

Impacts of Global Warming on Food

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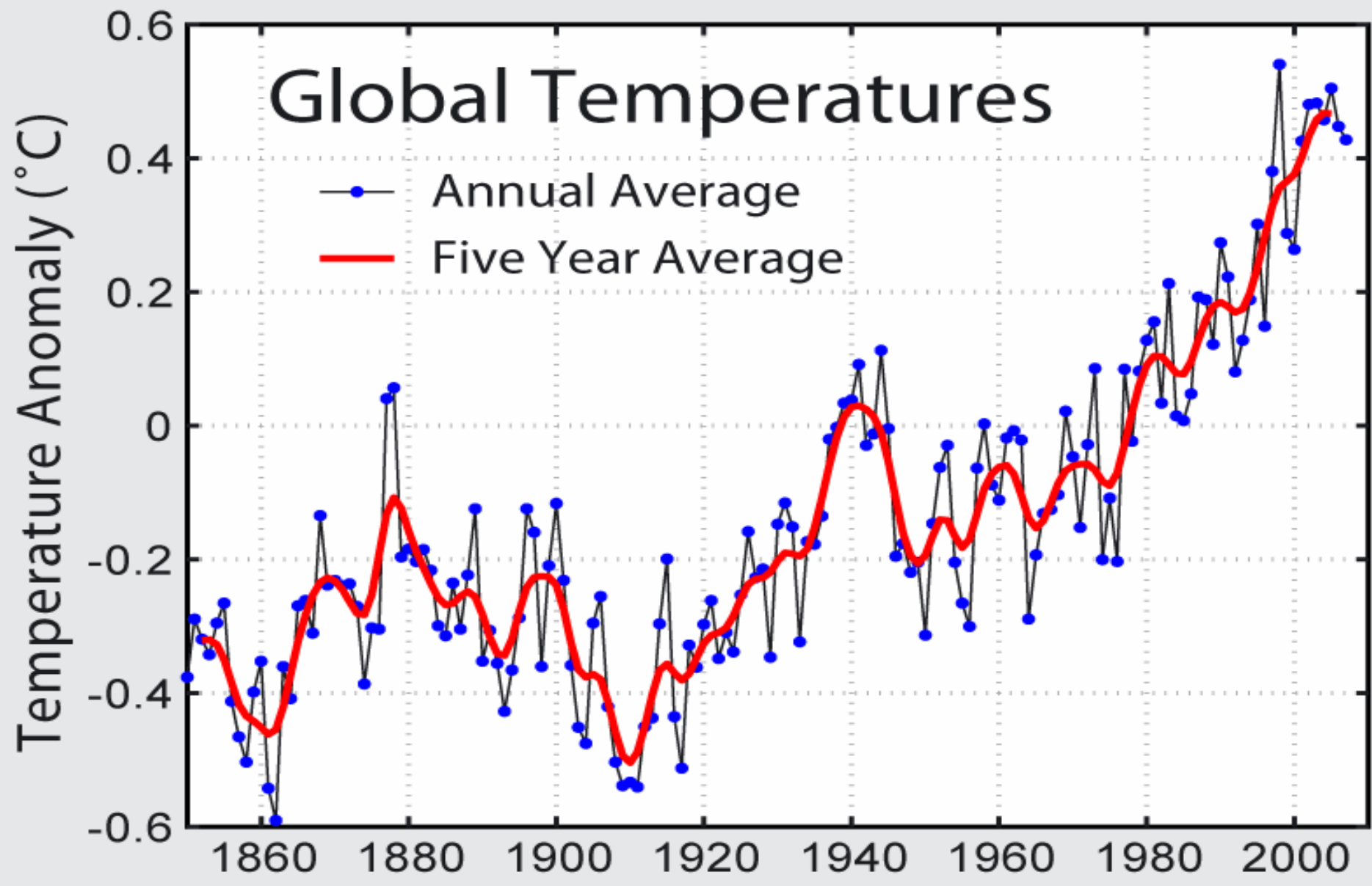
Presented at the Joint International Tropical
Medicine Meeting
13 October, 2008
Imperial Queen's Park Hotel, Bangkok

Global Warming

- Global warming results from either the man-caused climatic or the natural phenomenal changes or from their combined changes
- To differentiate one from the other, the UN Framework on the Convention of Climatic Change has referred man-caused warming as climatic change while warming due to natural phenomenal change as climate variability.
- Most climatic changes felt nowadays are largely attributed to man-caused gas emissions contributing to greenhouse gases and global warming. Major greenhouse emissions consists largely of CO₂ (which accounts for 72%), methane (for 18%) and nitrous oxide (for 9%)

There are evidences indicating that Climatic change and Global Warming has already occurred (IPCC, 2007)

- CO₂ concentrations (the primary greenhouse gas) already rose to about 30% in the last 100 years (1906-2006)
- Temperature has increased by 0.7°C over the same period
- The ten warmest years in the past 100years occurred after 1980
- The rising temperature has already caused glacier ice to retreat in 5 continents
- Frequent droughts *above normal* temperature, winter time precipitation and heavy rainstorms mostly occurred after 1980



Source: IPCC, 2007

What does these changes imply?

These changes imply that studies and knowledge is still insufficient to tell exactly whether the impacts of global warming could be catastrophic or irreversible hence, it is important that we understand its implications and to do something to lessen its potential impacts before it is too late.

Potential Impacts of Global Warming on Food

- Its impacts might go beyond economic losses as it could bring serious food security problems with social, political and environmental implications.
- Global warming can affect food security and the stability of the entire food system
- It can also impact on food safety and consumers' health, our food production and productivity, market flow, people's livelihood and their changing purchasing power.

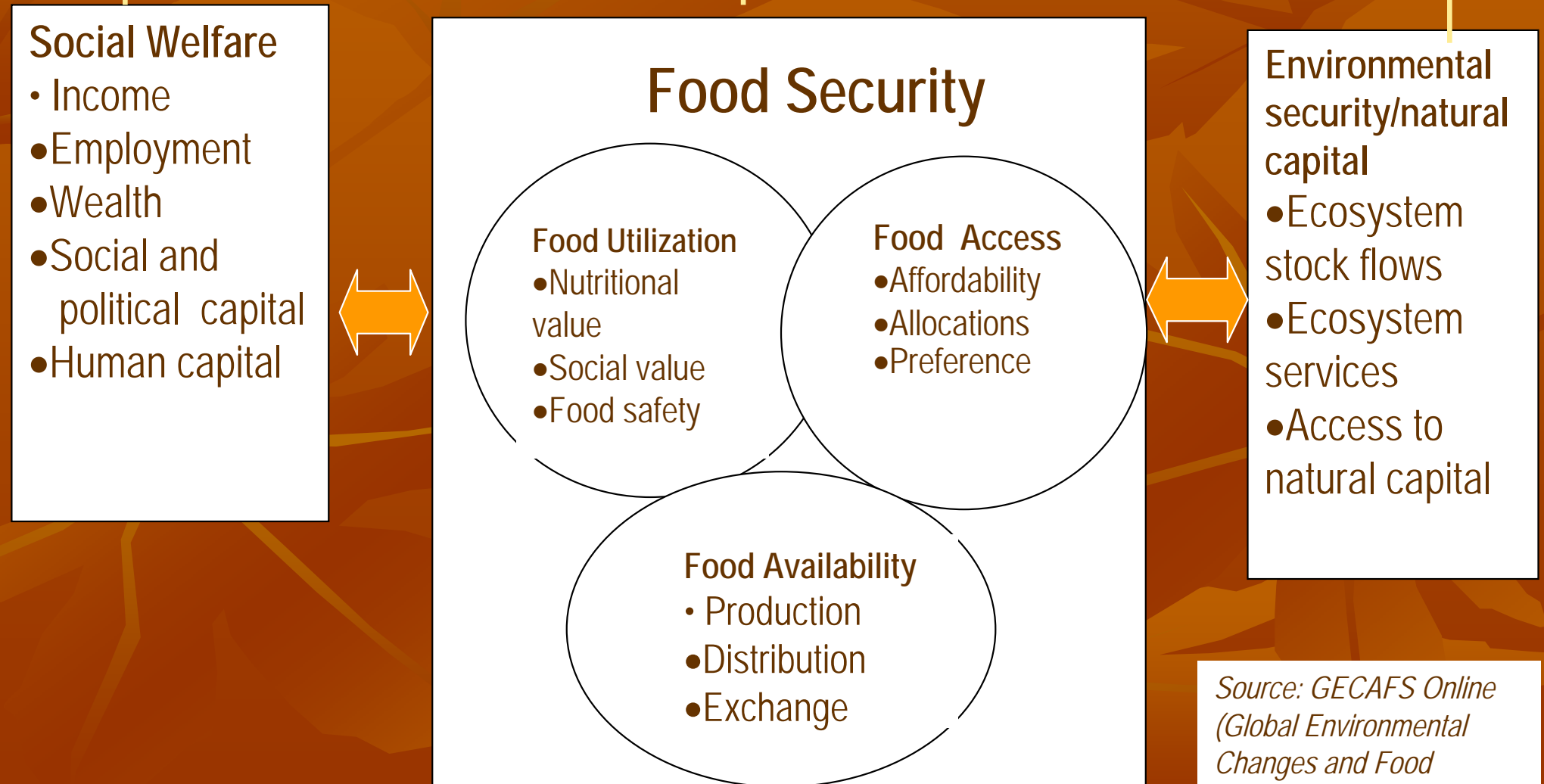
Food Security Definition

FAO definition of food security:

"It is a condition when all people at all times have physical or economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life."

Food Security Dimensions

Food System



Source: GECAFS Online
(Global Environmental
Changes and Food
System)

To ensure a stable and secure Food System, we need to promote

- *Food Production:* meaning sufficient natural resources, inputs, technology
- *Processing and packaging food:* by providing adequate raw material supply, quality and safety standards, storage, etc.
- *Distribution and retailing of food:* through appropriate transport, marketing strategies and advertising...
- *Consumption and utilization of food:* by providing access to supply through economic, social and political policies so that people can access and utilize hygienic, safe and nutritional food , etc.

Global Warming Effect Implications on Food

- *Increase CO₂* - more CO₂ available for plant growth enhancing plant fertilization and production . Sufficient food supply also implies stable world market food price but diversion of land from food to economic cash crops might write off this benefit and even further increase food price.
- *Increase mean temperatures* - increase maximum temperature on hot days or minimum temperature on cold days; increase annual occurrence of hot days and also frequency, duration and intensity of heat waves

Global Warming Effect Implications (cont'd)

Increased temperature implies change in the suitability of land to crops and livestock production

- It may result to production and productivity losses due to heat and water stress to some countries or gain to other countries
- It can pose greater food production risks and uncertainties
- It may strain global food supplies which might affect demand and food price
- Since foods are heat-sensitive, better cooling and storage facilities would be required to ensure their quality and safety and consequently, requiring higher energy consumption and costs
- It also implies change in vectors and natural habitats of plant and animal pests and diseases – which may enhance mutation and virulence and pose greater health challenges

Global Warming Effect Implications (cont'd)

- *Gradual changes in precipitation* - increase not only frequency, duration and intensity of dry spells and droughts but also the timing, location and amounts of rain and snowfall
 - Loss of crops and vegetation due to water stress and increasing fire hazards
 - Changes in suitability of land for crop and livestock production
 - Changes in geographic distribution of vulnerability
 - Increase in food prices in drought-affected areas
 - Could result in scarcity of water for food processing
 - Full cost pricing for water may cause food prices to rise
 - Changes in consumption patterns, in response to changes in relative prices
 - Changes in private sector investments - to adapt to climate changes

Global Warming Effect Implications (continued)

- *Increase in frequency and intensity of extreme weather events* – can increase occurrence of high winds, heavy rains, storm surge and flash floods associated with tropical storms and tornadoes. Perhaps the “super typhoons” we recently witnessed like Typhoon Nargis, Katrina, Gustav and recently Ike - are already manifestations of global warming?
 - Damage to food crops and food animals
 - Damage to buildings such as food processing plants, equipment, roads and other transport infra-structures, storage facilities and electrical wirings

Global Warming Effect Implications (continued)

- Increase in water and food-borne diseases
- Disruption in food supply chains and increase in marketing and distribution costs
- *Greater weather variability* –changing seasonal weather patterns can also change crop growing seasons and food supply

Global Warming Implications on Food Security

- Change in the food production capabilities of the countries/regions - affecting economic and socio-political stabilities – which may result in possible migration and conflicts
- Change in food security including, food availability, accessibility, utilization and food system stability
- Change in food consumption patterns which may impact on the people's nutritional and health status
- Increase incidence of water and food-borne diseases especially in flood-prone areas
- Change in the eco-system and the possible emergence of new diseases and health challenges

Mitigating Global Warming Impacts on Foods

Some Potential National Strategies

- To ensure adequate food supply, we should discourage diverting land for food production to other uses
- To reduce gas emissions, we should encourage the use of alternative fuels such as wind, solar etc. for electricity and machines
- To save on energy consumption, we should encourage development of fuel or energy-efficient technologies
- To minimize water usage, we should advocate for efficient water management policies and water use regulations
- To ensure adequate food production, we should support and promote development of heat tolerant crop varieties and species for distribution to farmers
- To minimize CO₂ emission, we should develop and promote re-cycling technologies for energy, water, packaging and other process
- To minimize the impacts of flood, we should support investment on flood embankments especially in flood-prone areas

Mitigating Global Warming Impacts on Foods

We should also run Promotional Campaigns to:

- Encourage food producers to develop and implement risk management plans
- Encourage producers to embark on weather-related insurance
- Encourage the use of recycled water for irrigation
- Encourage water-retaining land management practices
- Encourage energy and water saving
- Promote eco-friendly food packaging
- Promote greater "saving the environment" awareness to children and the youngsters by advocating its inclusion in school curriculum, by creating more environment-related public programs and project initiatives and by doing eco-friendly practices ourselves.

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**Thank you
for your attention**

