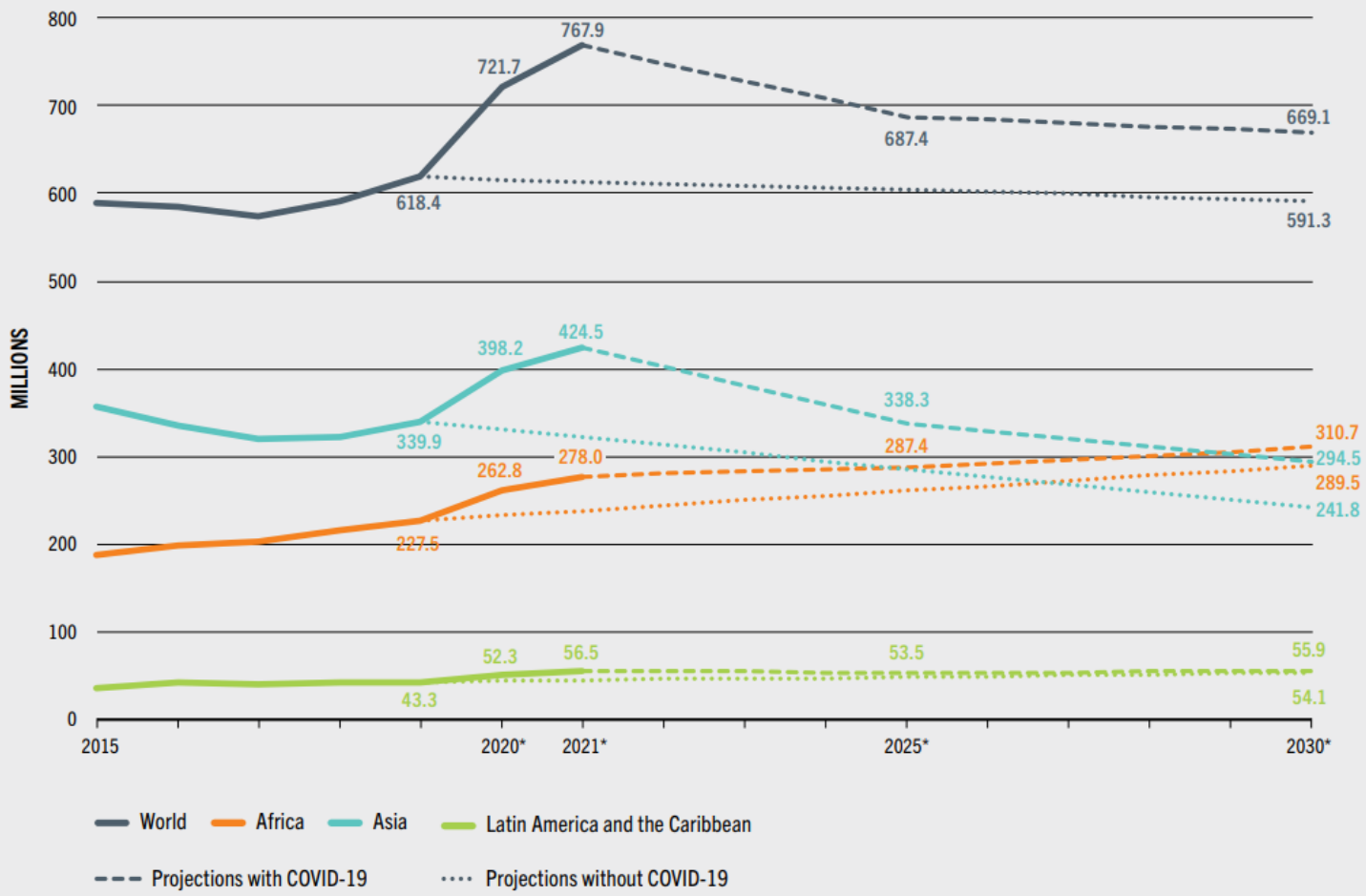
Increasing demands for healthy diets

Source: FAO and SDGs



*Source: https://www.fao.org/3/cc0639en/cc0639en.pdf

The COVID-19 scenario projects a decrease in global hunger to around 670 million in 2030, far from the zero hunger target. This is 78 million more undernourished people in 2030 than in a scenario in which the pandemic had not occurred*

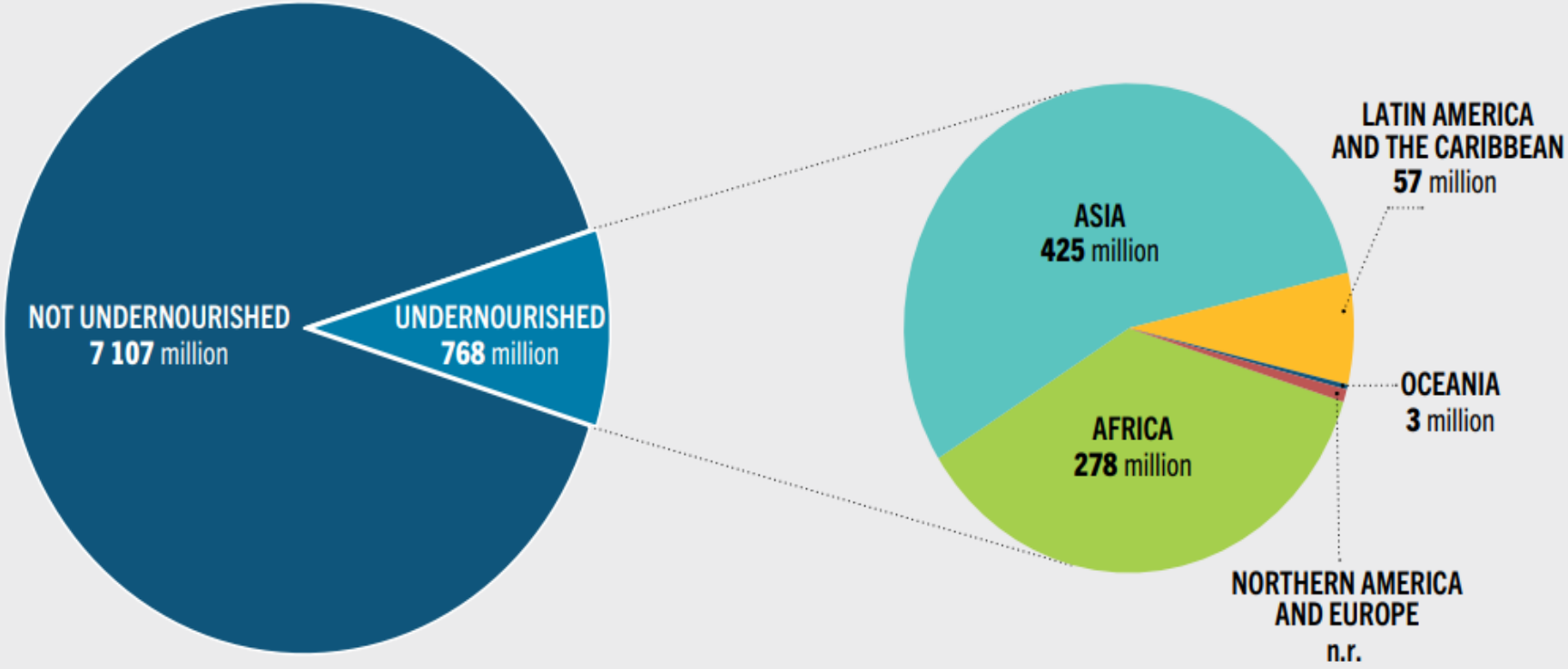


NOTES: * Projected values. The 2020 and 2021 values are based on the middle of the projected range. The full ranges can be found in **Annex 2**.
SOURCE: FAO.

*Source: https://www.fao.org/3/cc0639en/cc0639en.pdf

Kraisid Tontisirin

More than half (425 million) of the people in the world affected by hunger in 2021 were in Asia and more than one-third (278 million) in Africa*



NOTES: Projected values based on the middle of the projected range. The full ranges of the projected 2021 values can be found in **Annex 2**. n.r. = not reported, as the prevalence is less than 2.5 percent.
SOURCE: FAO.

*Source: https://www.fao.org/3/cc0639en/cc0639en.pdf

Main causes of food insecurity*

- Extreme climate changes: drought versus flooding
- Wars and civil conflicts i.e Russia and Ukraine
- Pandemic diseases in plants and animals
- Human pandemic diseases i.e. Covid 19
- Others: poverty and inequality…..

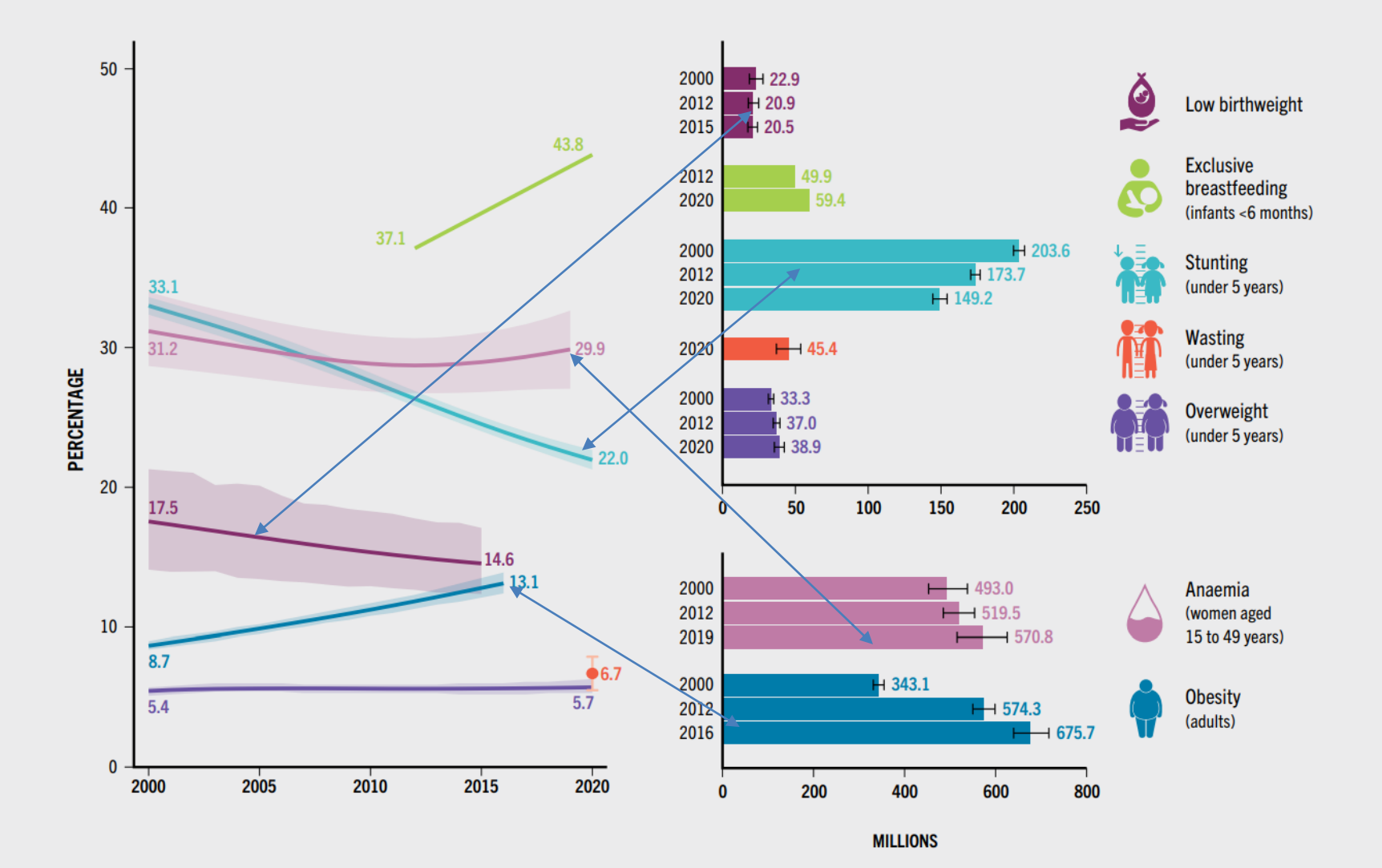
Consequences of COVID-19 pandemic and controlling measures

- Health: morbidity, mortality and disruption of health system
- Economic: unemployment, disruptions of trade, tourism industry and logistics, reduction of GDP and GNI…
- Social: increased & unveiled poverty and social inequity, migration of labors back to rural areas or native countries, livelihood disruption, and disruption of education system
- Agriculture and food system, and nutrition: disruption of food chain from farms to plates; rising trends of food insecurity, hunger and malnutrition of the poor and vulnerable groups.
- Environment: increased plastic used, GHGs continue being problem…

Global Nutrition Targets 2025 in 2012 WHA Resolution 65.6

- achieve a 40% reduction in the number of children under-5 who are stunted;
- achieve a 50% reduction of anaemia in women of reproductive age;
- achieve a 30% reduction in low birth weight;
- ensure that there is no increase in childhood overweight;
- increase the rate of exclusive breastfeeding in the first 6 months up to at least 50%;
- reduce and maintain childhood wasting to less than 5%.

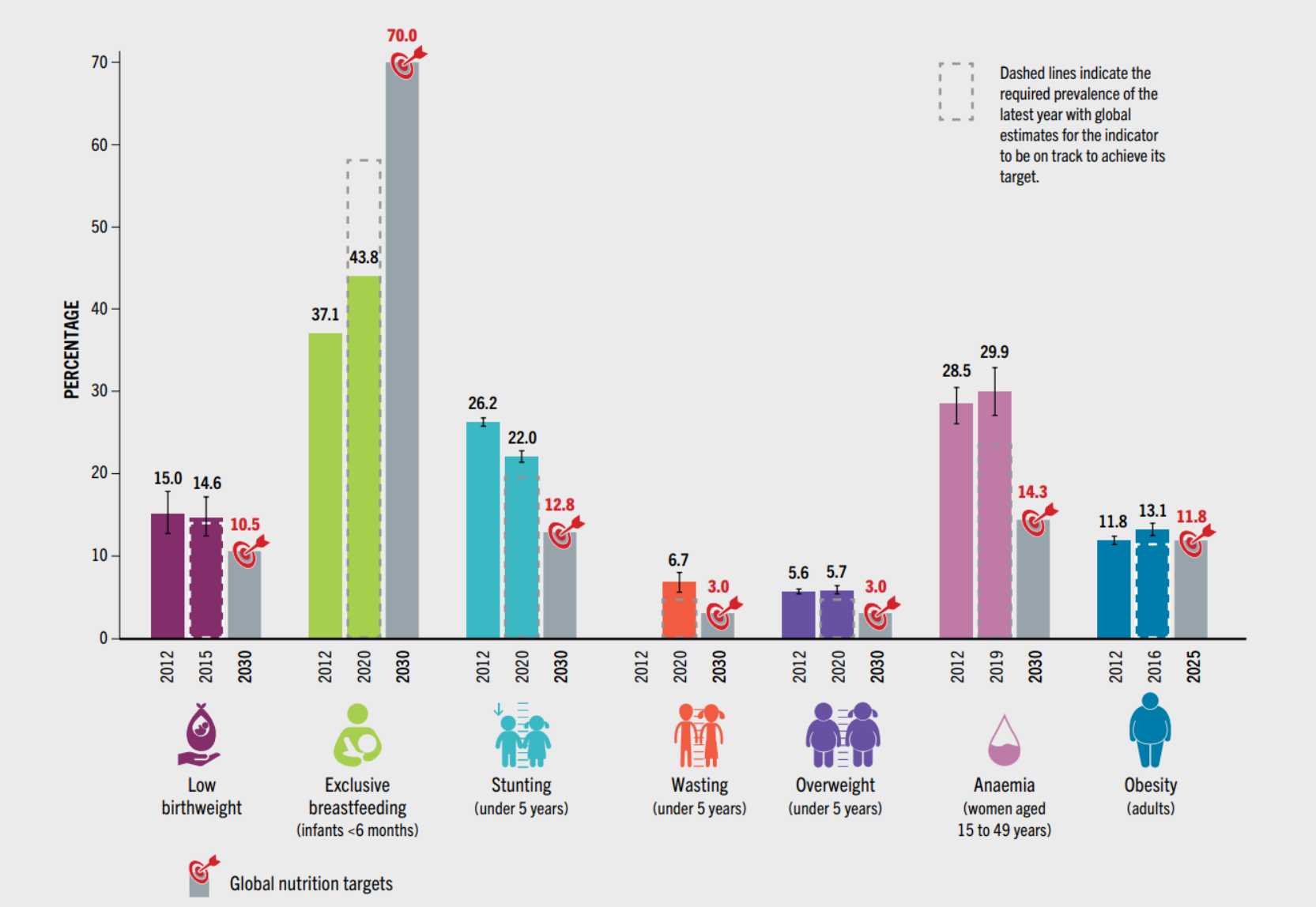
Global trends in prevalence and absolute numbers indicate that overweight among children under five years of age, anemia among women, and obesity among adults are increasing, while low birth weight, stunting among children under five years of age and exclusive breastfeeding have steadily improved since 2000*



*Source: https://www.fao.org/3/cc0639en/cc0639en.pdf

Kraisid Tontisirin

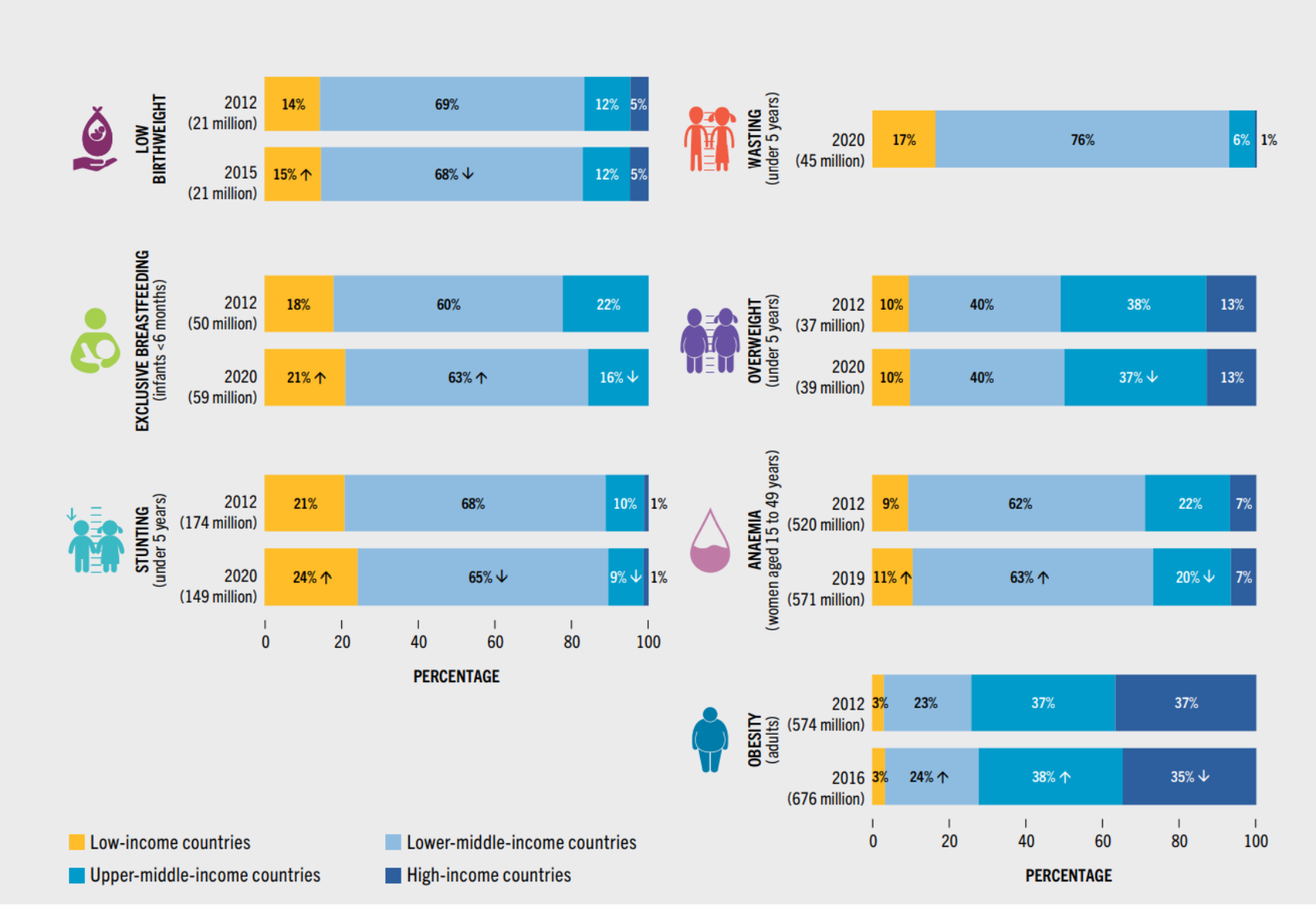
Reaching the 2030 global nutrition targets will require immense efforts. Only exclusive breastfeeding among infants under 6 months of age (37.1 to 43.8 %) and stunting among children under 5 years of age (26.2 to 22.0 %) have notably improved since 2012, yet even these indicators will require accelerated progress to meet the 2030targets*



*Source: https://www.fao.org/3/cc0639en/cc0639en.pdf

Kraisid Tontisirin

Low-and lower-middle-income countries bear the greatest burden of stunting, wasting, low birth weight, and anemia cases while upper-middle- and high-income countries have the greatest burden of obesity cases *



*Source: https://www.fao.org/3/cc0639en/cc0639en.pdf

Kraisid Tontisirin

Vitamin and Mineral Deficiencies

(Micronutrient deficiencies)

- About 2 billion people are deficient in key vitamins and minerals i.e.. iron, iodine and vit. A with severe consequences. Woman and child are most vulnerable.
- Zinc and folate also become a major concern
- Multiple VM def. have been recently addressed rather than a single def.
- Main causes of VM def. are poor diets and frequent infections often lead to multiple micronutrient def. in the same population

Current dietary dimensions

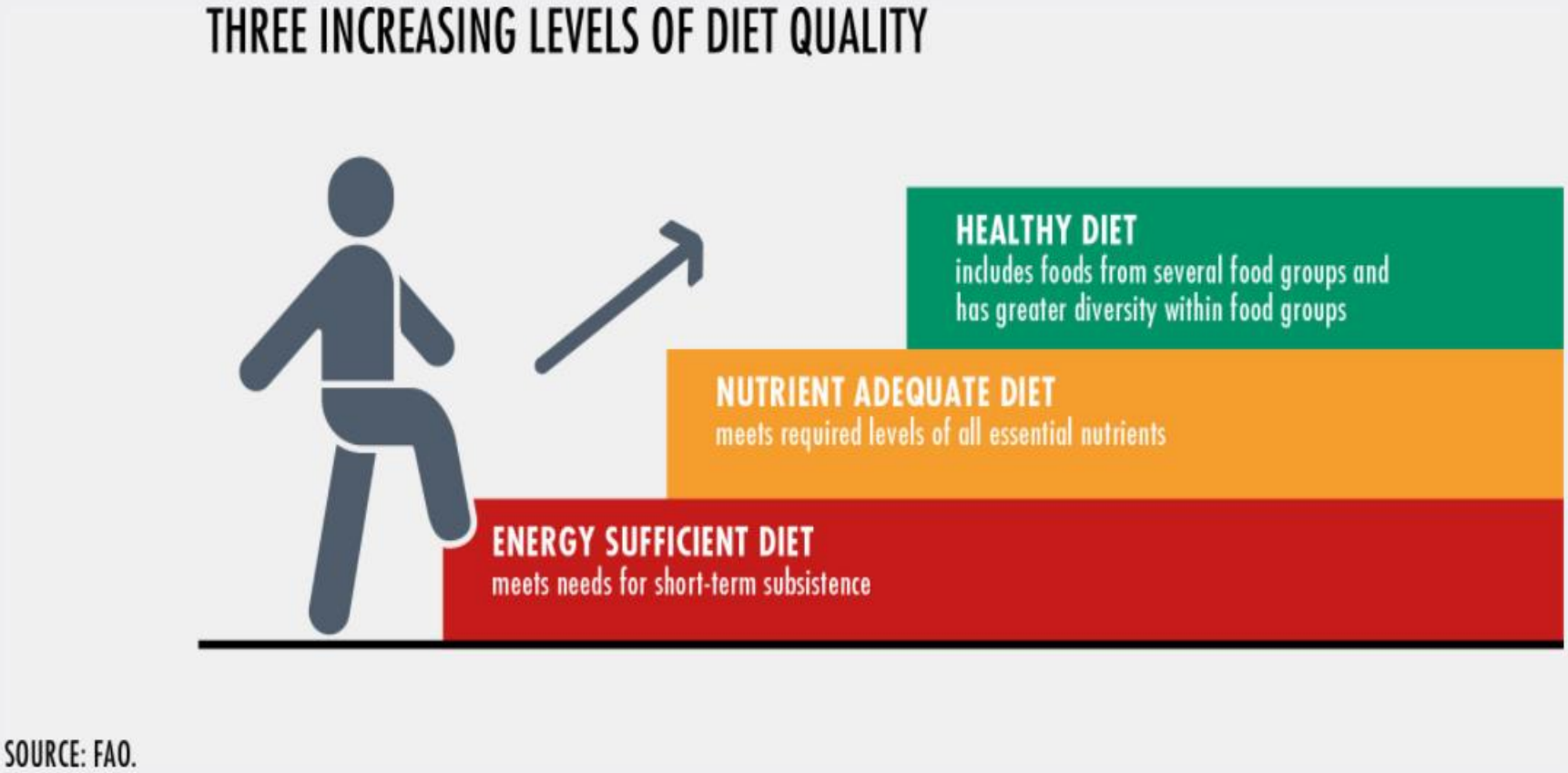
*Globally, diet is becoming increasingly energy-dense high in fat sugar and salt.

*Variety of foods especially vegetables and fruits are being replaced by processed foods.

*Eating pattern shifts: increased portion sizes, away-from-home food intakes, and snacking

*Popularization of ready to eat, semi-cooked foods and convenient foods includ. quick frozen food

*Increasing demand for healthy diets, and functional ingredients



From: http://www.fao.org/3/ca9692en/online/ca9692en.html

Almost 3.1 billion people could not afford a healthy diet in 2022 due to the increased cost*

	Cost of a healthy diet in 2020		People unable to afford a healthy diet in 2020		
	Cost (USD per person per day)	Change between 2019 and 2020 (percent)	Percent	Total number (millions)	Change between 2019 and 2020 (percent)
WORLD	**3.54**	**3.3**	**42.0**	**3 074.2**	**3.8**
AFRICA	**3.46**	**2.5**	**79.9**	**1 031.0**	**2.5**
Northern Africa	3.57	-0.7	57.2	136.7	-0.8
Sub-Saharan Africa	3.44	2.9	85.0	894.3	3.1
Eastern Africa	3.37	3.4	87.4	360.8	3.0
Middle Africa	3.34	2.2	85.4	152.2	3.0
Southern Africa	3.84	3.3	65.5	44.2	1.8
Western Africa	3.45	2.7	85.7	337.1	3.3
ASIA	**3.72**	**4.0**	**43.5**	**1 891.4**	**4.3**
Central Asia	3.11	4.0	21.5	7.5	6.9
Eastern Asia	4.72	6.0	11.0	174.4	18.7
South-eastern Asia	4.02	4.2	53.9	347.2	4.7
Southern Asia	3.81	4.0	70.0	1 331.5	2.7
Western Asia	3.22	2.9	17.8	30.9	-1.4
LATIN AMERICA AND THE CARIBBEAN	**3.89**	**3.4**	**22.5**	**131.3**	**6.5**
Caribbean	4.23	4.1	52.0	13.9	3.5
Latin America	3.56	2.5	21.0	117.3	6.9
Central America	3.47	2.1	27.8	43.1	9.8
South America	3.61	2.7	18.4	74.2	5.3
OCEANIA	**3.07**	**3.6**	**2.7**	**0.7**	**1.0**
NORTHERN AMERICA AND EUROPE	**3.19**	**3.2**	**1.9**	**19.8**	**5.4**
COUNTRY INCOME GROUP					
Low-income countries	3.20	2.7	88.3	454.2	3.0
Lower-middle-income countries	3.70	2.9	69.4	2 230.7	2.9
Upper-middle-income countries	3.76	2.9	15.2	374.0	10.9
High-income countries	3.35	4.0	1.4	15.3	3.3

*Source: https://www.fao.org/3/cc0639en/cc0639en.pdf

Presentation Outline

- Introduction
- Current situation of food security and nutrition
- Food and nutrition strategies and actions
- Linking food and nutrition with B-C-G Economy & Sustainable Development Goals (SDGs)
- Conclusion

Strategies/actions for achieving nutrition well-being

- Supplementation with food/micronutrients
- Food fortification
- Food regulation
- Food and Nutrition education/communication
- Right to food (and nutrition)
- Food based approach: ensuring food security/consumption of safe and nutritious food
- Public health measures: basic services, immunization, sanitation, water supply, deworming
- Community based (integrated) approaches
- Others: M&E, R&D, Capacity Building (CB)

Food fortification

- **Salt:** universal salt iodization
- **Wheat flour:** fortification with MN in many countries
- **Fish/soy sauce:** with iron and iodide
- **Instant noodle:** seasoning powder with iron, iodide and vitamin A (and Zinc)
- **Others:** margarine with vitamin A

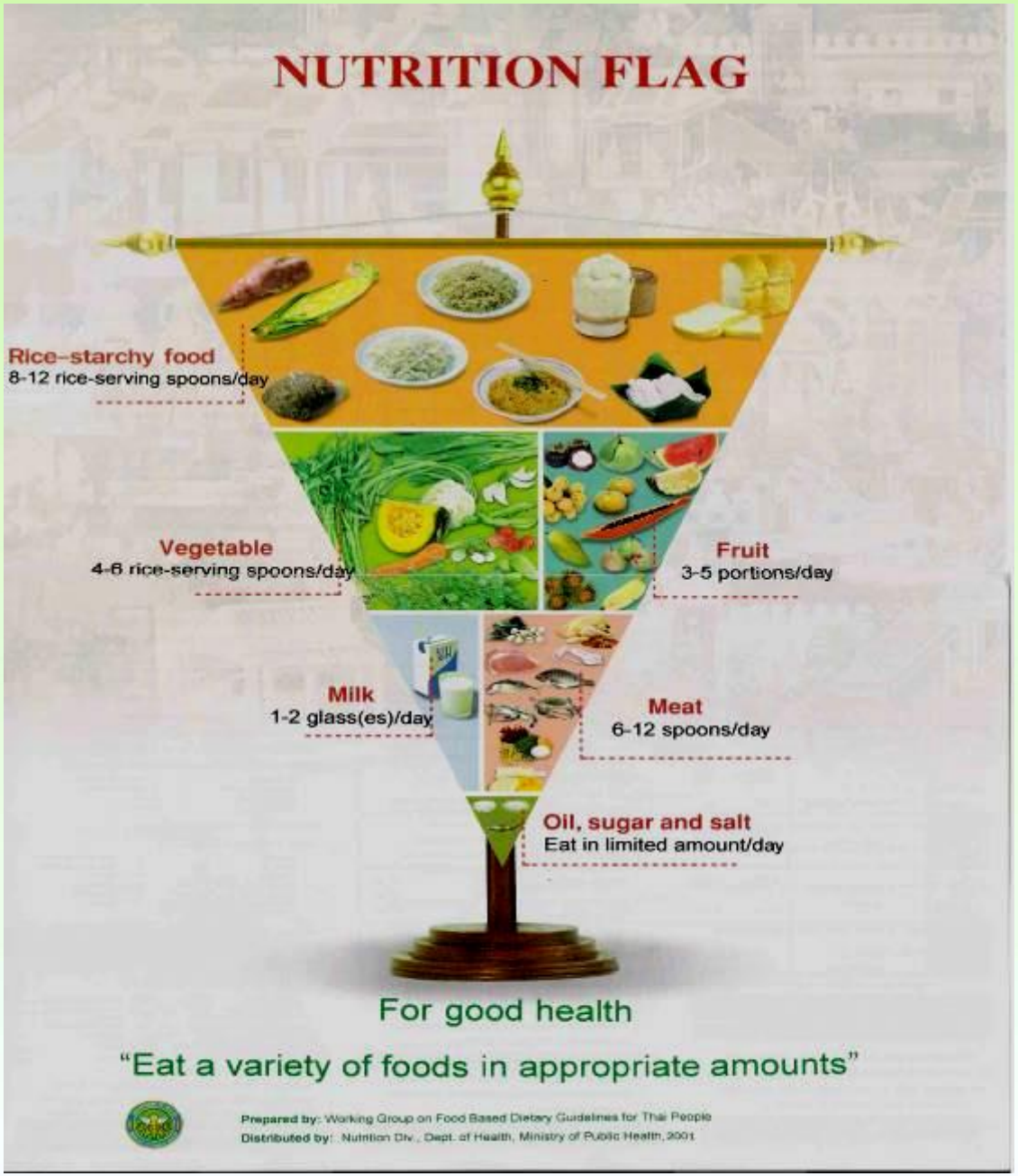
Need public-private partnership and research support by academia

Food and nutrition education/ communication

- Based on scientific evidences of the link between diet, nutrition and health in human life course
- Promotion of good practices in agriculture, food supply and nutrition
- Implement through agriculture, heath and education services system, and public

Population nutrient intake goals
(FAO/WHO, 2003 expert report)

Dietary factor	Goal (% of total energy unless otherwise stated
Total fat	**15-30 %**
Saturated fatty acids	<10 %
Polyunsaturated acids (PUFAs)	6-10 %
n-6 PUFAs	5-8 %
n-3 PUFAs	1-2 %
Trans fatty acids	<1 %
Monounsaturated fatty acids	By difference
Total carbohydrate	**55-75 %**
Free sugars	<10 %
Protein	**10-15 %**
Cholesterol	**<300 mg per day**
Sodium chloride (sodium)	**< 5 g per day (< 2 g per day)**
Fruit and vegetables	**≥ 400 g per day**
Total dietary fiber	**From foods**
Non-starch polysaccharides (NSP)	**From foods**



Thailand Food Guides

Kraisid Tontisirin

Thailand: Current situation

- Population of 68.3 m.
- Area of 514,000 sq. kilometers
- Success in reduction of maternal and child malnutrition since the eighty under the Poverty Alleviation Plan (PAP)
- Currently facing with double burden of malnutrition (DBM), a coexistence of under and over nutrition, and related non-communicable diseases (NCDs)
- Thailand has been a major food exporter

Community-Based Approaches

- Is an *integrated program* implemented at local level (district level and below)
- *National commitment* with sound nutrition improvement strategies and goals
- *Community actions*: basic services, mass mobilization, mutual efforts/actions to reach all people and to prevent malnutrition

Components of a successful community based program

Minimum Basic Services
(Health, Education, Agr. Extension)

Menus (*Activities*)
- Antenatal Cares (ANC)
- Growth Monitoring and Promotion (GMP)
- Food production
- Food and nutrition education
- Food sanitation & safety
- School lunch and milk program since 1992
- Other activities

Supportive System
- Training
- Funding
- Problem Solving
- Supervision

Facilitators

Interface
(service providers and community leaders)
- Plan/goals
- Implementation
- Monitoring/evaluation

Volunteers
(1:10 households)

Community Leaders
Family
Individual

Basic Minimum Needs Goals/Indicators

Success components of community-based program

1. Provision of basis services

2. Active community organization/leader engagement

3. Community volunteers of 1:10 households

4. Community goals and indicators for situation analysis, planning, actions and evaluation

5. Community actions including remedial actions

Menu Activity on ANCs

- 4 ANC visits for all pregnant mothers
- High risk check up and treatment
- monitoring wt. gain
- Food, Nutrition and health education
- Food supplementation
- MTV, iron and folate supplementation
- Two tetanus toxoids
- Referral system and safe delivery service

Menu on Growth Monitoring and Promotion (GMP)

- Growth monitoring (wt.& ht.) and remedial actions
- Child growth education and cares
- Breastfeeding and complementary feeding
- Immunization
- Village based complementary food production for infants and young children
- Health and nutrition education
- Cooking and feeding demonstration
- Treatment of malnourished child
- Referral of severe illness and malnutrition

Menu on Nutrition in School

- Monitor weight and height regularly and take remedial actions based on growth mornitoring
- Food services-school lunch and milk programs
- Food, personal and environmental hygiene
- Nutrition education
- Promotion of physical activity and exercise
- Positive school environment for healthy diets
- Plan to set up a Nutri-teacher" post
- School gardens

School milk program in Thailand

- Based on Food Nutrition Plan aiming to provide daily 200 ml of milk to children in kindergartens and primary school 200 days/ year
- The program has been implemented since 1992 along with school lunch program in kindergartens and gradually stepped up to cover 6 grade-students in 2009

- School milk program has created demand for local dairy industry

Milk

is a good source of energy, protein, calcium, vitamin A and B2 as indicated in nutrition labeling.

UHT Fresh Milk/200 ml.

Nutrition Facts

One serving : 1 package (200 ml)

Serving number per package : 1

Nutritive Values per serving

Total energy 140 Kcal (Energy from fat 70 Kcal)

			Percent of recommended intakes*	
Total fat	8	g.	12	%
Sat. fat	3.5	g.	17	%
Cholesterol	20	mg.	7	%
Protein	6	g.		
Total CHO	10	g.	3	%
Fiber	0	g.	0	%
Sugar	9	g.		
Sodium	120	mg.	5	%

Percent of daily recommended intakes*

Vitamin A	15	%	Vitamin B1	2	%
Vitamin B2	25	%	Calcium	25	%
Iron	0	%			

* Percent of daily recommended intakes for Thai from over 6 years (Thai RDI) based on daily energy requirement of 2,000 Kcal

Energy requirement vary in different individuals. Those require daily energy of 2,000 Kcal should receive the following nutrients:

Total fat	Less than	65	g.
Sat. fat	Less than	20	g.
Cholesterol	Less than	300	mg.
Total CHO		300	g.
Fiber		25	g.
Sodium	Less than	2,400	mg.

Energy (Kcal) per g : Fat = 9 ; Protein = 4 ; CHO = 4

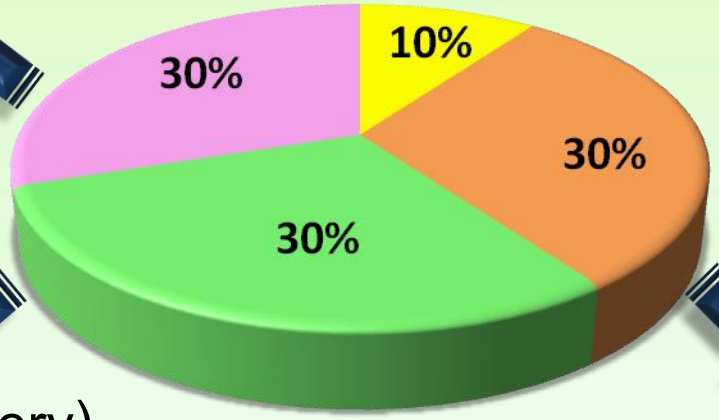
Community Food Production

- Home and school gardens growing vegetables, fruits, fishes and chicken for learning, consumption and income
- Supplementary food for pregnant mothers
- Complementary food for IYC
- food preservation, processing and OTOP food products
- Cooperative and micro credit

New theory for land uses in agriculture*

Land is divided in 4 areas

- Vegetables/Fruits
- House & gardens with animal foods



- Rice field (and paddy field fishery)
- Water reservoir and aquaculture

*From King Bhumibol' s Sufficiency Economy and land use aiming for household food security

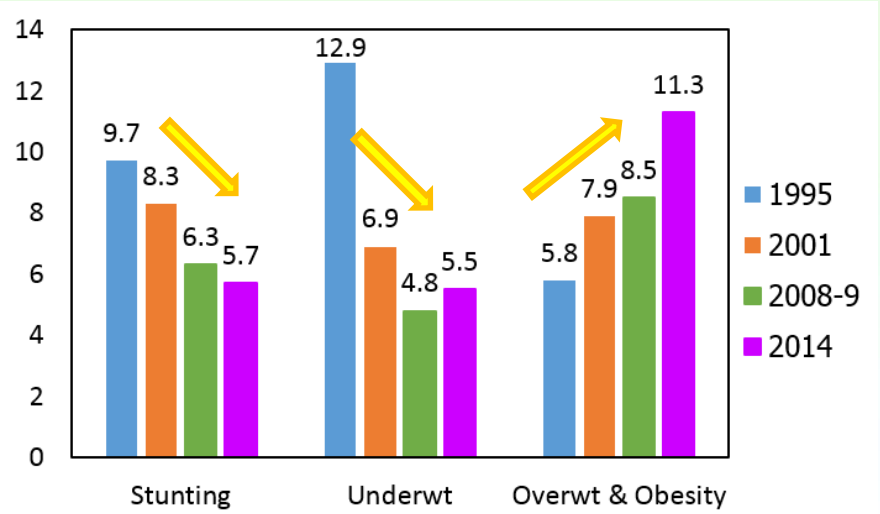
Source: http://www.kasetporpeang.com

Challenges of global nutrition targets for Thailand

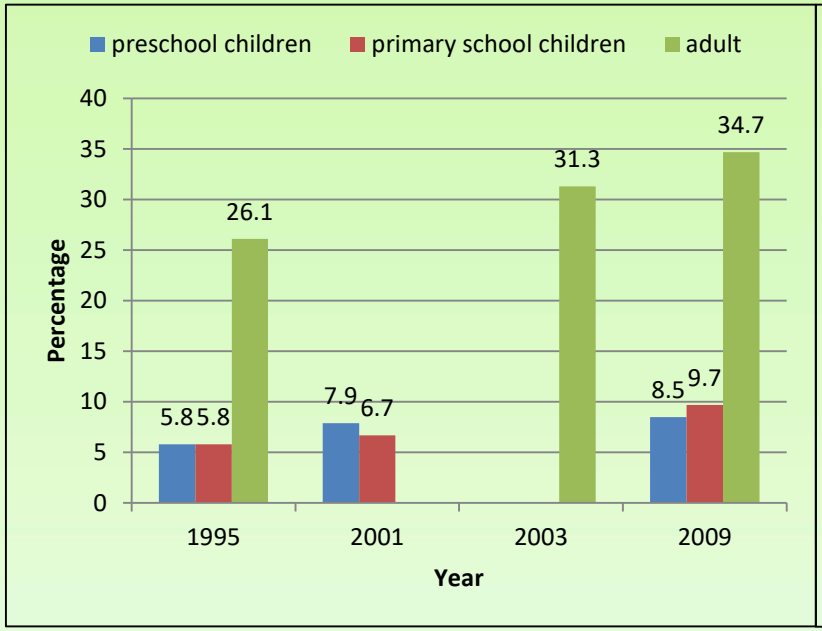
	2009		2025
Stunting %	6.3	↓40%	3.8
Anemia in pregnancy %	18.0	↓50%	9.0
LBW %	8.0	↓30%	5.6
Underweight of under 5 %	4.8	↓	
Overweight of under 5 %	8.5	no increase	
Exclusive breastfeeding rate %		↑ at least 50%	

Increase elderly population

Recent trend of nutritional status of under 5*



* Source: NHES 2; Holistic Development of Thai Children; NFNS 5; NHES 4; and NHES 5



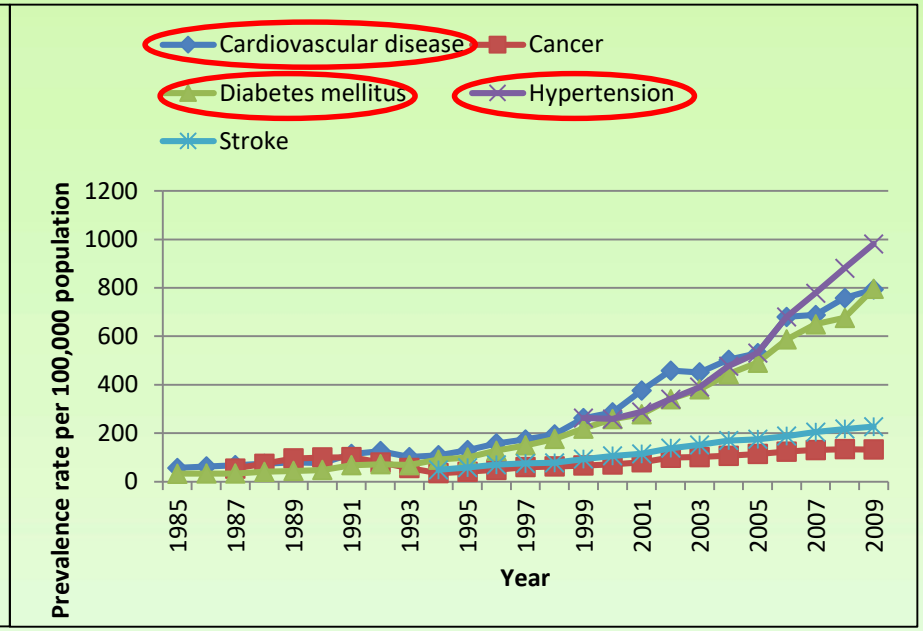


Figure 6 Prevalence of **overweight and obesity** in the Thai population

Source: Bureau of Policy and Strategy (1996); Bureau of Policy and Strategy (2006); Aekplakorn et al (2011b)

Figure 7 Increase in prevalence of **non-communicable diseases** in Thailand

Source: Bureau of Policy and Strategy (2011)

Thai males consume fruit and vegetable daily only 268 g and females 283 (Aekplakorn *et al*. 2011)

Medical expenses for treating and managing NCDs were estimated at 140 billion Baht

Several organizations and agencies are conducting projects/programmes focusing especially on nutrition education and public campaigns.

Community Based Program for Health Promotion

Minimum Basic Services

(Health, Education, Agricultural Extension)

Menu (*Activities*)

- Antenatal care
- Growth monitoring /promotion
- Elderly cares
- Cares of NCDs
- Food production
- Nutrition education
- Food sanitation & safety
- Other activities (Tobacco and alcoholic consumption control)
- Recreation and physical activities)
- Etc.

Supportive System

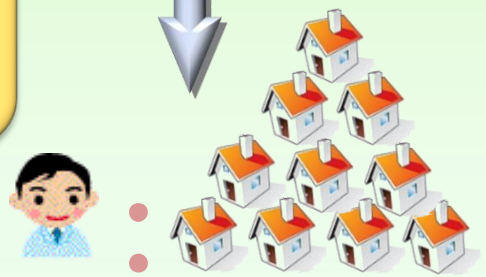
- Training
- Funding
- Problem Solving
- Supervision

Facilitators

Interface

(service providers and community leaders)

- Plan/goals
- Implementation
- Monitoring/evaluation



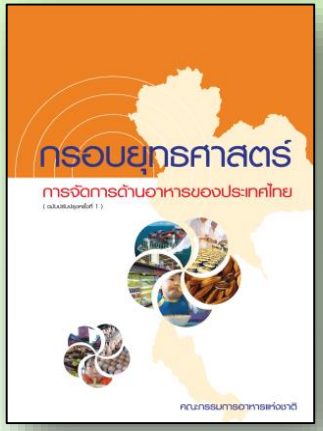
Community Leaders
Family
Individual

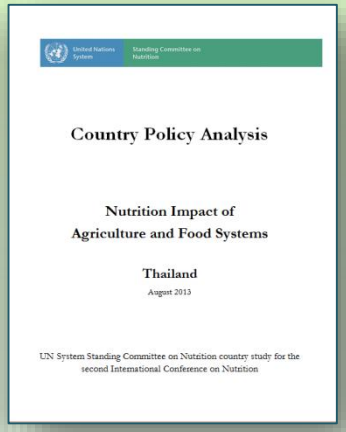
Volunteers

(1:10 households)

Minimum Indicators of well-being & NCDs

Key Elements of Strategic Framework for Food Management in Thailand





Prepared by
The Secretariat of The National Food Committee

Successful programme requires*

- Program factors: planning, implementing, monitoring and evaluating best on best practices, efficient and effective management
- Contextual factors: country and local situation; socio-economic, cultural, political, environmental factors, leadership…
- Institutional arrangement and capacity

*Modified from; Urban Jonsson

Food and nutrition development require multi-system approaches

- Multi-stakeholder approach

  Public, private, professional and people partnership (5P)

- Multi-strategic approach

  Agriculture, food and health systems for nutrition

- Multi-level approach

  Global, national, provincial, district, village, household and individual

Presentation Outline

- Introduction
- Current situation of food security and nutrition
- Food and nutrition strategies and actions
- Linking food and nutrition with B-C-G Economy & Sustainable Development Goals (SDGs)
- Conclusion

Holistic Approach for Food Management in Thailand*

Consumer Driven/Demand Pull

Agriculture
Food & Non Food

Farming

- Zoning (province data/ information)
- Smart Farmers/ Smart Officers
- GAP Mandatory
- Productivity
- Traceability

Food Systems
Safe Food & Premium/ Nutrition Quality

Processing

- Household
- OTOP
- Industry

Trade/ Consumption

- Service Outlets
- Community
  - Schools
  - Workplaces

Consumer Health & Well Being

Environment Sustainability

Economic & Prosperity

- Value Chain
- Logistic Efficiency
- Reduction of Food Loss and Waste
- Strengthening Linkage between Individual Sectors
- 5P (Public - Private - Professional – People Partnership) & Fair Income Distribution

- R & D
- Capacity Building
- Area & Setting Based
- Monitoring & Evaluation

* From: Thailand National Food Committee

Food and Agriculture

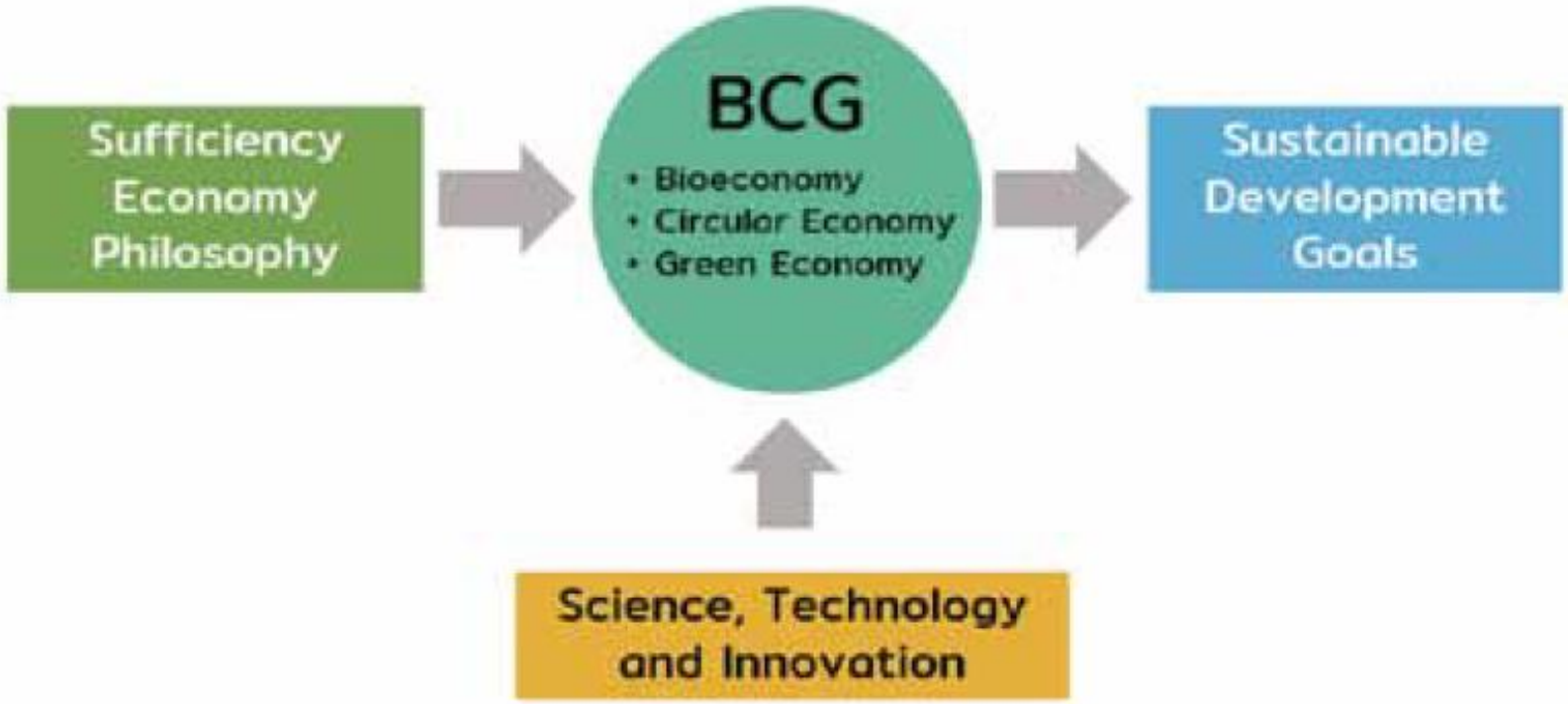
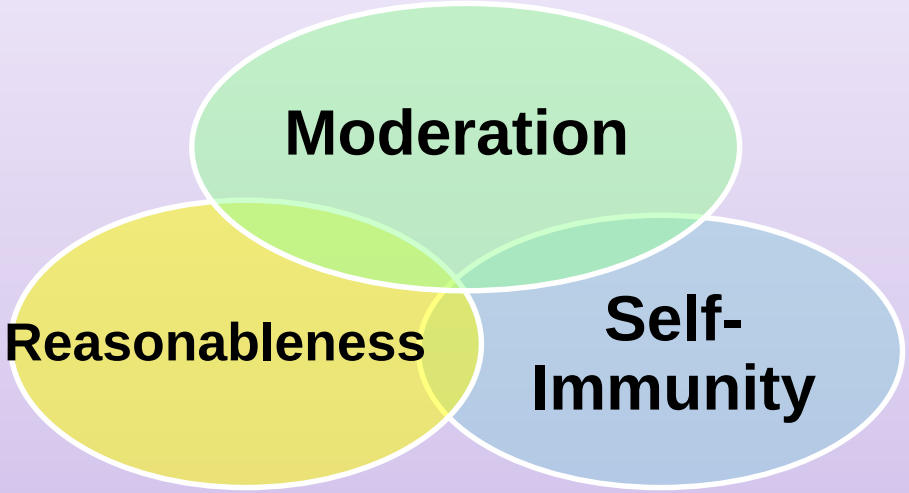


Figure 38: BCG Economy Model

Source: The Seven Shifts by Suvit Maesincee

King Bhumibol's Sufficiency Economy Philosophy

The Middle Path



Knowledge and wisdom

Ethic and morality

Lead to

Life/ Economy/ Social / Environment
Progress in balance, stable and sustainable way

From MDGs to SDGs

Millennium Development Goals (MDGs)

to be attained by 2015

↓

Sustainable Development Goals (SDGs)

to be attained by 2030

↓

Well-being for All

UN General Assembly Hall, New York

Kraisid Tontisirin

From: http://www.un.org/sustainabledevelopment/sustainable-development-goals/

Nutrition and the Sustainable Development Goals

Source: www.un.org/sustainabledevelopment/hunger/

From: https://www.unicef.org/media/63016/file/SOWC-2019.pdf

SUSTAINABLE DEVELOPMENT GOALS

From: http://www.un.org/sustainabledevelopment/sustainable-development-goals/

Conclusion

- Food security and nutrition have been always a major global challenges
- Effective programs require multi-stakeholders, multi-strategic and multi-levels approaches adjusted to local context.
- Food and nutrition objectives, goals, targets and indicators with sound strategies and actions at global, nation and local (community-based/setting) levels are keys for the successful programs
- Research, capacity development, monitoring and valuation are essential to support strategy & program development, implementation & evaluation

Thanks for your
attention