



# Climate change and agri – food industry: a global view



Nicola Cantore  
Department of Policy Research and Statistics  
UNIDO

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# Food security and climate change in SDGs





## Food in the Paris agreement

“Safeguarding food security and ending hunger, and the particular vulnerabilities of food production systems to the adverse impacts of climate change”

“Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production”



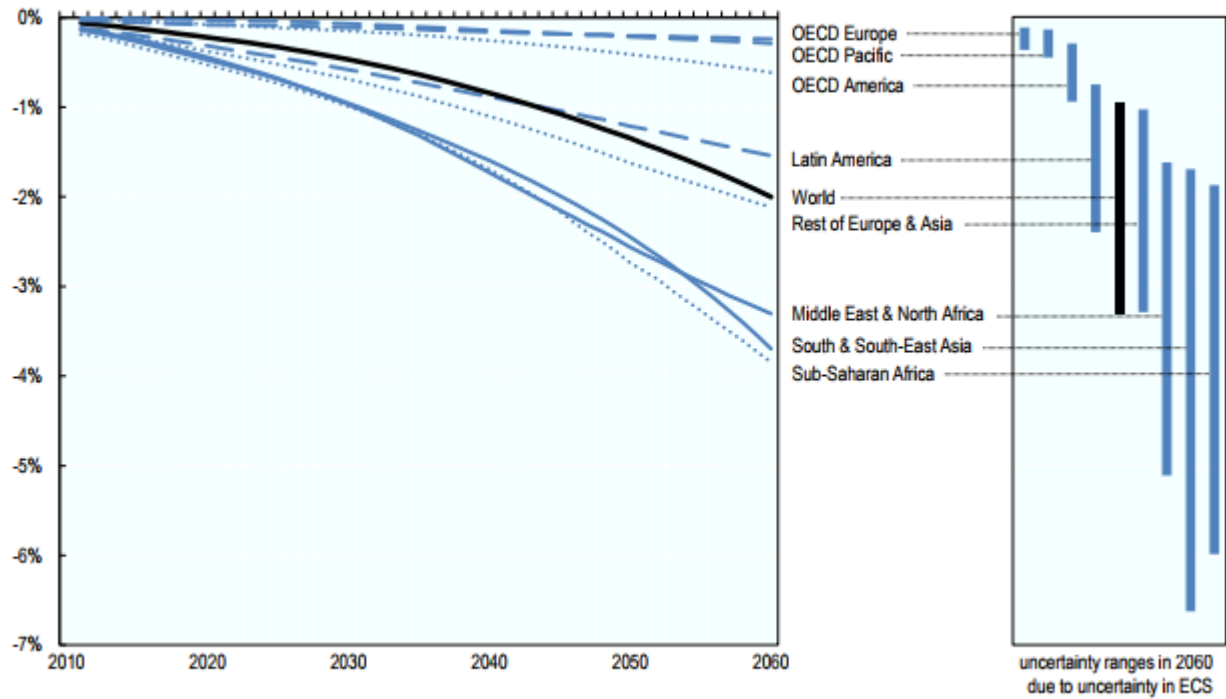
## Structure of the presentation

- 1. Impacts of climate change on agriculture
- 2. The agri – food industry
- 3. Policy implications



# 1. Impacts of climate change on the overall economy: GDP per capita (I)

(Percentage change in GDP w.r.t. no-damage baseline)  
Panel A. Evolution over time

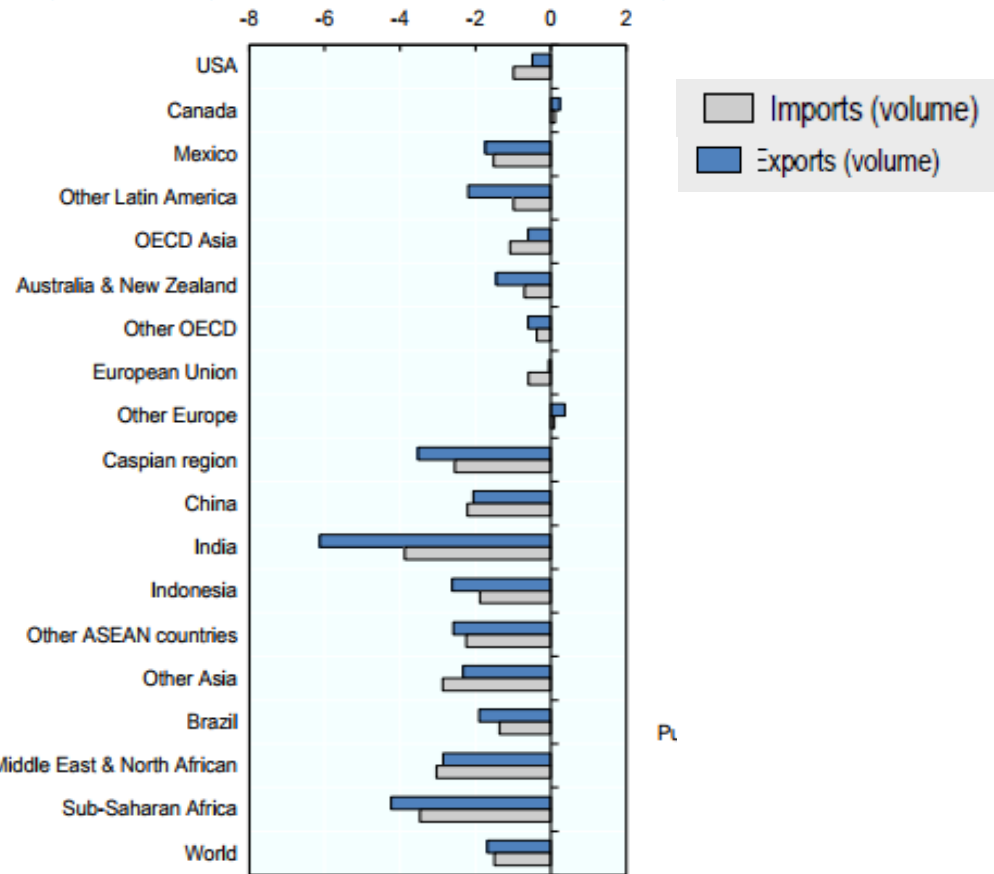


High costs of climate change especially in developing countries

OECD (2017): international trade consequences of climate change

# 1. Impacts of climate change on the overall economy: exports and imports (II)

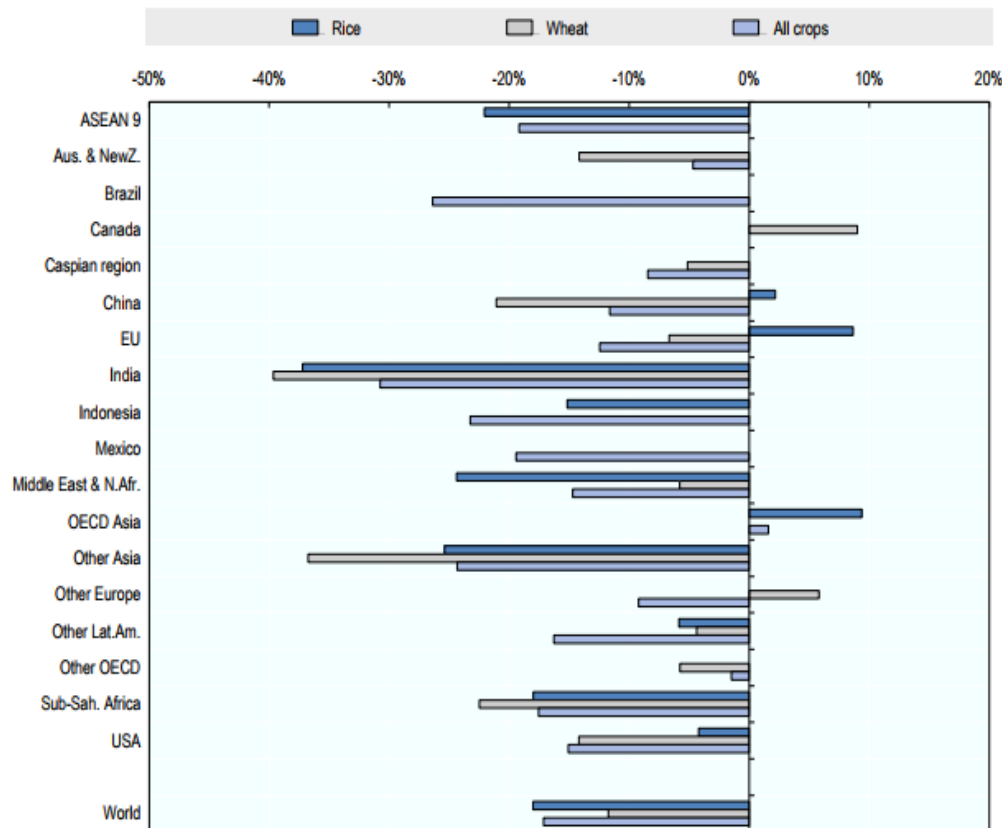
Africa and India penalized in terms of exports in 2060



OECD (2017): international trade consequences of climate change

# 1. Impacts of climate change on the agriculture: yields(III)

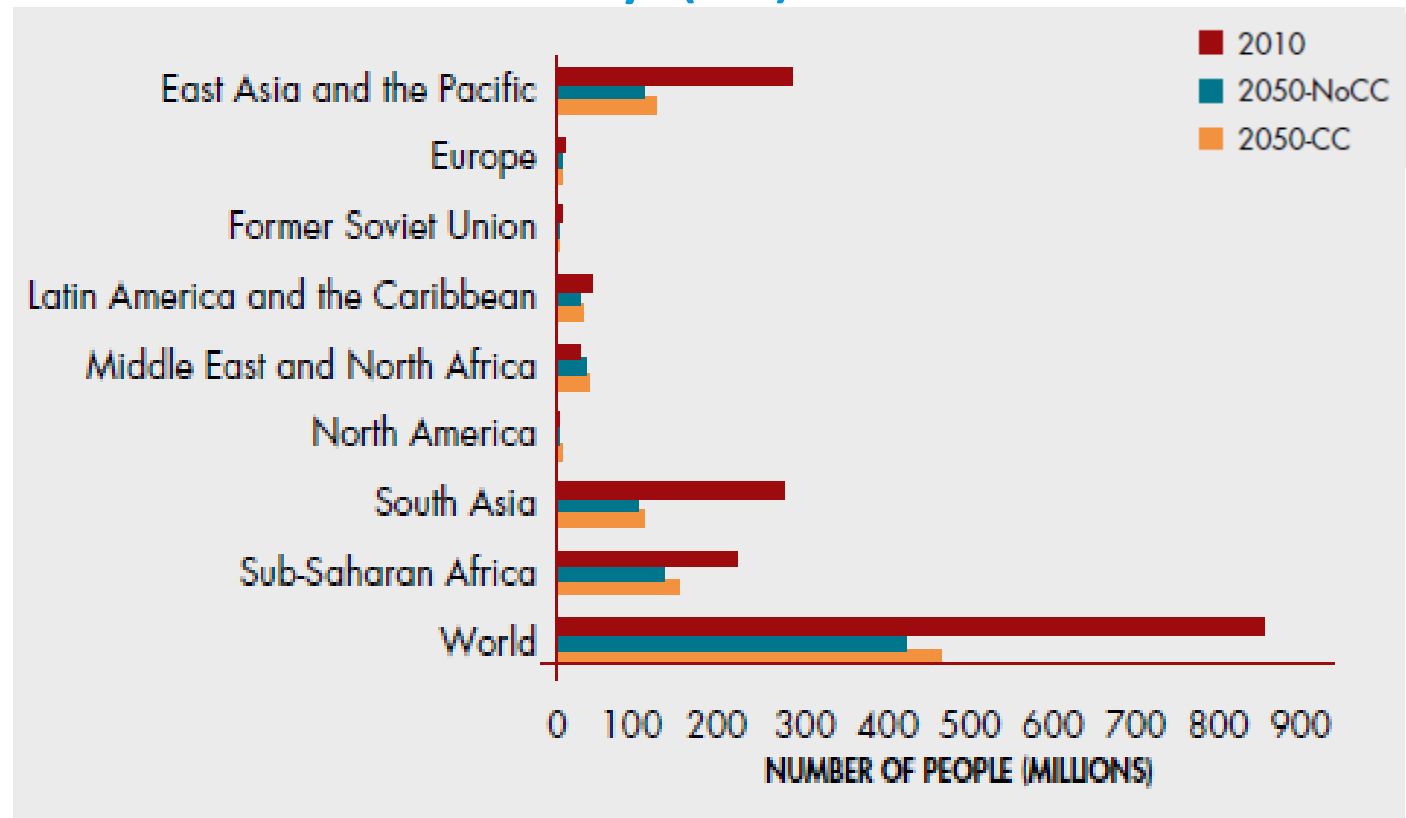
Climate change reduces yields in 2060



OECD (2017): international trade consequences of climate change

# 1. Impacts of climate change on agriculture: food security (IV)

Climate change increases the number of malnourished people



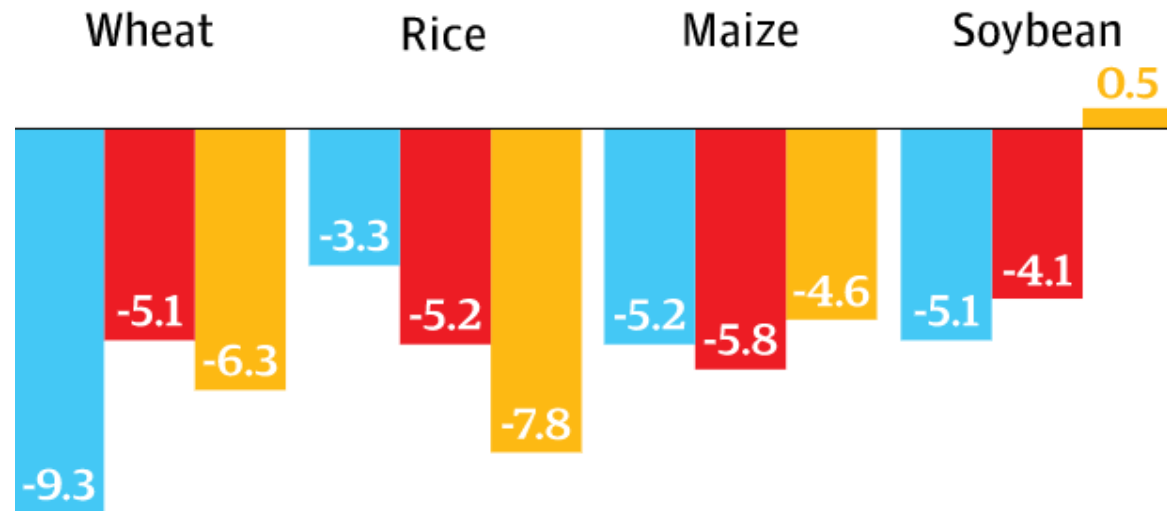
FAO (2016): The state of food and agriculture



# 1. Impacts of climate change on agriculture: nutrition (V)

Percentage under CO2 levels expected in 2050,

■ Zinc ■ Iron ■ Protein



Estimated two billion people suffer deficiencies of zinc and iron, causing a loss of 63 million life-years annually

Source: Myers et al. (2014): Nature

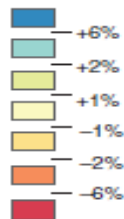
# 1. Impact of climate change on agriculture: water (VI)

**MAP ES.1 The Estimated Effects of Water Scarcity on GDP in Year 2050, under Two Policy Regimes**

Business as usual



Efficient water policies

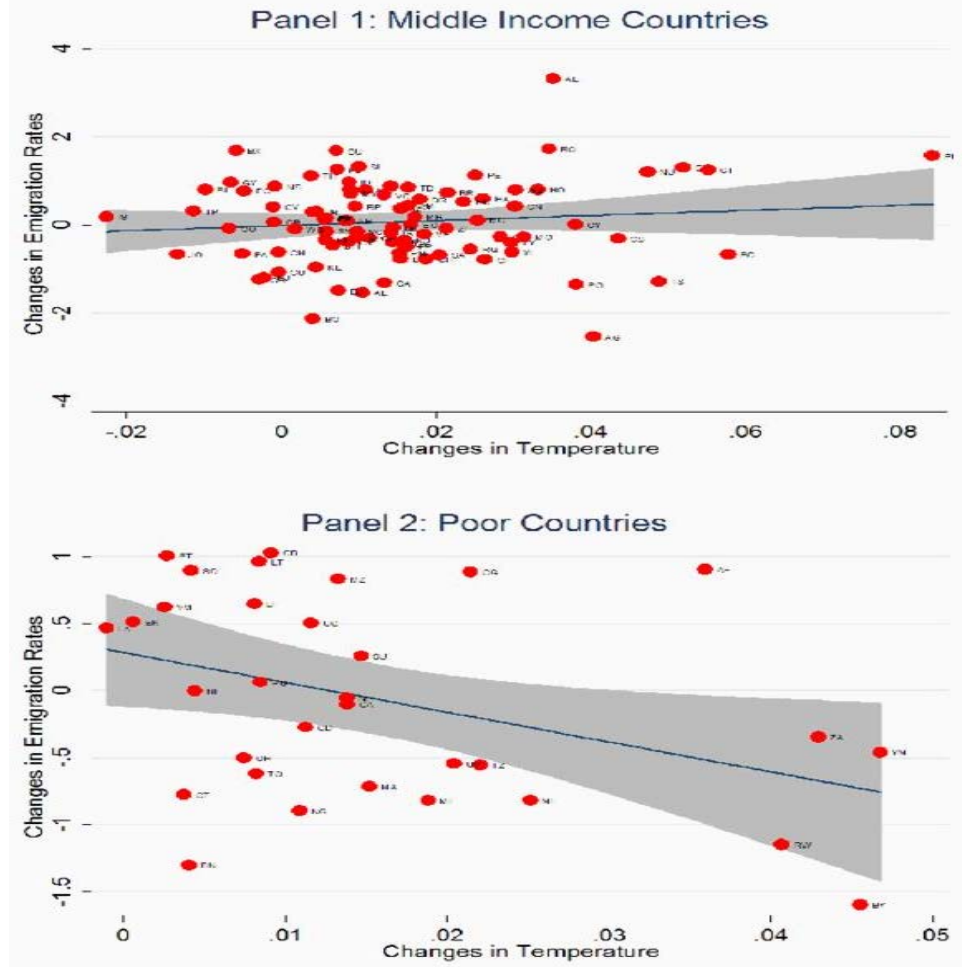


Climate change generates water stress

World Bank 2016 – High and dry, climate change, water and the economy

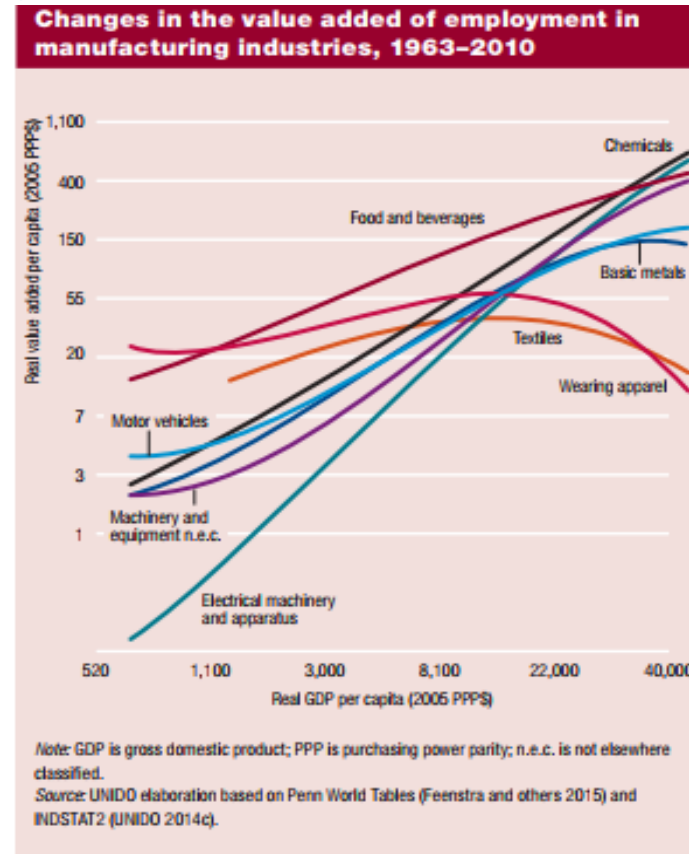
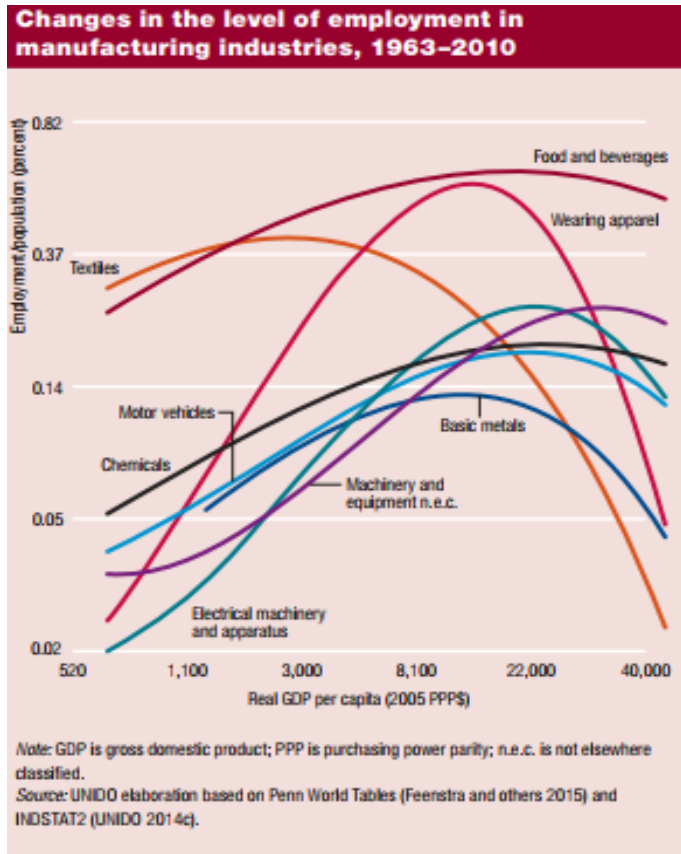
# 1. Impact of climate change on migration (VII)

Climate change generates migration especially in middle income countries



Cattaneo C, and G Peri (2015), "The Migration Response to Increasing Temperatures" NBER Working Paper 21622.

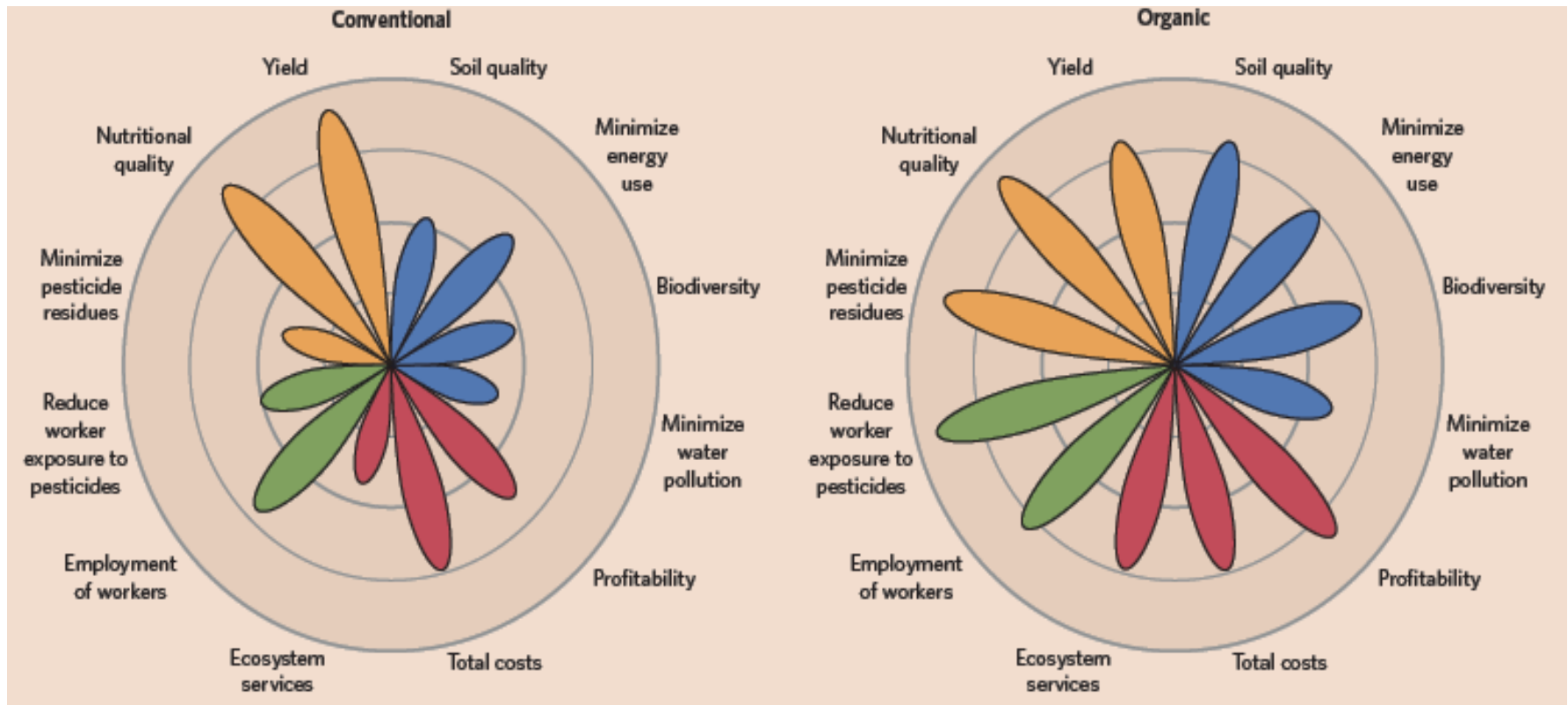
# 2. The agri – food industry: importance for development



Source: UNIDO 2016

## 2. The agri – food industry: organic vs conventional

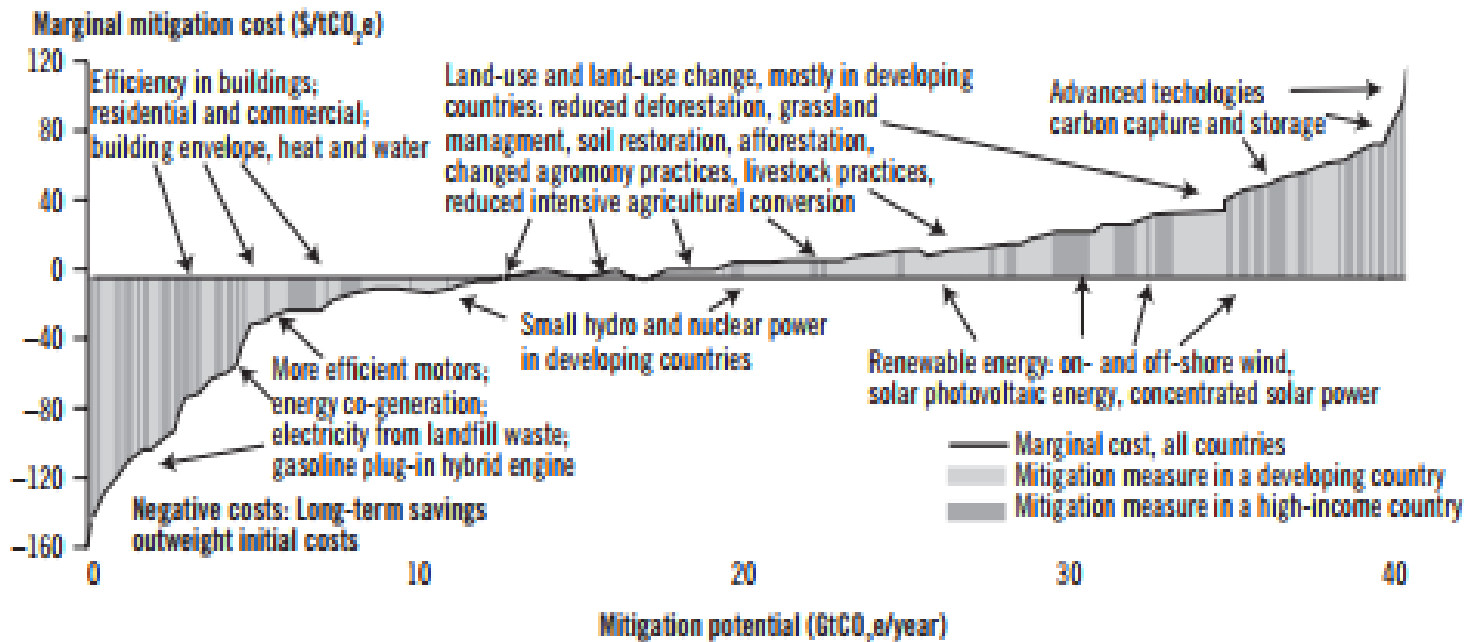
Organic performs better under many aspects



Source: Reganold and Wachter, Nature Plant 2016

## 2. The agri – food industry: organic is low cost and climate friendly in low income countries

Figure 1: Marginal mitigation costs in developing and high-income countries



Source: World Bank (2010), Figure 1.3(a), based on data from McKinsey & Company

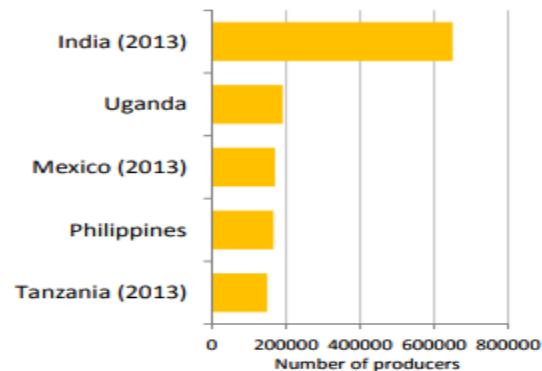
LDCs offer the world some relatively cheap options for reducing emissions, particularly from agriculture

Source: Bowen and Fankhauser (2011, World Economics)

## 2. The agri – food industry: organic easy to do in developing countries

2.3 Mio  
producers

The country with the most organic producers is India, followed by Uganda and Mexico.



The five countries with the largest numbers of organic producers 2014

Source: FIBL: Organic agriculture worldwide (2016): Current Statistics



## 2. The agri – food industry: Challenges in the organic sector

- More expensive
- Difficult for farmers in developing countries to integrate with international markets
- Lower yields





### 3. Policy implications

- Organic industry provides a positive externality: market instruments to facilitate conversion
- Promotion of international certification systems or domestic certification brands
- Correct asymmetric information failures among consumers and producers
- Business development to facilitate contact between producers, processors and distribution.



# Thank you!!!

