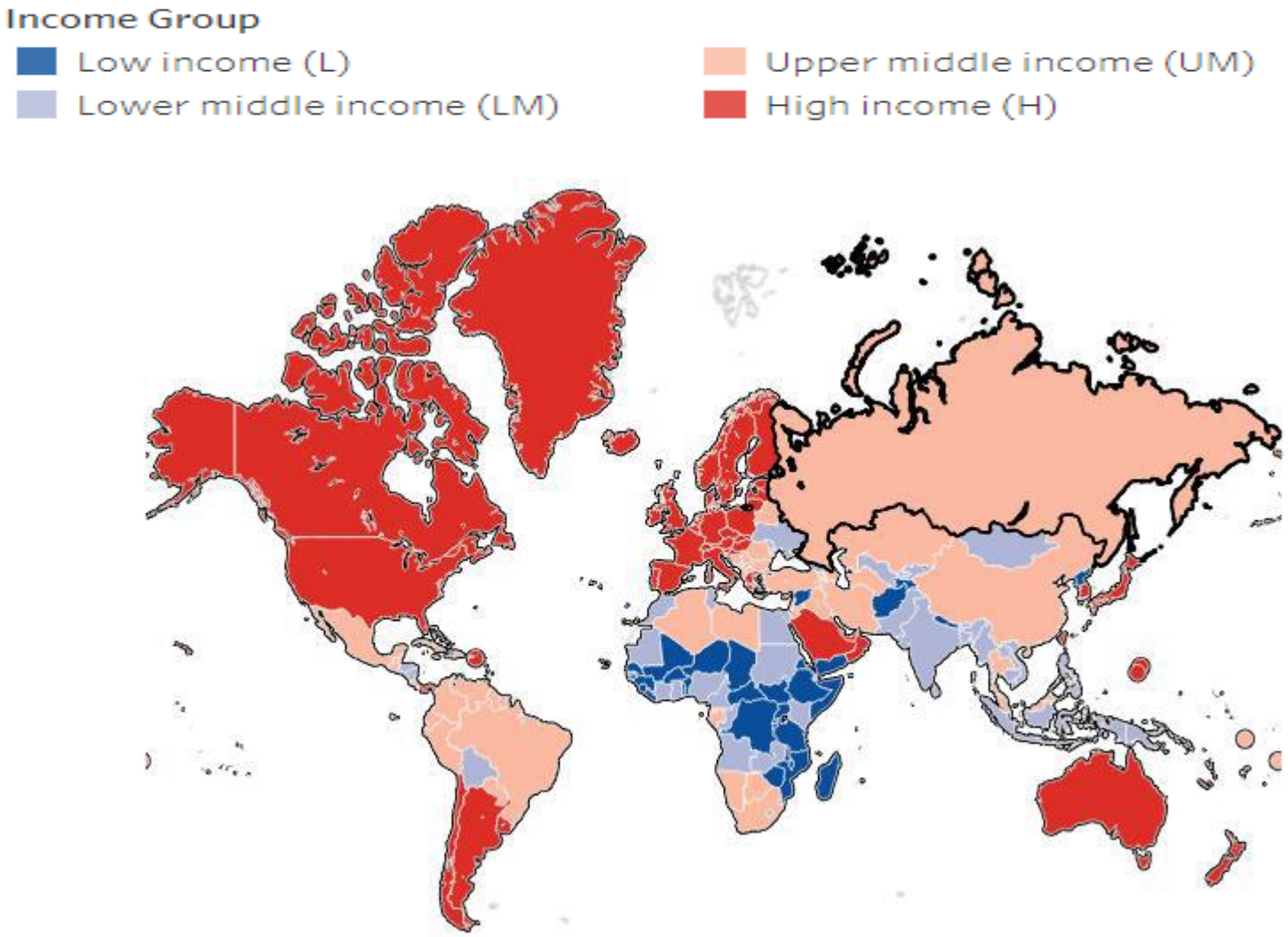
# A Focus on Food International Challenges
## *Global Food challenges Related to Climate Change*

**Dimitri Uzunidis**

**Research Network on Innovation**
**Spring of Innovation**
**March 22 2019, Athens, Greece**

- **The correlation between food security and climate change** is part of a sociotechnical and economic context based on **3 pillars**:
- a/ The rapid **increase of the world population** associated with malnutrition, poverty and hunger.
- b) The **domination** in the economic activity of the **petrochemical paradigm**.
- c) Socio-economic organization and the global governance model based on **unequal international relations.**

**a)** FAO estimates that by 2050, the global demand for food and feed will increase by 60%. 2 billion people in the world are overweight; 1 billion suffer from chronic malnutrition… In 2017:



# b) Petrochemical paradigm:

| | | |
|---|---|---|
| Oil | Steam cracking | - plastics<br>- building materials<br>- energy / fuels<br>- pharmacy and related<br>- cosmetics<br>- phytosanitary products / fertilizers and related<br>- food: food derivatives and additives<br>-… |

# c) Global governance

“Planet for profit strategies and policies” or “Profit strategies and policies against planet and people”

| | |
|---|---|
| **Characteristics** | **- industrial and intensive agriculture and livestock farming**<br>**- transnational oligopoly ("Big Food")**<br>**- conflicts over health standards and patents**<br>**- protectionist tendencies**<br>**- unequal distribution of income and access to food resources**<br>**- sharp fluctuations in the prices of primary goods**<br>**- military conflicts**<br>**- …** |

**Food security** is ensured when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to satisfy their dietary needs and food preferences for an active and healthy life

Four conditions must be observed to achieve food security:

a) **food availability**. This first condition refers to the amount of food available in sufficient abundance to meet the vital needs of the population. Growth in agricultural production must therefore be positively correlated with population growth

b) **physical, social and economic access to food**. This second condition refers to the demand. The evolution of the supply of agricultural products must be correlated with the evolution of demand, which must be correlated to the income level, necessary to cover individual and collective vital needs

c) **the quality of the food consumed**. This third condition refers to the nature of the products consumed and must be correlated with other parameters related to health, physical environment and, individual and collective education

d) **stability or sustainability** in the sense that the food security must be part of a sustainable and socially fair development perspective

**Climate change refers to all variations in climatic characteristics:**

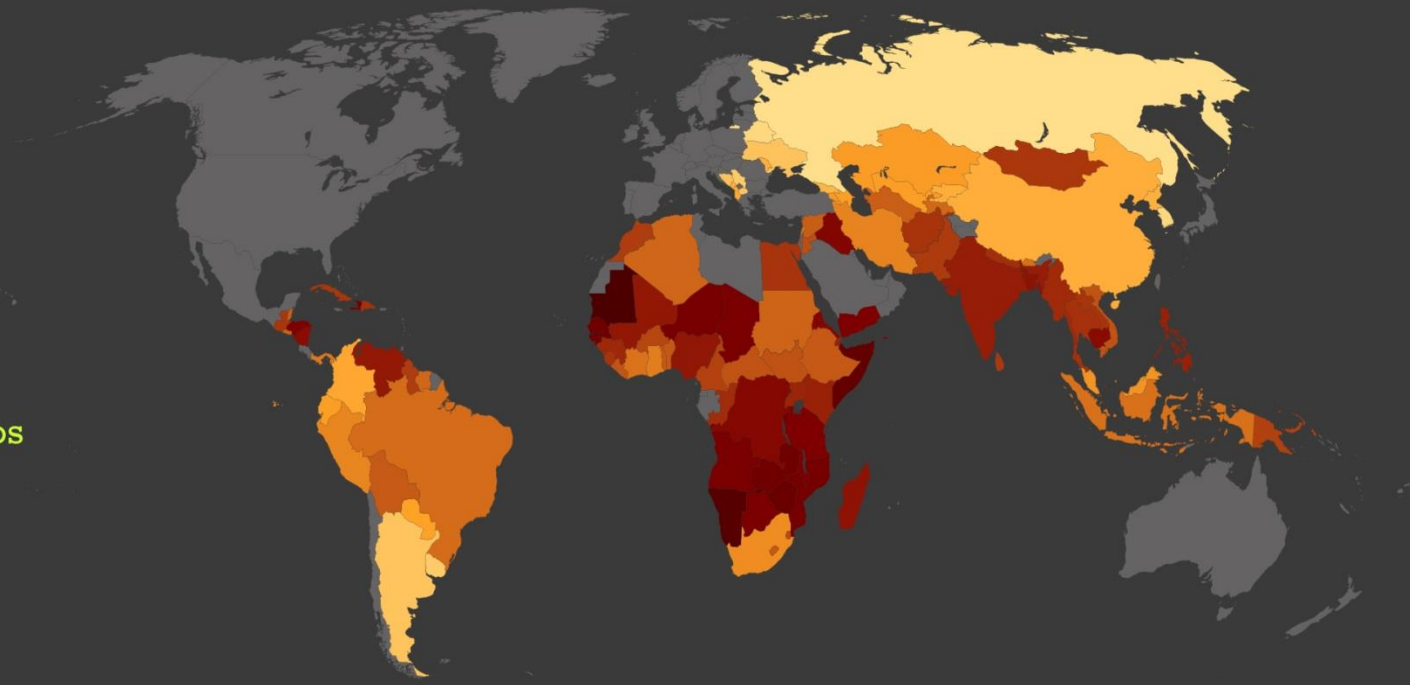
- **Air pollution**, resulting from human activities, threatens to significantly alter the climate towards **global warming**.

- This phenomenon can cause **significant damage**:
  - sea level rise,
  - increased extreme,
  - climatic events (droughts, floods, cyclones, etc.),
  - destabilization of forests,
  - threats to freshwater resources,
  - agricultural difficulties,
  - desertification,
  - reduction of biodiversity,
  - spread of tropical diseases, etc.

Met Office Hadley Centre

WFP World Food Programme wfp.org

# & Food Insecurity *Climate Change*



## Future Scenarios

Emissions

**HIGH**

Adaptation

**NONE**

## Key

Vulnerability to food insecurity

**LOW** — **HIGH**

**2050s**

**Extreme weather variations and conditions have a negative impact on:**

- **the availability, access, use and stability of food resources**, as well as on feeding, care and health practices. Direct and indirect climate-related impacts have a cumulative effect, leading to increased food insecurity and malnutrition;

- the agricultural productivity, food production and cropping patterns, thus contributing to **food shortage**;

- **food prices**: sharply rising and volatile food prices, loss of agricultural income, reducing access to food and negatively affecting the quantity, quality and diversity of food consumed;

- **nutrition**: the nutritional quality and food diversity of food produced and consumed is deteriorating, effects on water and sanitation are decreasing, resulting in increased health risks and diseases.

**Conclusion:**

- **Climate change has impacts on the evolution of global food resources, hence the need to direct research towards a sustainable and resilient agriculture in order to feed the planet**

- **Climate change can lead to increased poverty, hence the adaptation of farmers to the risks associated with it, in order to reduce poverty and improve global food security**

**Food security is a complex, multidimensional concept** that depends on agricultural and cooperation policies, economic choices, trade regulations and the social policies of States.

**5 main orientations to ensure the reduction of the effects of climate change on food security**:

1/ **Control of food production** by the producer and the consumer. This leads to the rationalization of the activity in relation to the available resources and the change of the Big Food paradigm;
2/ **Development of ecological agriculture**: change of the petrochemical paradigm;
3/ **Fostering biodiversity**;
4/ **Strengthening the resilience of food systems**;
5/ **Promoting biochemistry**

*The challenge is to articulate an economic approach, environmental protection and social justice in a context of the economic globalization, the commercialization of natural resources and the deepening of inequalities*. ***A paradigmatic shift will therefore be required***.

…

The current situation of social relations of production does not facilitate the **change of the technological and socio-economic paradigm**. **The ecological transition for food security is facing 3 major obstacles**:

a) **ineffectiveness of global governance** in reducing pollution;
b) **private appropriation** versus the need to conserve and manage natural resources as common goods (e.g. strategies for appropriating the resources of life through big food and lobbying);
c) **lack of incentives** for the use of alternative technologies: slow spread of green innovations, increase of their design and application costs and barriers to their use on a large scale.