



# AGRICULTURAL OUTLOOK IMPLICATIONS FOR FOOD SECURITY

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## *Presentation Outline*



- 1. Why growing food security concerns?**
- 2. What is the market outlook?**
- 3. Is price volatility increasing?**
- 4. Can supply keep up with demand?**



# 1. Why growing food security concerns?



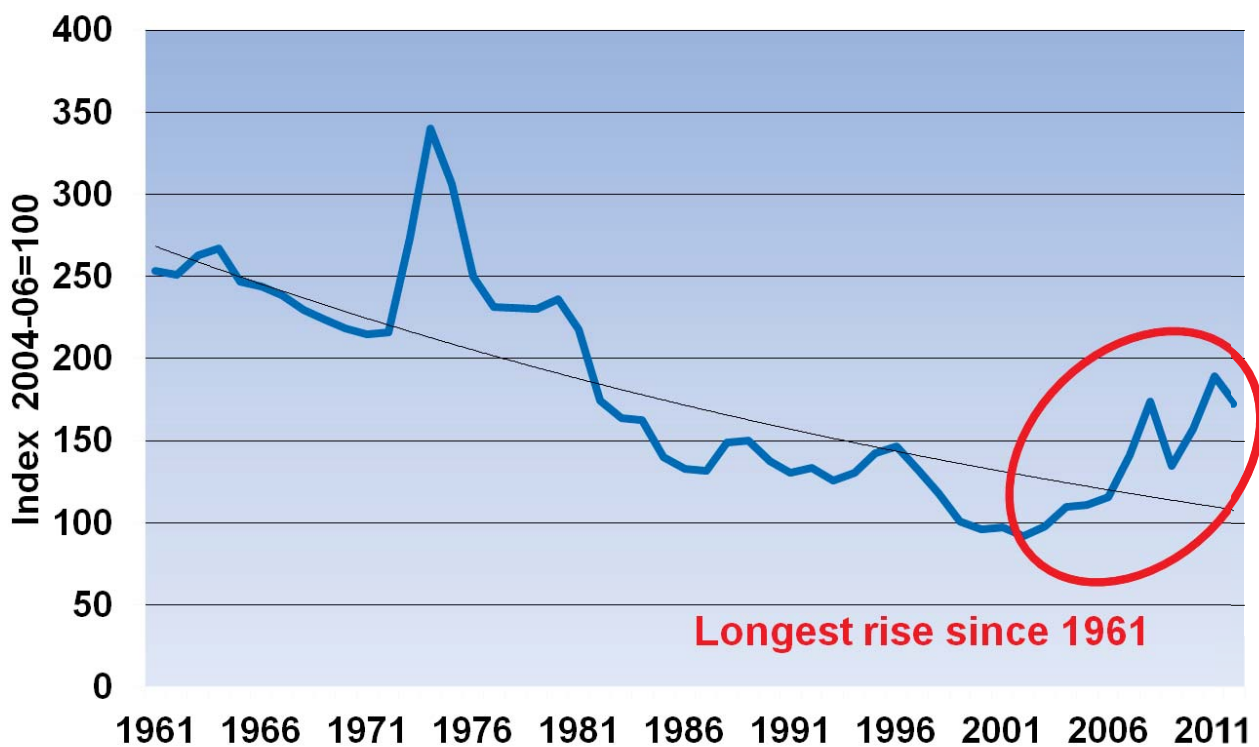
- **870 million hungry**
- **Growing pop'n**
- **Crop shortfalls/low stocks**
- **Resource constraints & climate change**

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## FAO Food Price Index has reversed

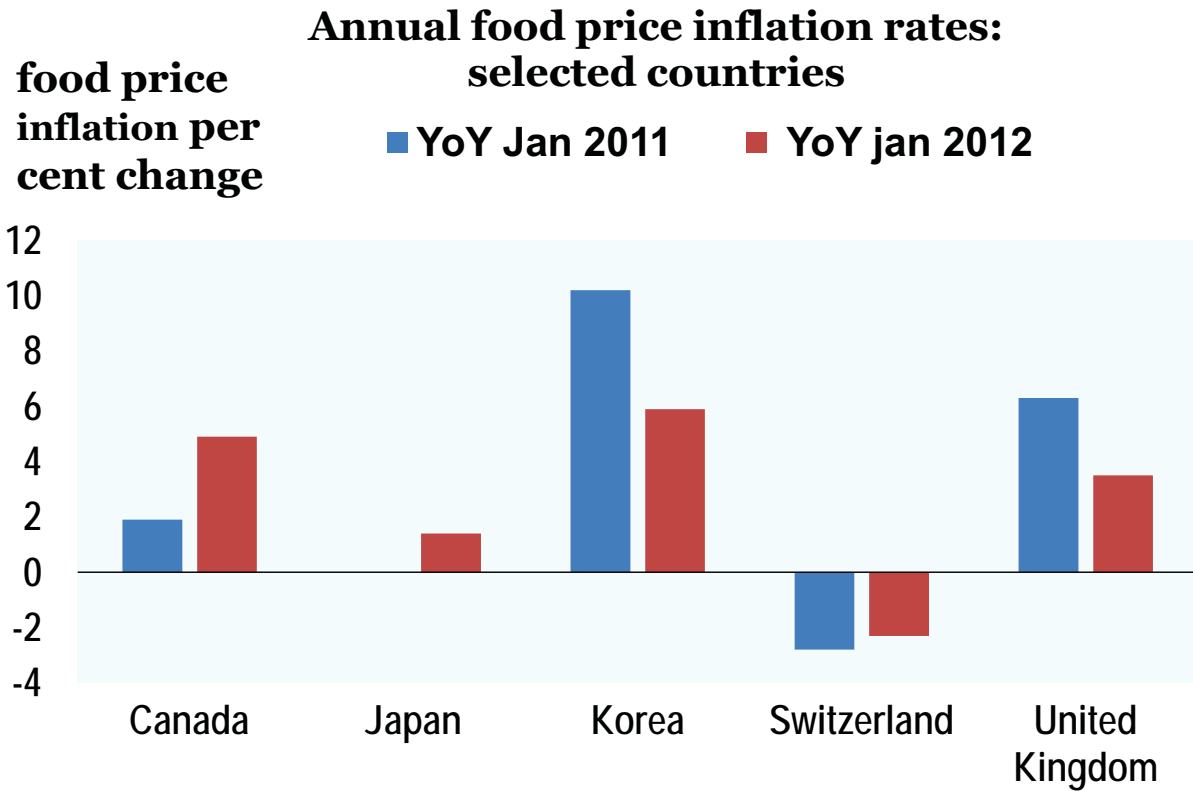


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## ***Food price inflation varies by country***



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## ***Food prices reflect commodity prices***



- **Which often move together**
- **Which reflect energy costs**
- **Which reflect gov't support policies**

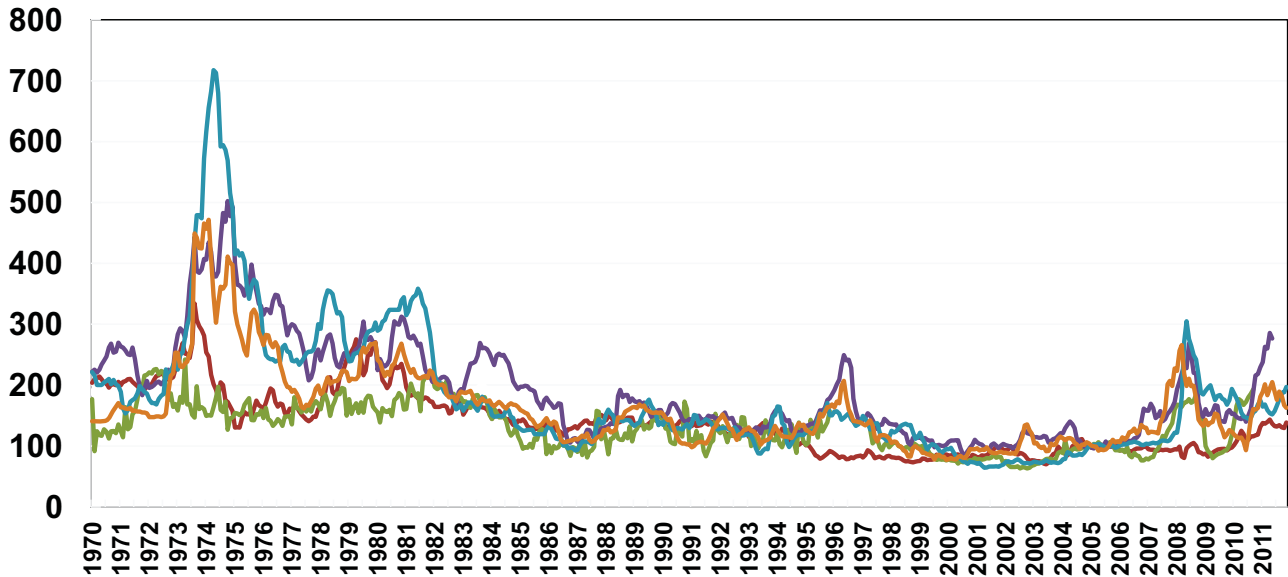
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# Long term decline in commodity prices at an end?

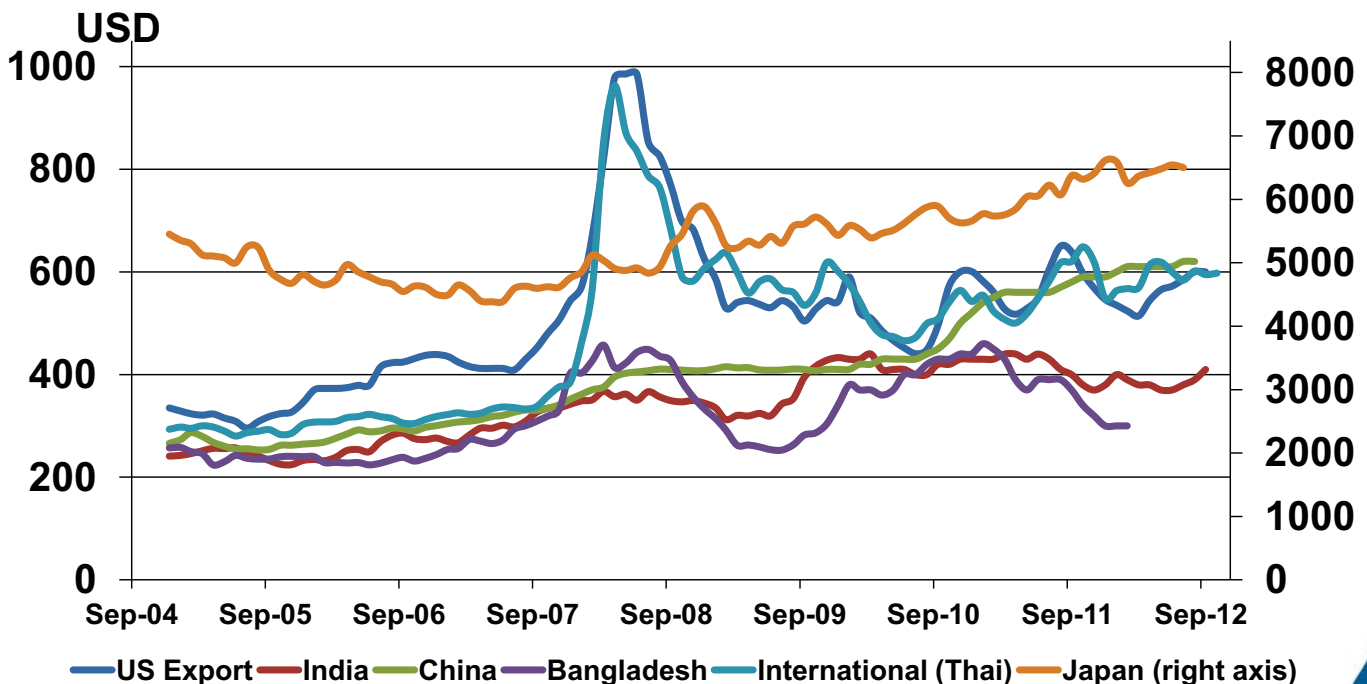
## Agricultural commodity prices in real terms (2005=100)

IMF food Index — Beef — Butter — Maize — Rice — Wheat



# Domestic prices may not reflect world price movements

## International and wholesale price of rice





## 2. *What is the market outlook?*



- **10 years - 2012-21**
- **Global consensus**
- **Normal weather**
- **Current policies**
- **Trends not forecasts**



## *Macro assumptions*

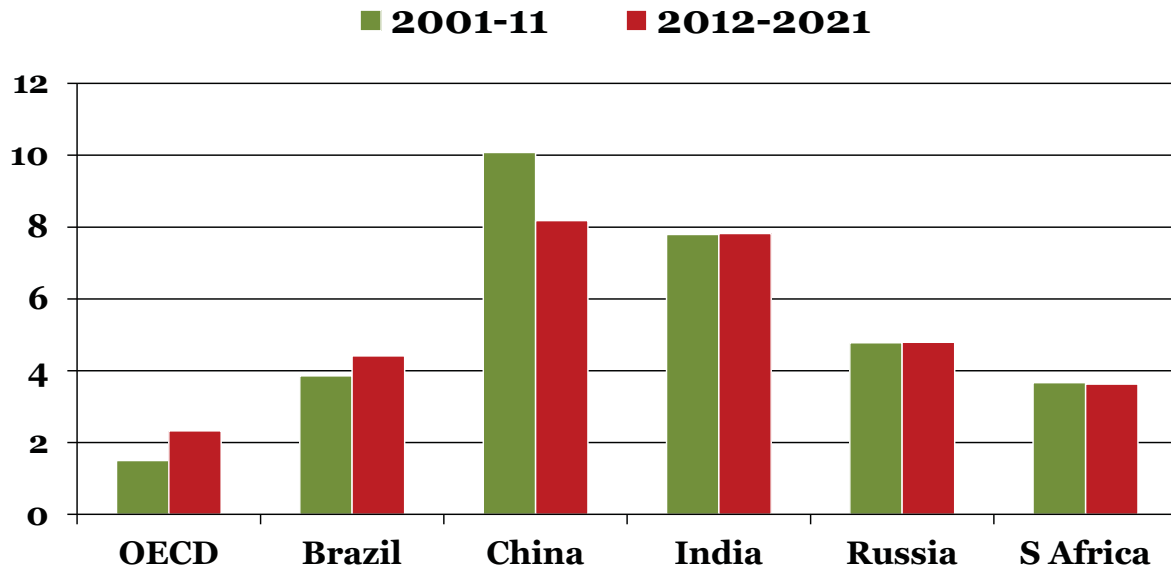


- **Two speed global economy**
- **Slowing pop'n growth**
- **Subdued inflation**
- **Higher energy prices**

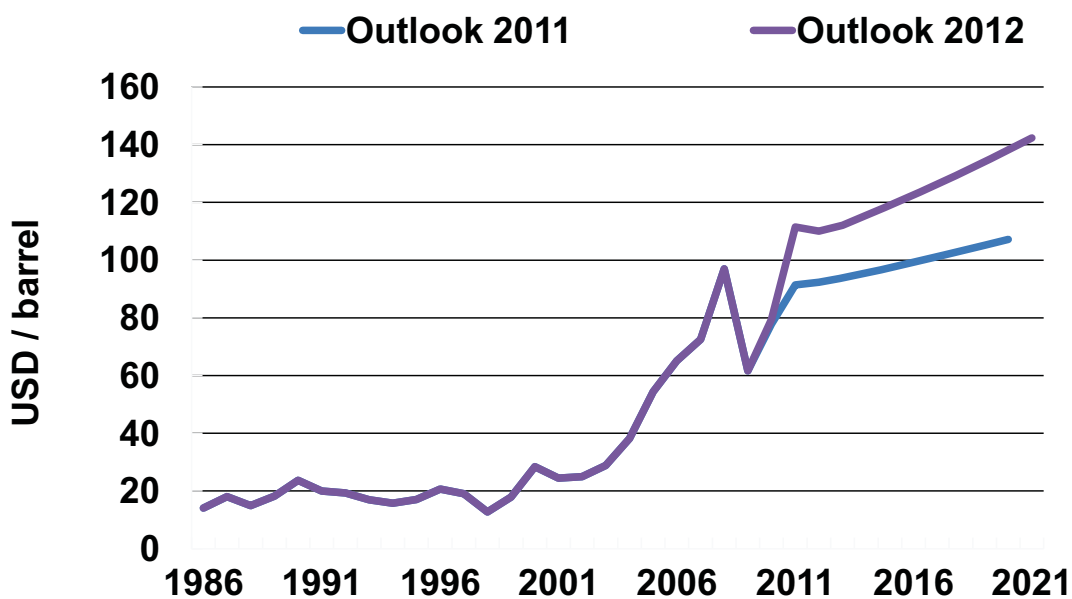


## Two speed global economy

### Average annual GDP growth (%)



## Higher oil prices projected





## ***Demand drivers***



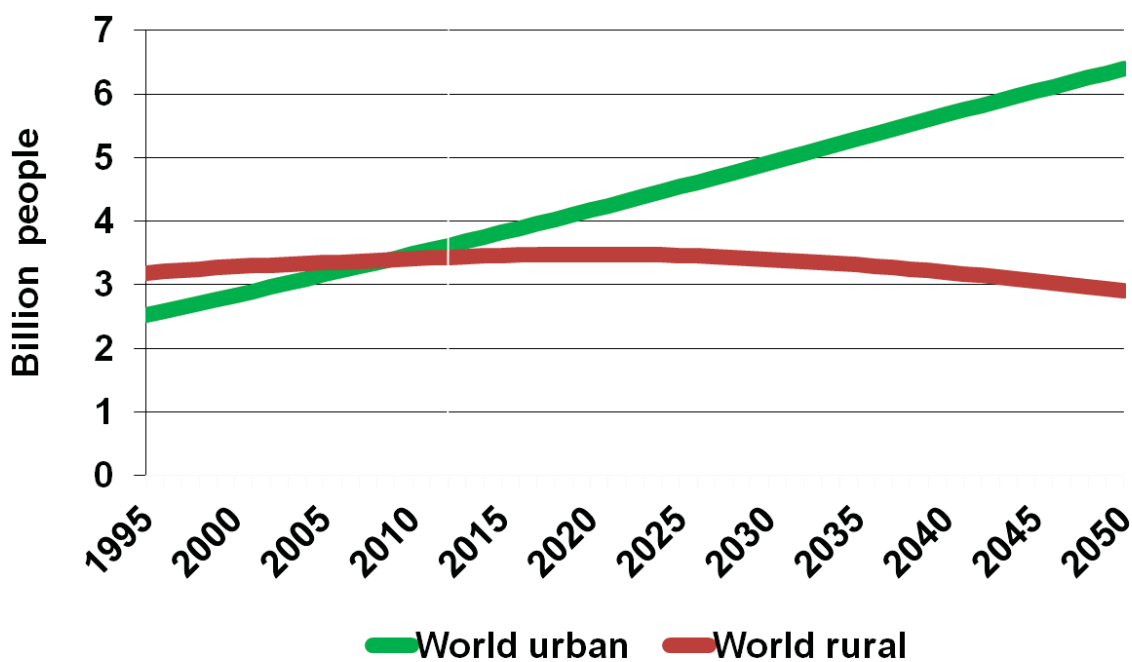
- **Pop'n up 680M**
- **Higher incomes**
- **Urban migration**
- **Changing diets**
- **More biofuel prod'n**

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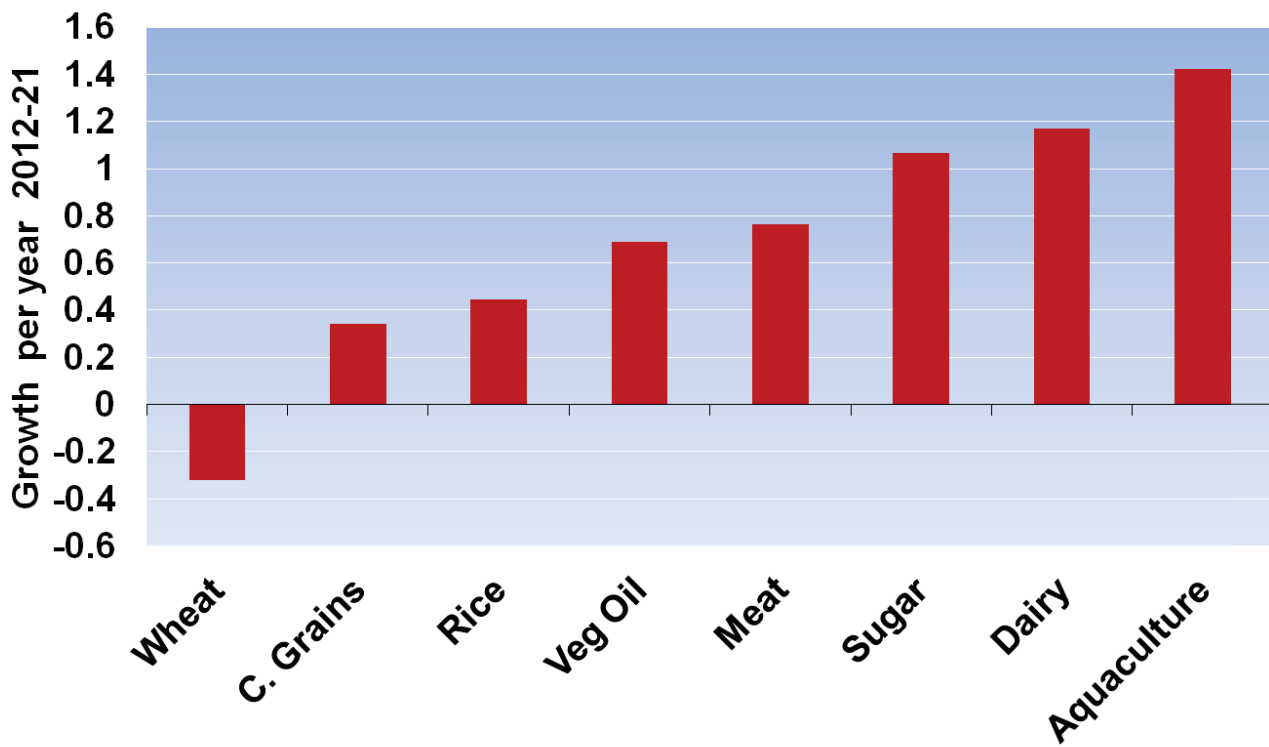
## ***Urban pop'n to increase 3 billion by 2050***



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## More processed foods, fats and proteins

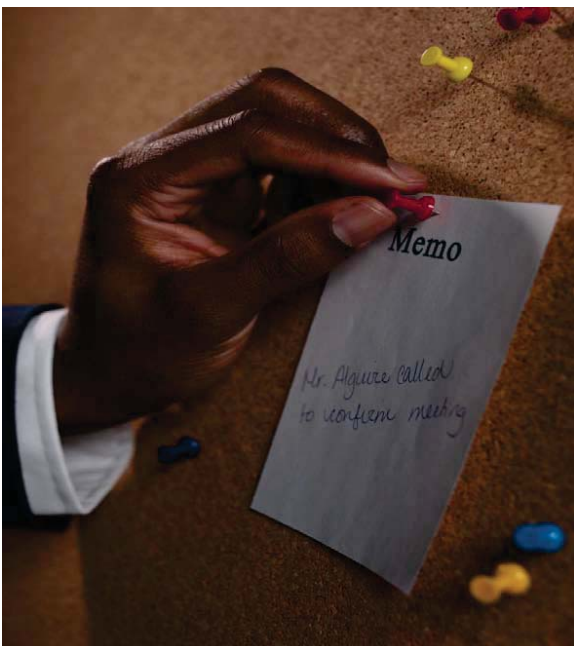


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## Outlook highlights



- **Slowing production growth**
- **Higher price plateau**
- **Developing countries increase role**

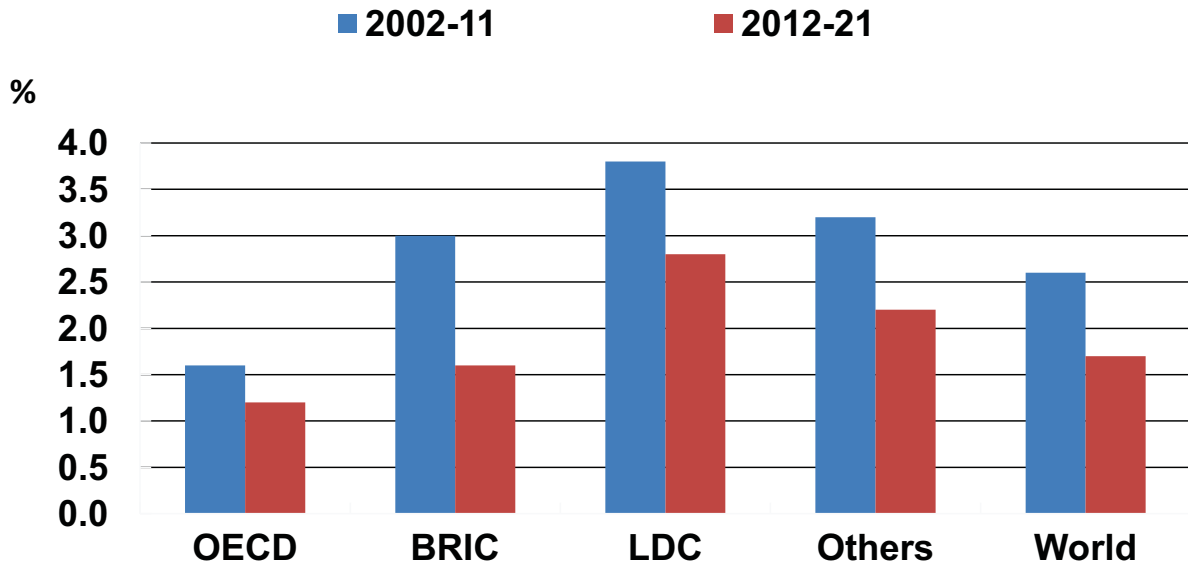
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# Global production to grow at 1.7%

## Average annual growth in net agricultural output (%)



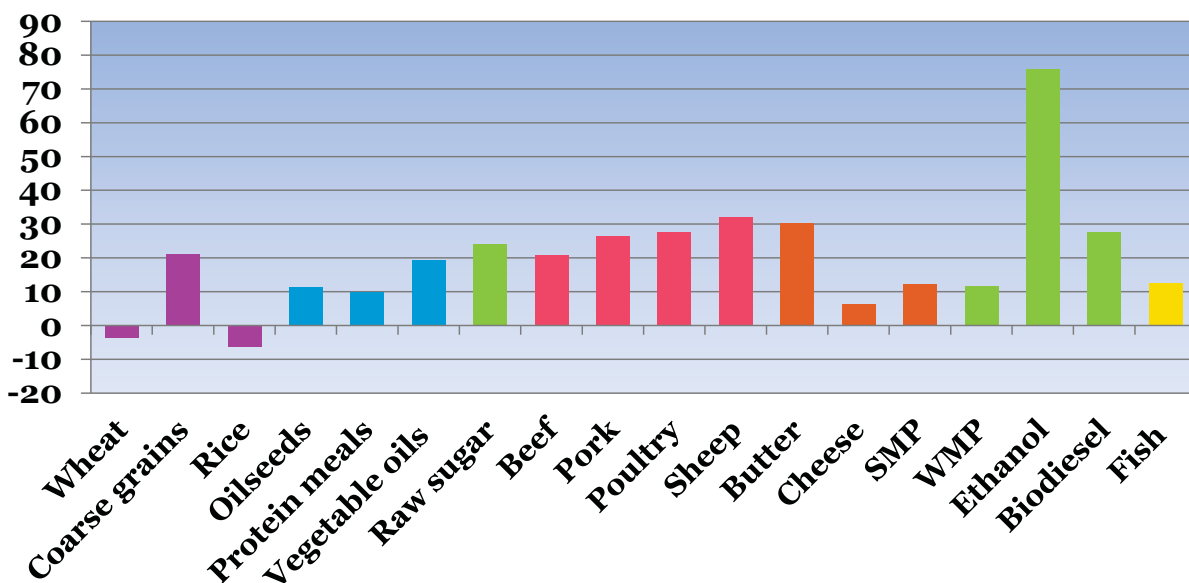
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# Higher average prices compared to previous decades

## % change in real average prices 2002-11 to 2012-21



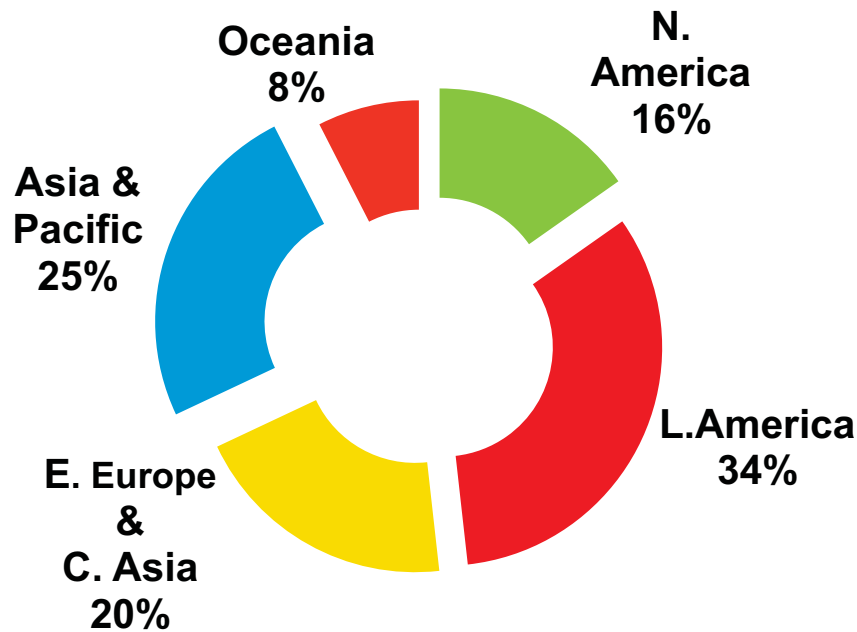
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## ***Developing countries to dominate export growth***

**% share of world export growth over next decade**



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### ***3. Is price volatility increasing ?***



- **Greater prod'n variability**
- **Less stable macroeconomy**
- **More inelastic demand**
- **Ag and trade policy**

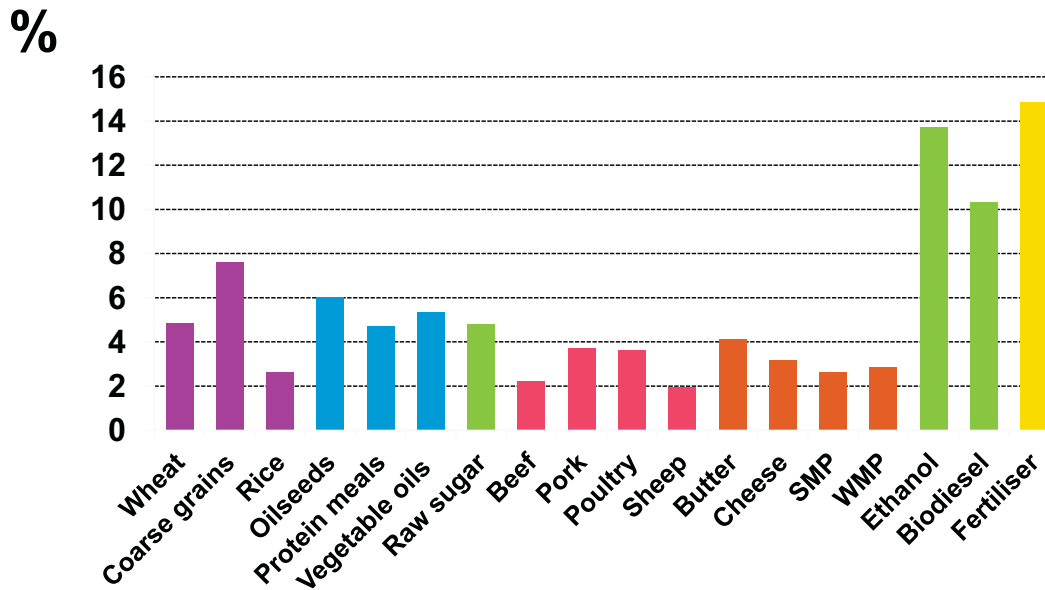
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# Volatility from crude oil prices

## Price impact of 25% increase in crude oil price



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# Volatility from GDP growth

## Price impact of 10% lower GDP growth in BRICs



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## **Measures to reduce price volatility**



- **Market information**
- **Futures markets**
- **Buffer stocks**
- **Domestic/trade policies**

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## **Measures to mitigate price volatility**



- **Safety nets**
- **Risk management**
- **Int'l policy coordination**

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## 4. Can supply keep up with demand?



- **Need 60% prod'n increase by 2050**
- **Little scope for area expansion**
- **Slowing rate of productivity growth**

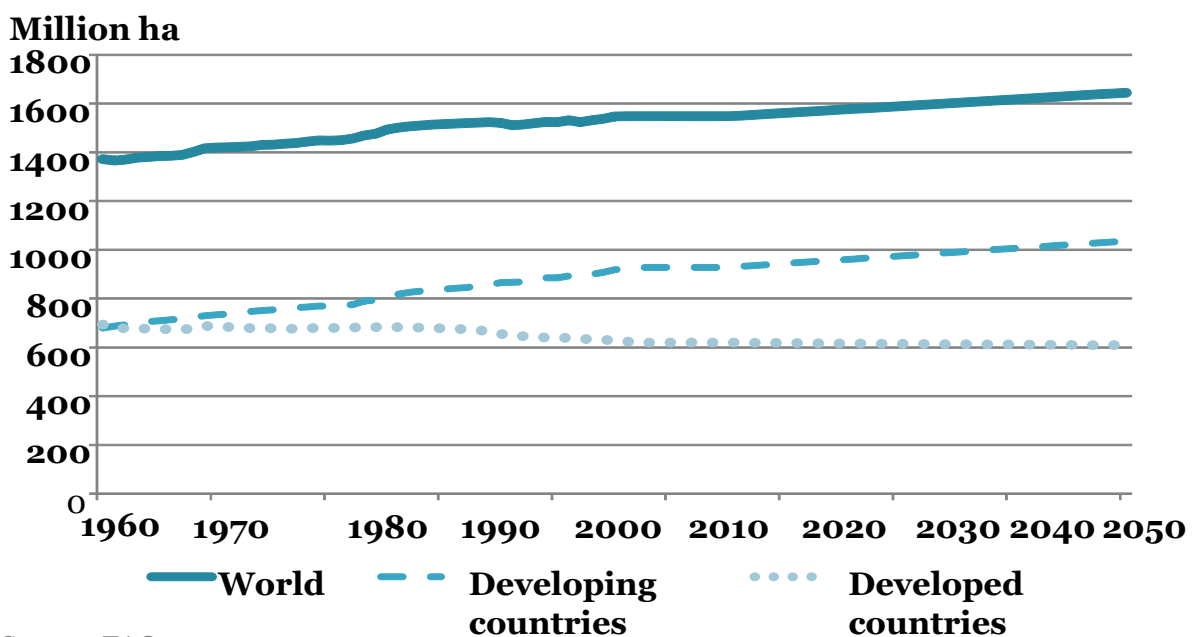
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## Arable land to increase only 5% by 2050

### Estimated/projected global arable land 1960 - 2050



Source: FAO

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## ***Past output increases from yield gains***

### **Average annual growth rates in world rice, wheat and maize production**

	<b>1992-2001</b>	<b>2002-2011</b>
<b>Production</b>	<b>0.9</b>	<b>2.5</b>
<b>Yield</b>	<b>1.4</b>	<b>1.9</b>
<b>Area</b>	<b>-0.5</b>	<b>0.7</b>

Source: OECD-FAO

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## ***Total factor productivity growth in agriculture has continued to rise***

### **Average annual growth rate by period**

<b>Period</b>	<b>Developed countries</b>	<b>Developing countries</b>
<b>1961-1970</b>	<b>0.99</b>	<b>0.69</b>
<b>1971-1980</b>	<b>1.64</b>	<b>0.93</b>
<b>1981-1990</b>	<b>1.36</b>	<b>1.12</b>
<b>1991-2000</b>	<b>2.33</b>	<b>2.22</b>
<b>2001-2009</b>	<b>2.44</b>	<b>2.21</b>

Source: Fuglie, 2012

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## **Constraints to productivity growth**



- **Rising input costs**
- **Land degradation**
- **Water shortages**
- **Environmental pressures**
- **Climate change**

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## **Potential exists to reduce yield gap**

### **Actual yields in 2000 as % of attainable yields**

<b>All Crops</b>	<b>Yield Gap (%)</b>
<b>North America</b>	<b>33</b>
<b>West /Central Europe</b>	<b>36</b>
<b>Eastern Europe/Russia</b>	<b>63</b>
<b>South America</b>	<b>52</b>
<b>South Asia (India)</b>	<b>55</b>
<b>Sub Saharan Africa</b>	<b>76</b>

Source: Fischer, Hitznyik, Prieler, Wiberg, 2010.

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## ***Yield gap reduction scenario***

### **20% cereal yield gap reduction in developing countries**



- **World cereal prod'n increases 5%**
- **World cereal prices fall 5-20%**
- **33% of additional grains goes to biofuel**

Source: OECD FAO Agricultural Outlook, 2012

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## ***What needs to be done?***



- **Better agronomic practices**
- **Create enabling environment**
- **Strengthen innovation system**
- **Reduction crop losses/food waste**

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## ***Closing thoughts on food security***

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- **Reducing extreme poverty is key**
- **Much food produced is lost/wasted**
- **Productivity and sustainability are linked**

### ***For governments***

***Invest in improving the productivity, profitability, sustainability and long-term competitiveness of the food & agriculture sector***



## ***For more information***

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- Contact us: **[tad.contact@oecd.org](mailto:tad.contact@oecd.org)**
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