QuaTerNes

‘The World Food Situation’

Ir. Jan Hak

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Vice President and Head ‘Emerging Markets’ Metropolitan Food Security

‘The Challenge of Africa’, V&A Waterfront, Cape Town, February 2013

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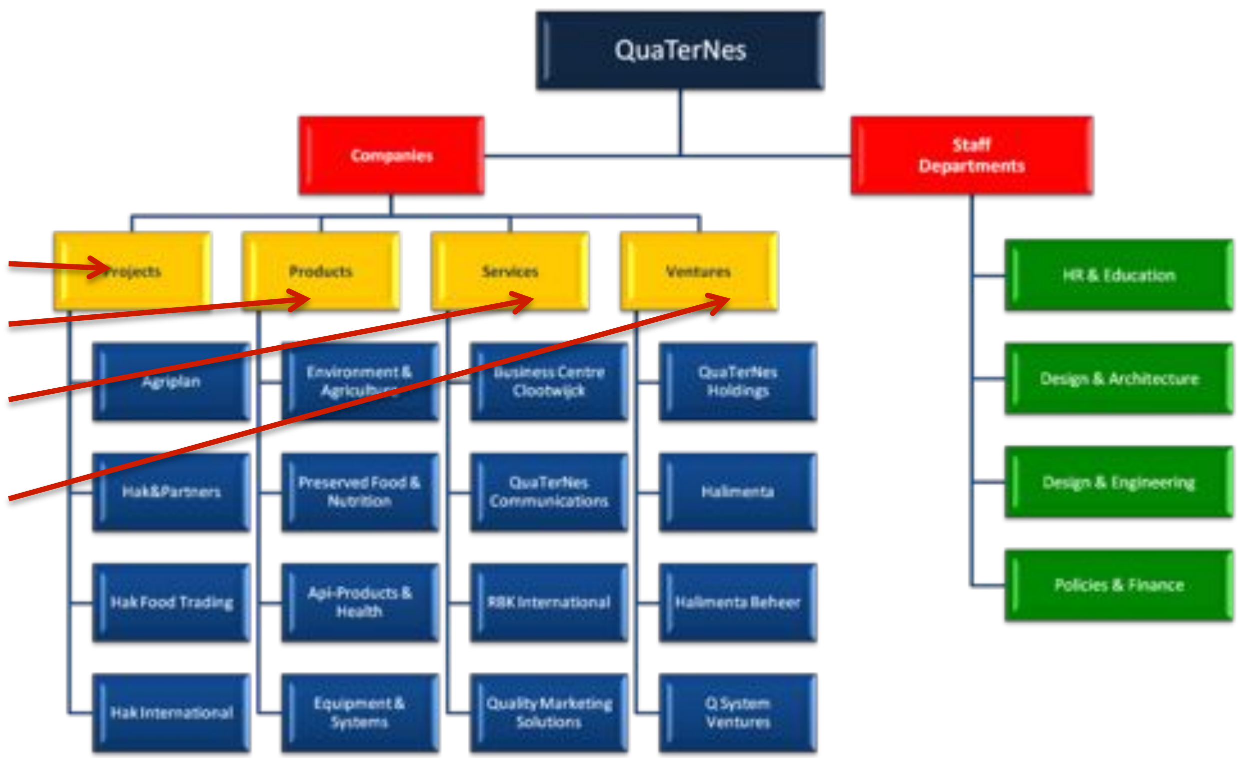
It's Great to be Allowed to Live Today !

Projects

Products

Services

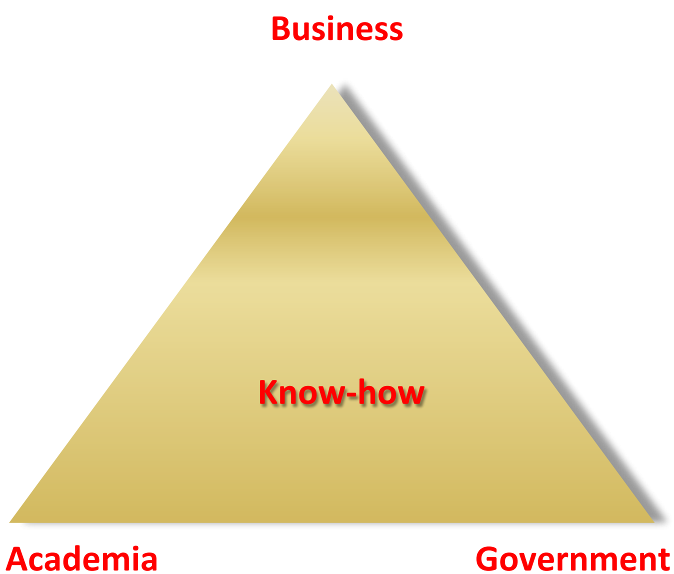
Ventures

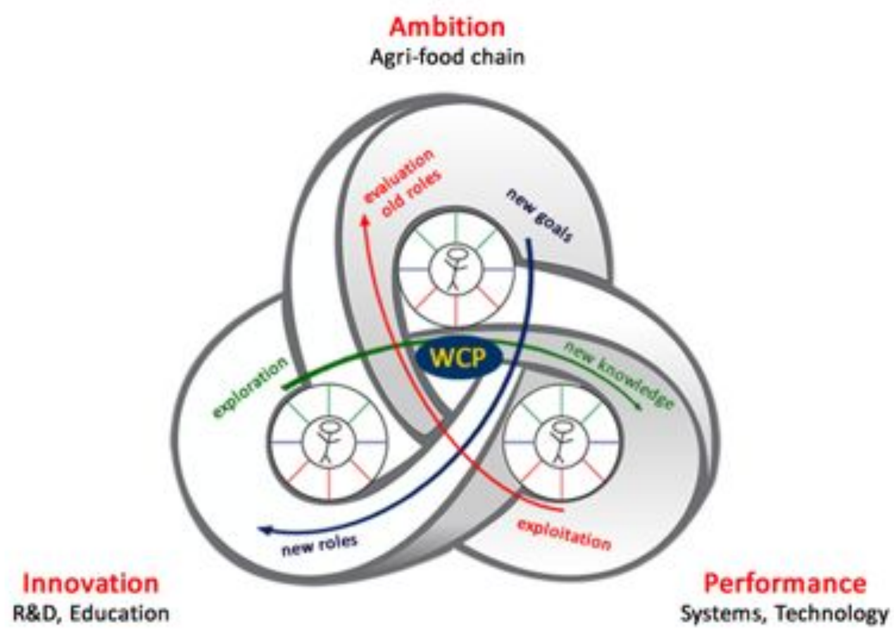


QuaTerNes
Mission

Supporting and facilitating sustainable developments,

Developing investments worldwide in agriculture and food.





QuaTerNes
Mission

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Realisation

- **Create sustainable entities with partners**
- **Support market oriented agri-food chains**
- **Improve values for stakeholders**
- **Partner in think-tanks and platforms:**
  - ✓ Agro-Food Systems Manufacturers (GMV – FME)
  - ✓ Metropolitan Food Security (MFS)
  - ✓ Netherlands Agro, Food & Technology Centre (NAFTC)

GMV

Metropolitan Food Security

NAFTC
Netherlands Agro, Food & Technology Centre

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GMV-FME, Dutch Association of manufacturers of food processing, packaging and bio-based systems

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GMV Facilitating Food

Facilitating Food

Fruits, vegetables, feed, meat, fish, dairy and bio-based products

Member of:

- **FPME** (Food Processing Machinery Europe)
- **Europama** (European Committee of the National Associations of Packaging Machinery Manufacturers)
- **Copama** (International Confederation of Packaging Machinery Associations)

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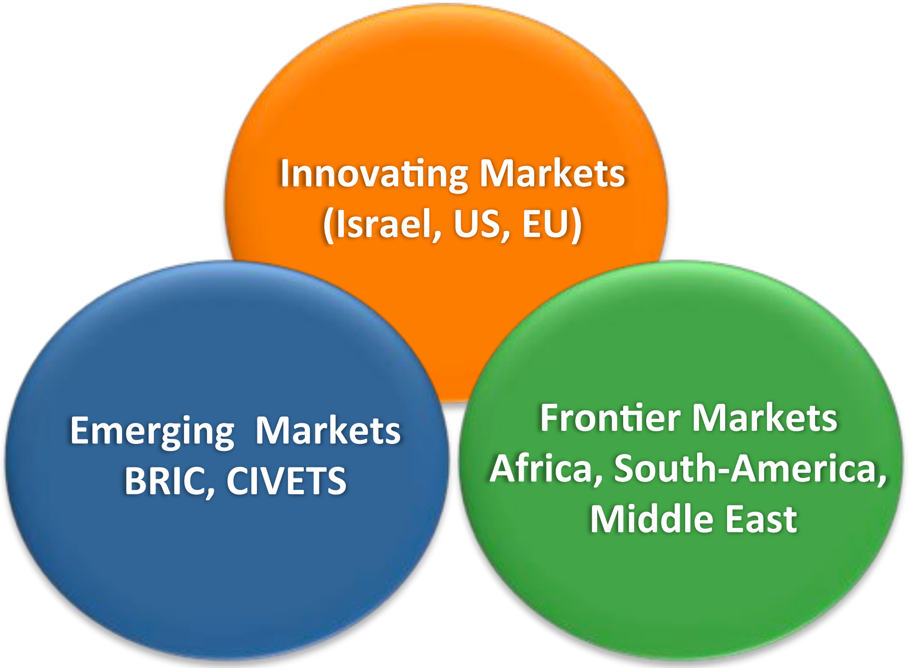
Twice as Much Food - Twice the Quality - Half the Resources !

International Organisation:

- Provision of input, know-how and network access also locally by counterparts:
- Industry, academia & education system, governments and thematic organisations

Three Working Groups:



THE WORLD FOOD SITUATION

Outline of Speech

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1. Situation Sketch & Will the world population be starving?
2. Trends & Position
3. Challenges & Solutions
4. Implications for Africa

1. Situation Sketch & Will the world population be starving?

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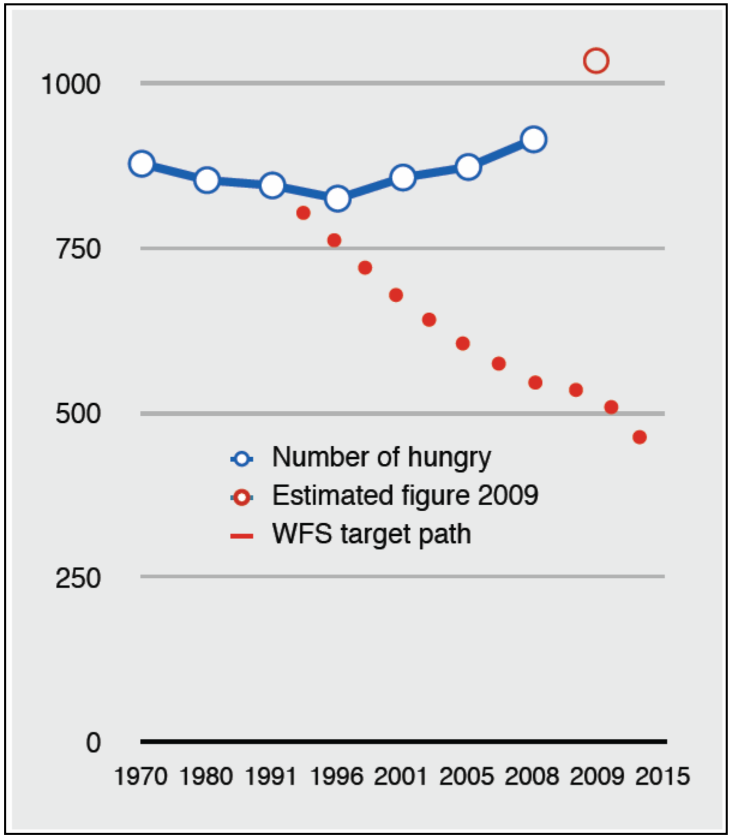
The world is not on track towards the global goal of hunger reduction.

The Millennium Development Goal:
‘Reducing half the share of hungry people in the developing world by 2015’
however still is within reach
with adequate measures.

source: FAO, 2009 and 2012

Number of hungry in millions



Year

1. Situation Sketch & Will the world population be starving?

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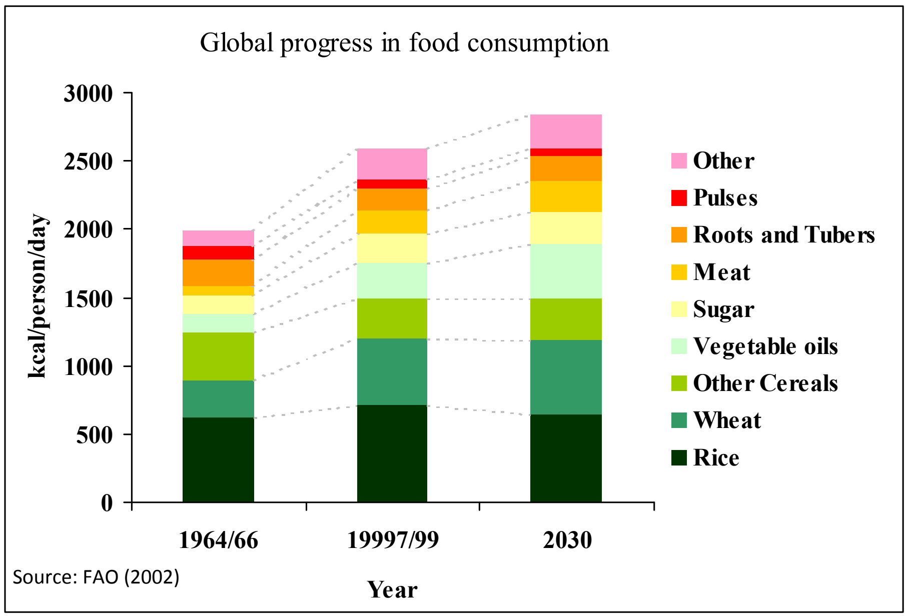
- 870 million undernourished people between 2010-2012: of which 852 million in developing countries.
- **Undernourishment in % of world population is on average declining**.
- In the world: from 18,6% to 12.5% (in developing countries: from 23.3% to 14.9%) in the past two decades.
- **Undernourishment in Africa:** as % of population overall reduced in last two decades but is rising in numbers: from 175 to 239 million of which 20 million in past four years. (2008-2012), Hunger mostly in non functioning states.
- A well fed world population (in general).
- Almost 3,000 Kcal per person (and 30% of food is wasted).
- Well functioning value chain (in general).
- More healthy and diverse foods available than ever.

Source '% Undernourishment': FAO, 2012

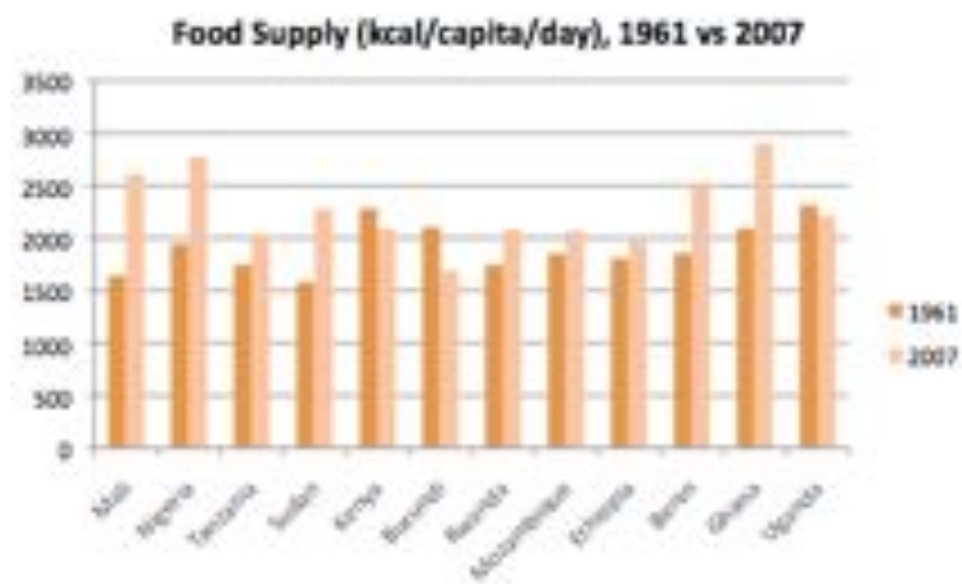
1. Situation Sketch & Will the world population be starving?

Increased Food Supply

On average in the world: almost 3.000 Kcal/person/day
African countries lagging behind



Source: FAO (2002)



1. Situation Sketch &
Will the world population be starving?
Investment Gap

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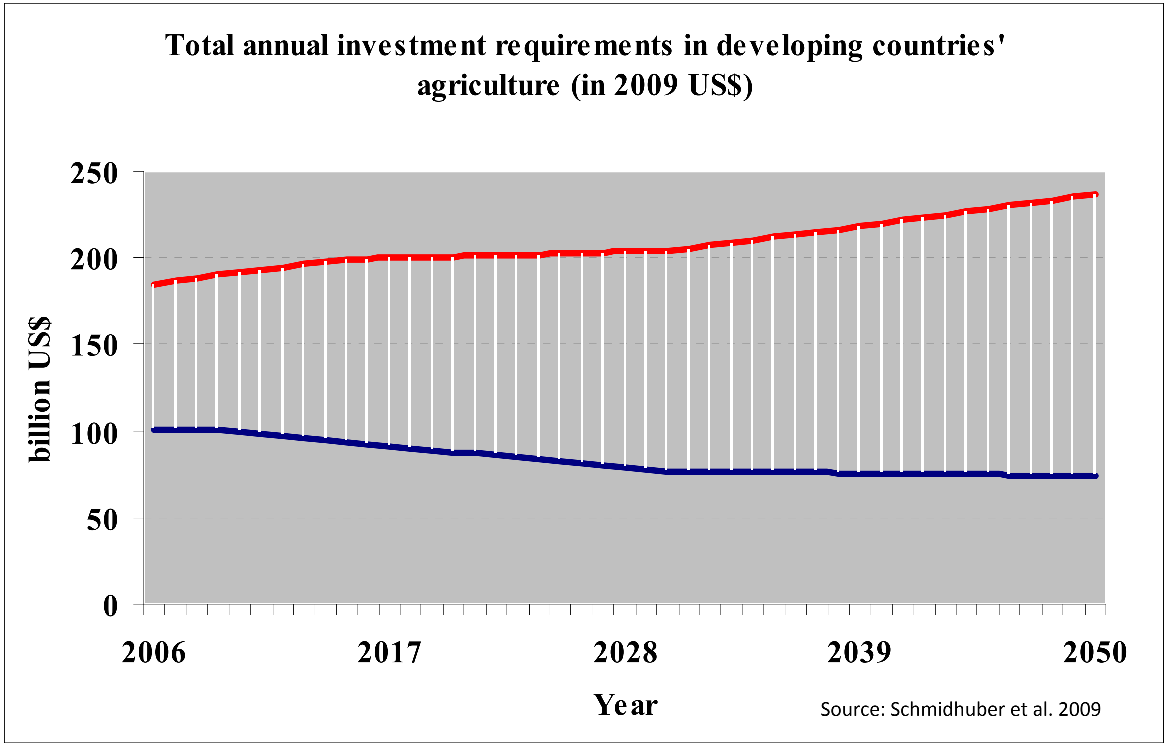
Total annual investment requirements in developing countries' agriculture (in 2009 USD)



Red: required annual gross investment, **Blue: current investment**

1. Situation Sketch &
Will the world population be starving?
Commodity Crops

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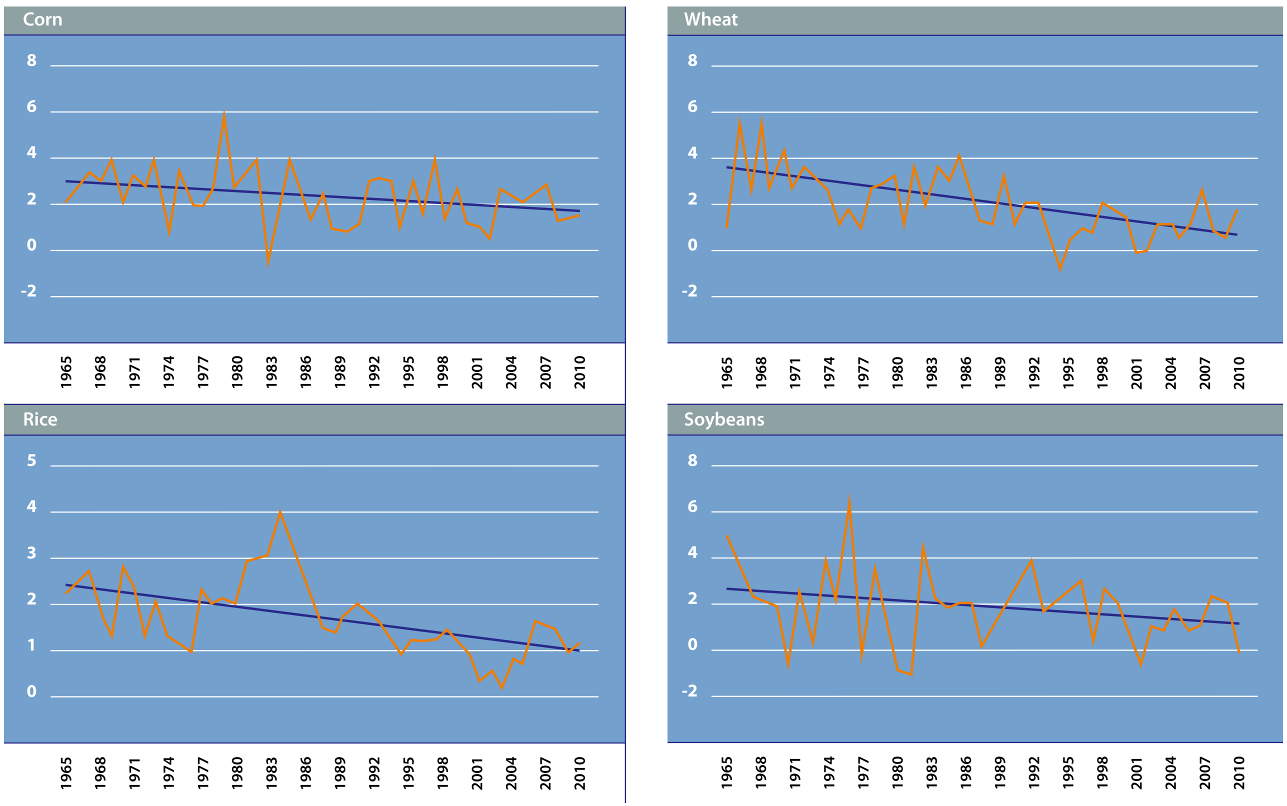
Yields of many crops have slowed down in the past decade

Corn

Wheat

Rice

Soy beans



World crop yields, selected crops, five-year moving average of YoY change, 1965 - 2010

Source: USDA (2011), in: 'Framework for an Inclusive Food Strategy', Rabobank (2012)

1. Situation Sketch & Will the world population be starving?

Well functioning value chain (in general)

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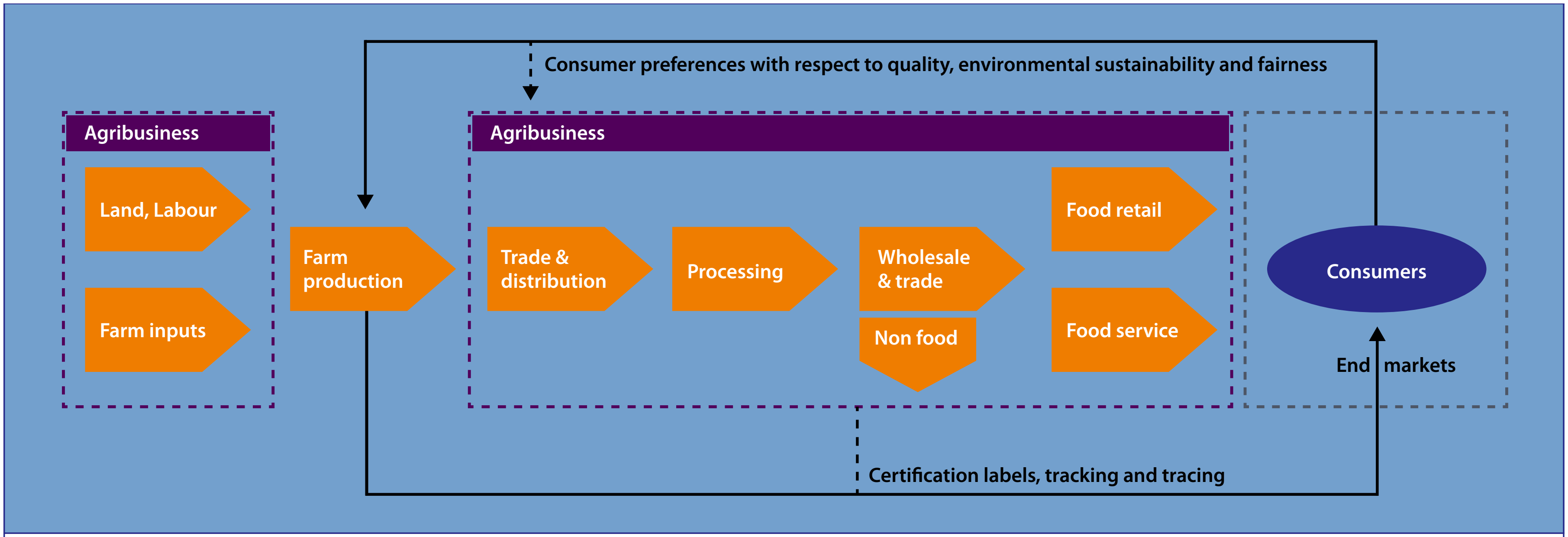
A comprehensive value chain approach in food markets



Source: Rabobank/ERD (2012)

1. Situation Sketch &
Will the world population be starving?
Food losses

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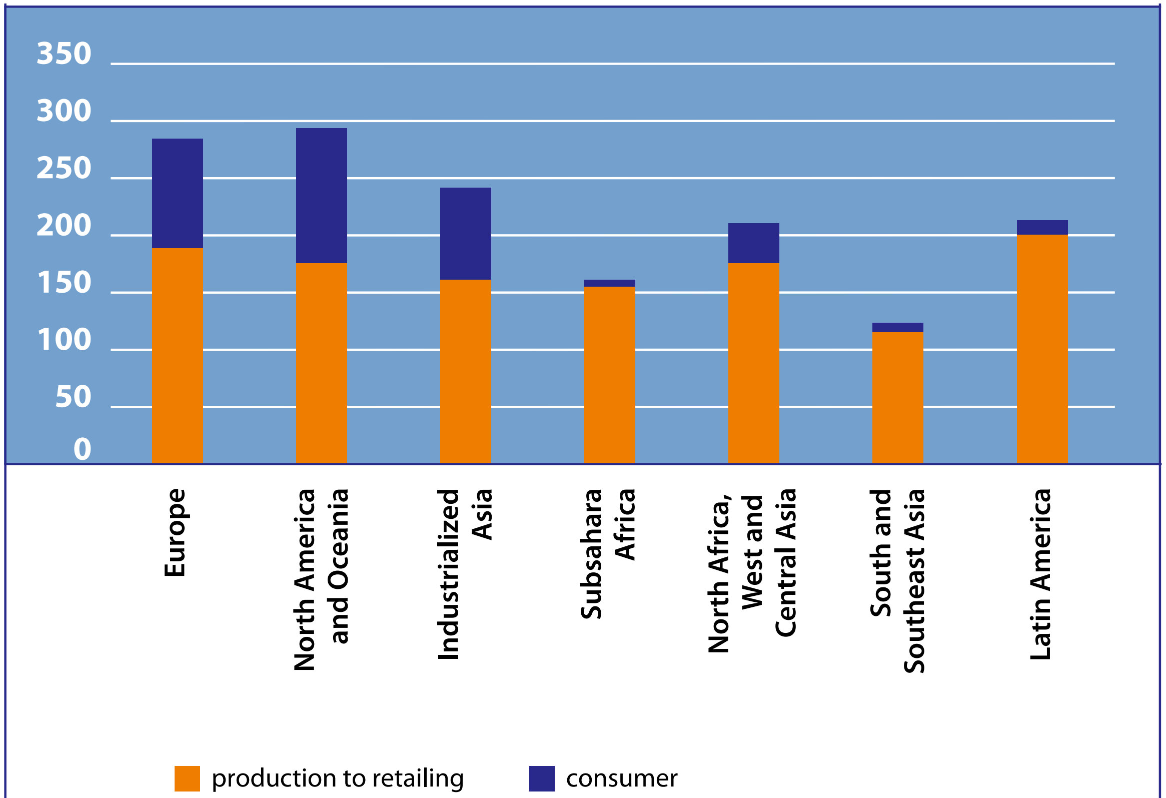
Per capita food losses and waste in different regions



Source: FAO (2011)

1. Situation Sketch & Will the world population be starving?

Employment

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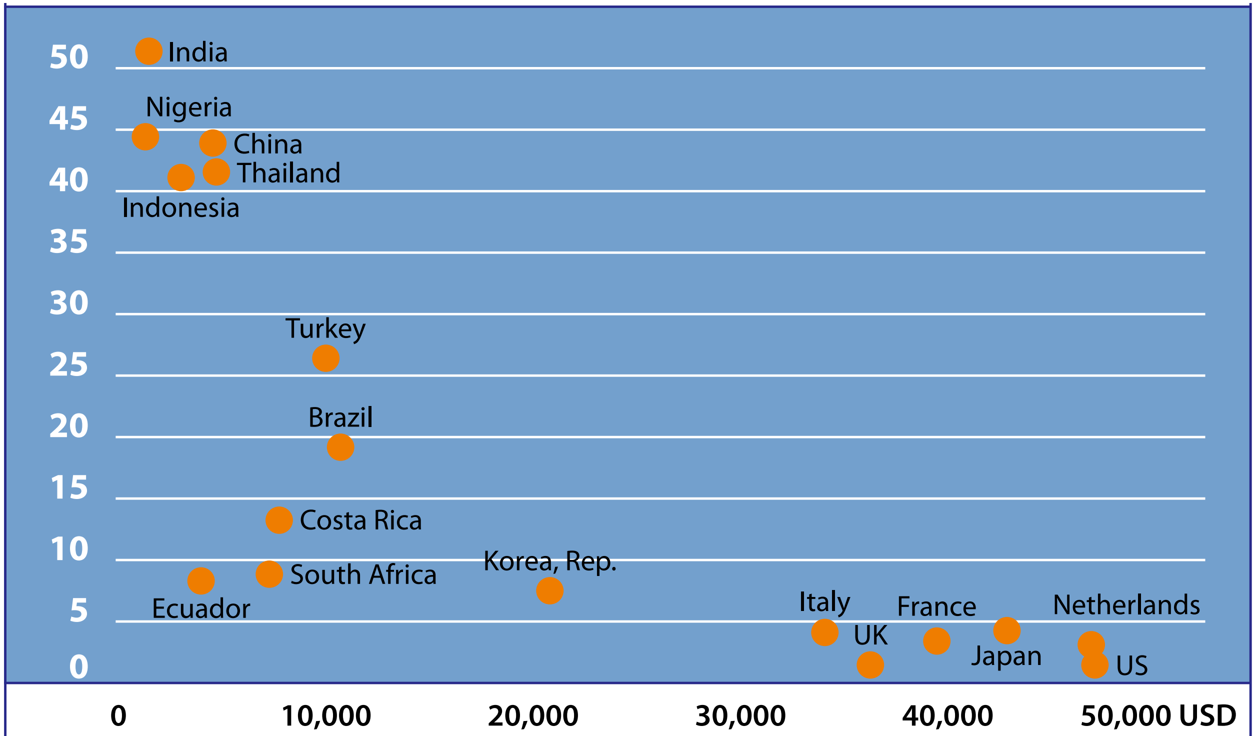
Employment (2007) in agriculture (% of total employment) (y-axis) and **GDP per capita** (x-axis); average 2007-2010



Source: World Development Indicators, World Bank (2012)

1. Situation Sketch & Will the world population be starving?

Urbanization

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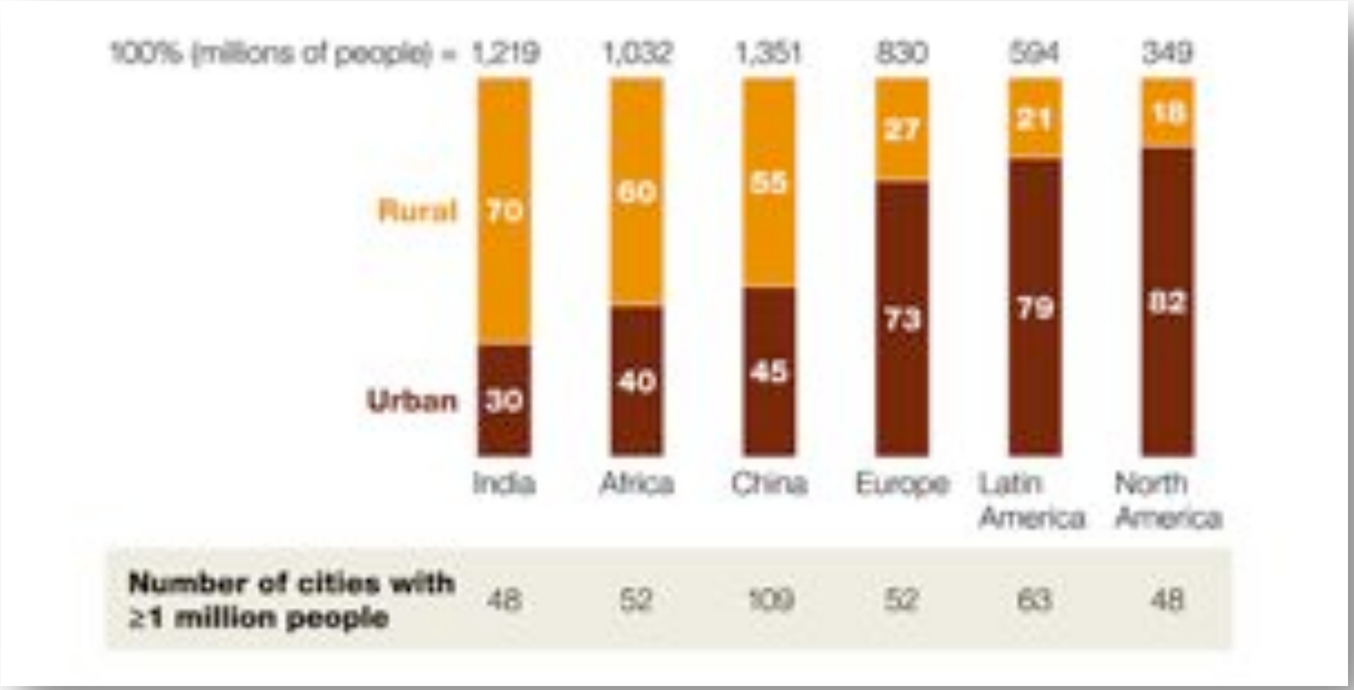
Share of population by region, %



Source: United Nations; McKinsey Global Institute analysis (2010)

1. Situation Sketch & Will the world population be starving?

Farmers Position

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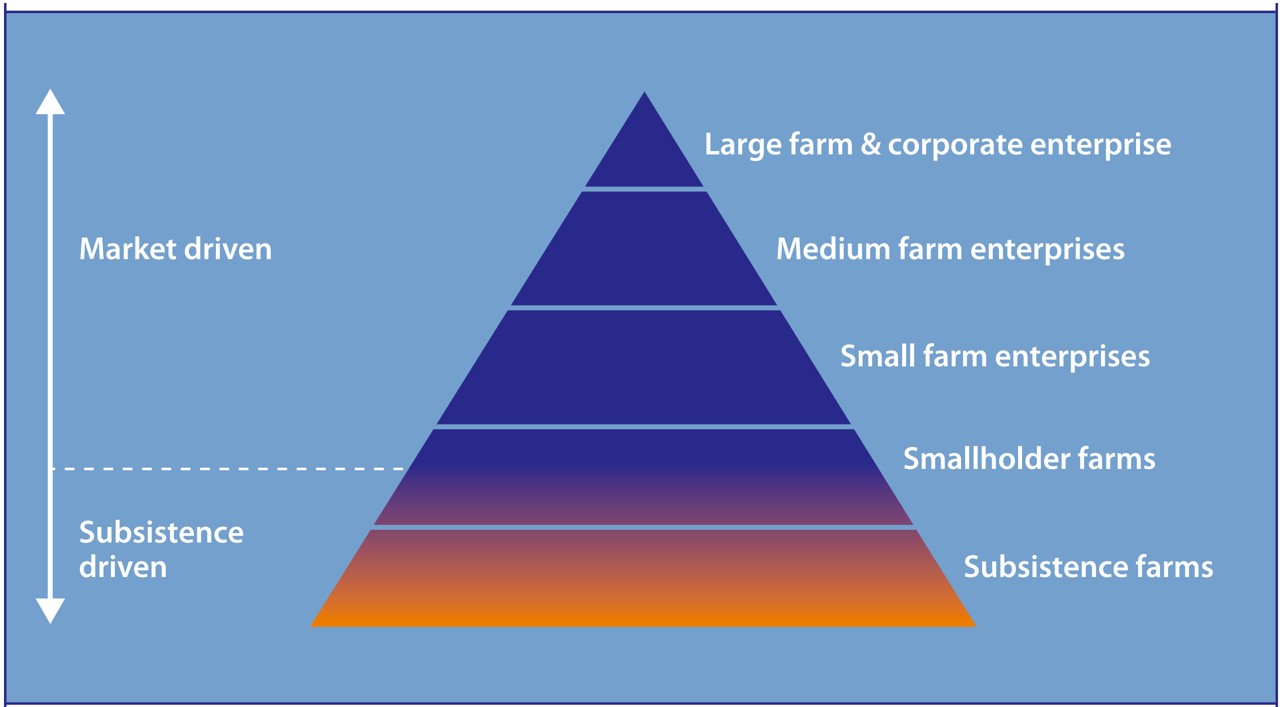
Farm production pyramid



Source: Rabobank Economic Research Department (2011)

1. Situation Sketch & Will the world population be starving?

Farmers Situation

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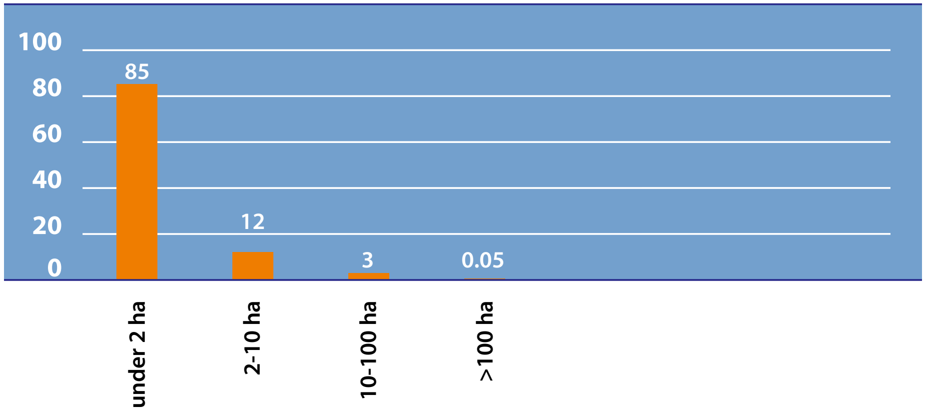
- Smallholders disappearing
- From Subsistence to Business
- Women, (elderly)

Needed:

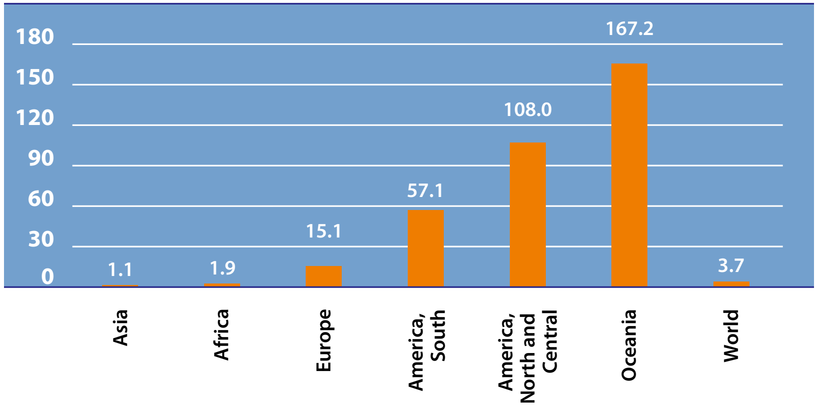
Education, financing, technology and.. young enterpreneurs!

Worldwide percentages of farm holdings measures by size (in %)



Source: FAO, 2000 census

Average farm size by region (in hectares)



Source: 2000 World Census of Agriculture - FAO[8]

2. Trends

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1. More people, Less land
2. Water, Ecology & Weather
3. Urbanization
4. Shift in food power and pressure (to South and East)
5. Key Players & Today's farmer
6. Consumer preferences, Technology and digitalization,

   Quality standards more important

2. Trends

More people, Less land

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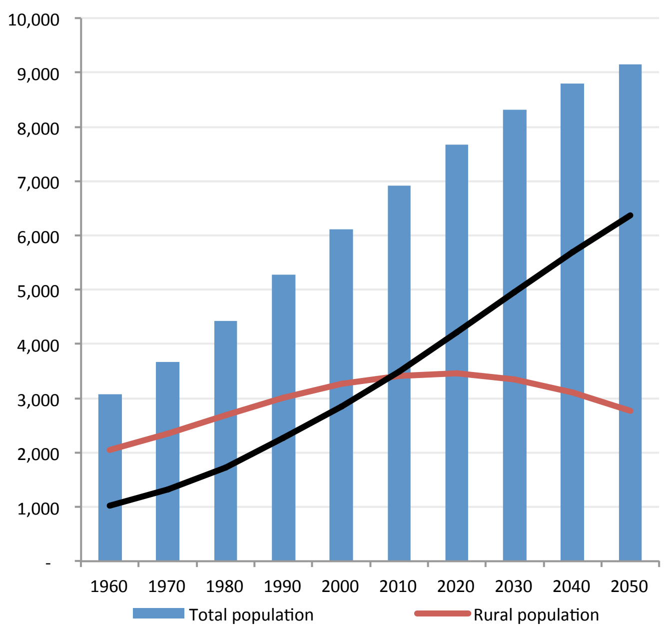
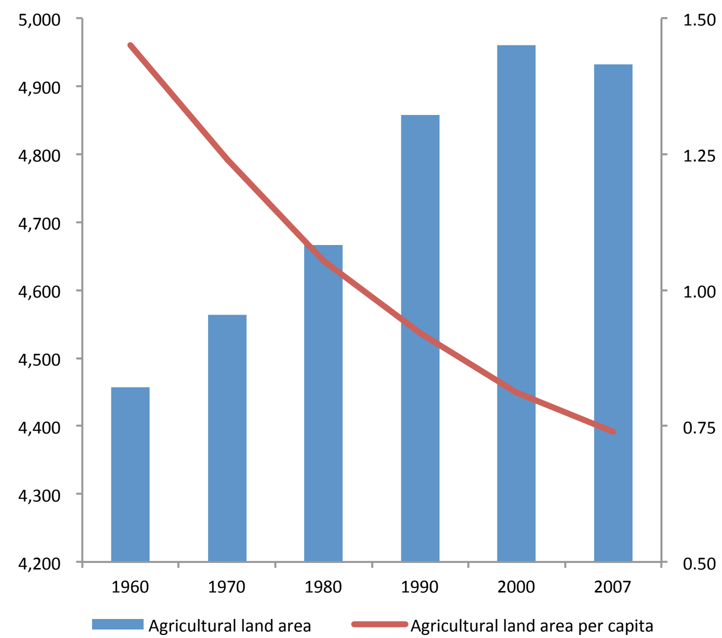
Global population (in millions)



Agricultural land (1,000 ha)



90% of population growth will occur in Sub-Saharan Africa (one billion or 49%) and Asia (900 million or 41%)

Source: FAO Stat, 'Framework for an Inclusive Food Strategy', Rabobank (2012)

2. Trends

Water, Ecology & Weather

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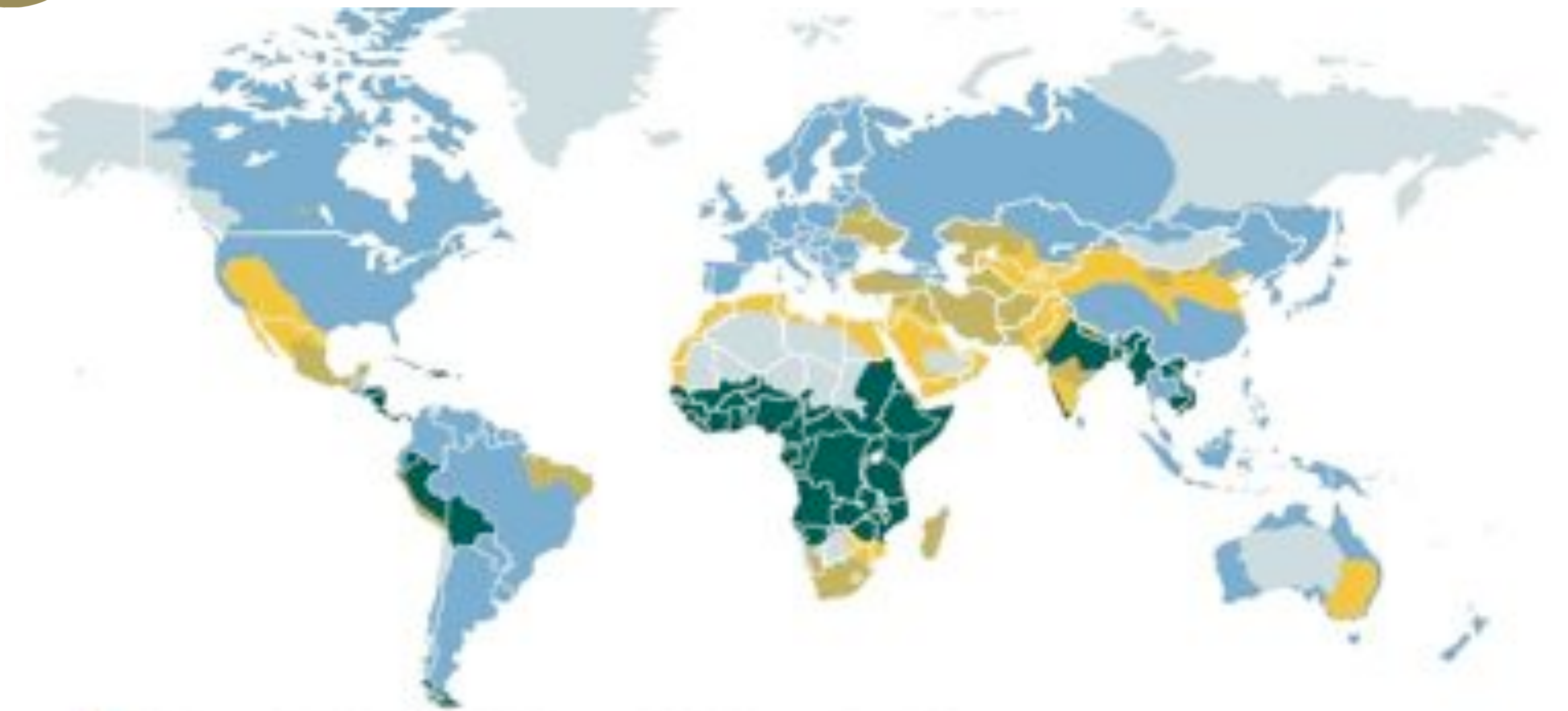

- Sufficient water available. (Temporary drought can occur)
- Water scarcity expected in the future (More than 60% of available water is being used)
- Physical water scarcity. (More is used than responsible. Future water supply in danger.)
- Economic water scarcity. (Sufficient water available, but men and means lack to make maximum use of it)
- No data known.

Source: "Hightech Agrosystems", ABN AMRO (2012)

2. Trends

Water, Ecology & Weather

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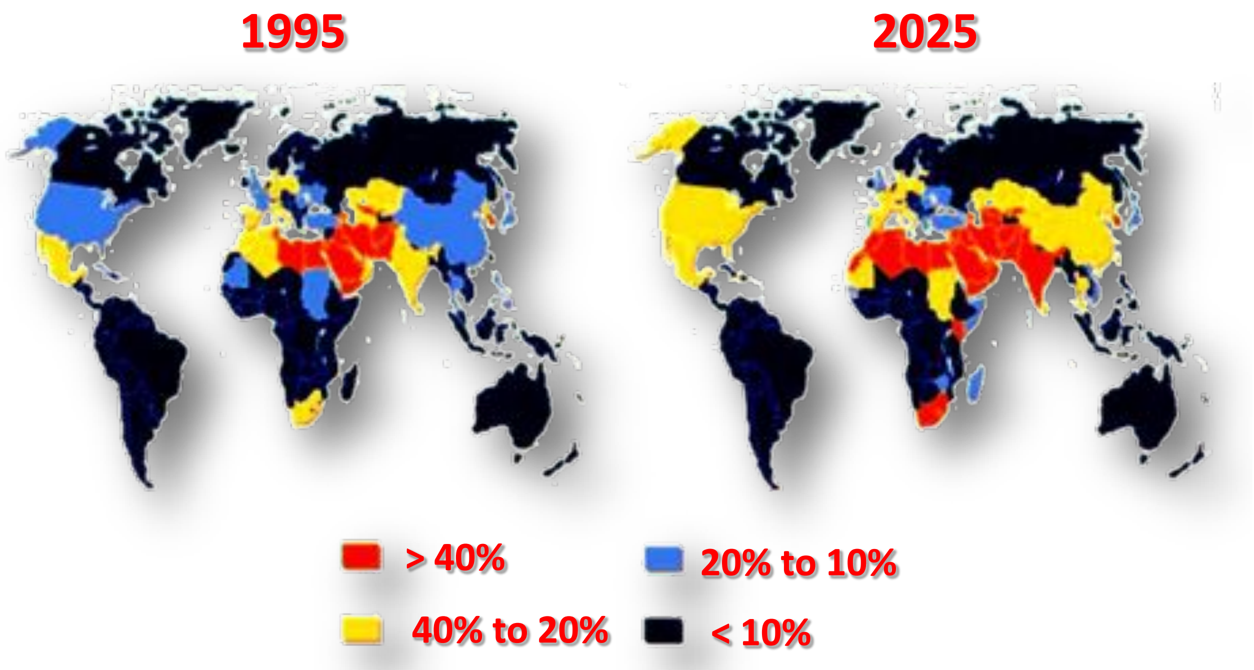
Fresh water Stress (withdrawal as a % of total)



(Source: WMO, 1996; GEO, 2000; UNEP, 1999)

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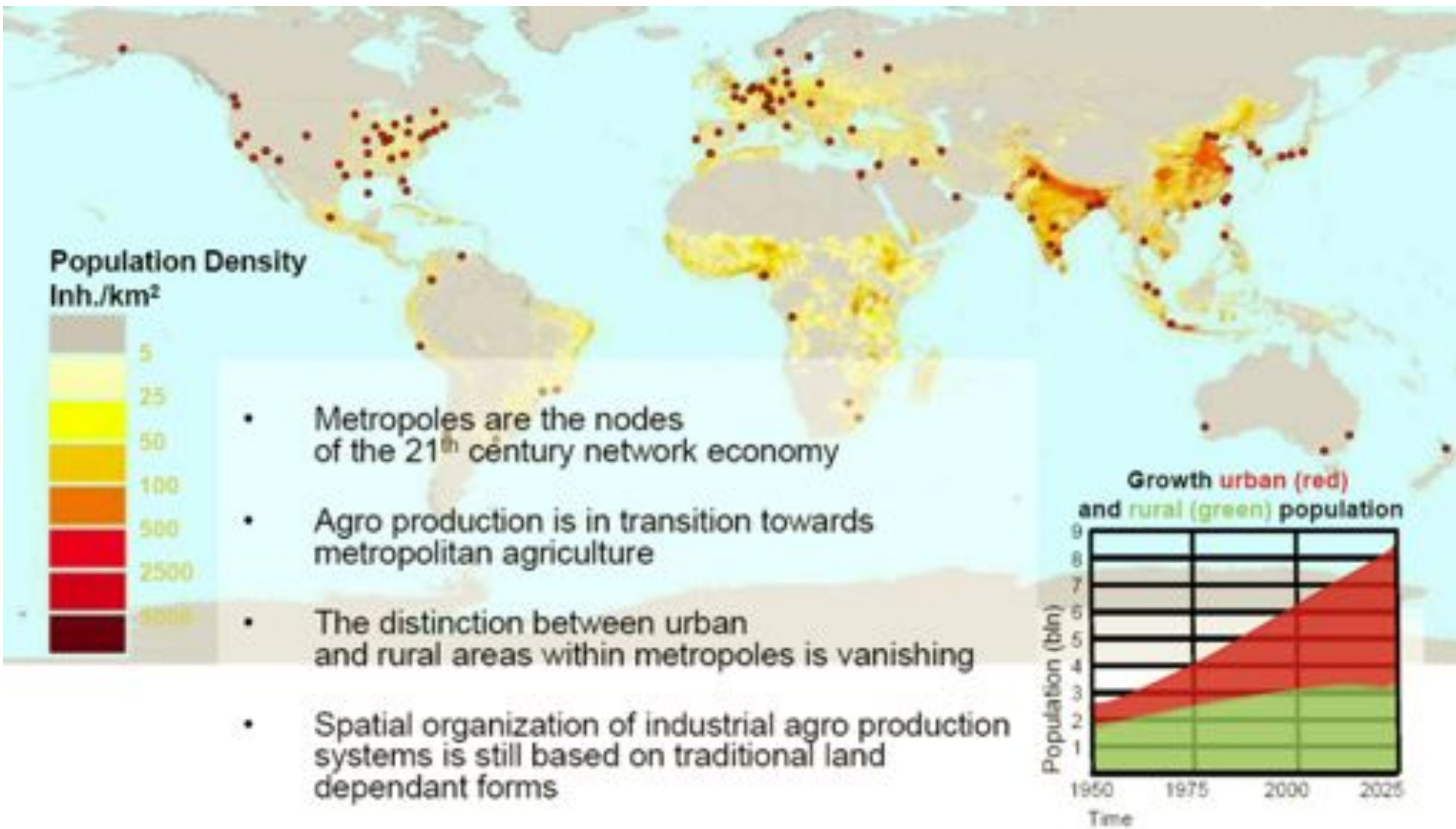
2. Trends

The World is Urbanizing



- Metropoles are the nodes of the 21th century network economy
- Agro production is in transition towards metropolitan agriculture
- The distinction between urban and rural areas within metropoles is vanishing
- Spatial organization of industrial agro production systems is still based on traditional land dependant forms

2. Trends

The World is Urbanizing

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Urbanization level (%) in Africa

White: no data available

Source: ASC Leiden (Africa 2012 – African Studies Centre))

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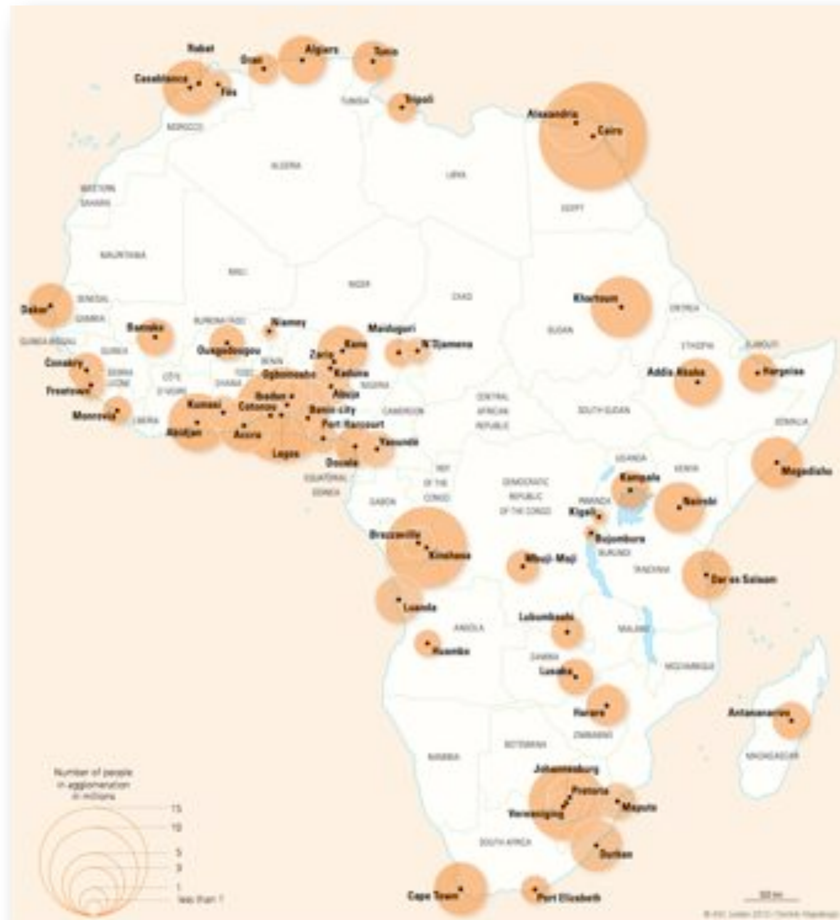
2. Trends

The World is Urbanizing

Africa

From a Continent of States

to a Continent of Cities



Source: ASC Leiden (Africa 2012 – African Studies Centre))

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Consumer Preferences

Preference for convenience, clean and healthy food

Is healthy food.. Good for food security?

- **Shifting demand**
- **Diversification**
- **Function of Food**
- **Trends in (EU) Society**

2. Trends

Consumer Preferences > Shift in consumption

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Urban population has more purchasing power

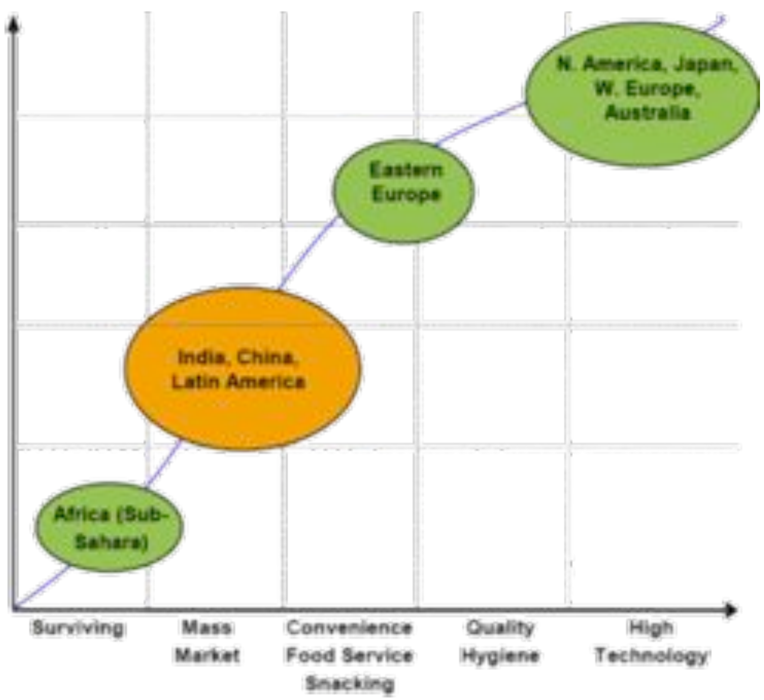
Diet/Functional/ Organic Foods

Convenience foods

Snacks/Prepared meals

Dairy, meat, fish, fresh fruit juices, beverages

Carbohydrate staples



Increasing consumption of processed food

Increasing consumer concern towards safe, healthy and quality food

Transparency in food chain "from farm gate to food plate"

2. Trends

Consumer Preferences > Diversification

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Diversification of demand in Metropoles:

From food to fashion to pharmaceuticals

Pharmaceuticals

Functional foods, Pharmaceuticals

Fashion

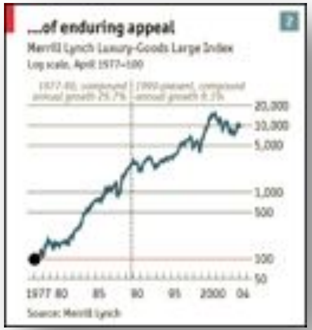
Flowers, Flavors, Fragrances

Food

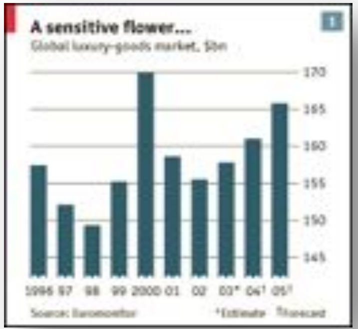
Fodder, Food Crops, Vegetables, Fruits

Energy

Fuel, Fibers



A 100-fold increase between 1977 and 2005



World spending on luxury goods in 2005: US% 165 bln

Function of Food

- **WHAT** — Calories → "experience" → nutrition & health, variety
  More Protein
- **WHEN** — Regular → grazing and snacking
- **WHERE** — In-home → out-of-home
- **WITH WHOM** — Social → individual
- **HOW PREPARED** — From scratch → ready-to-eat, heat and eat



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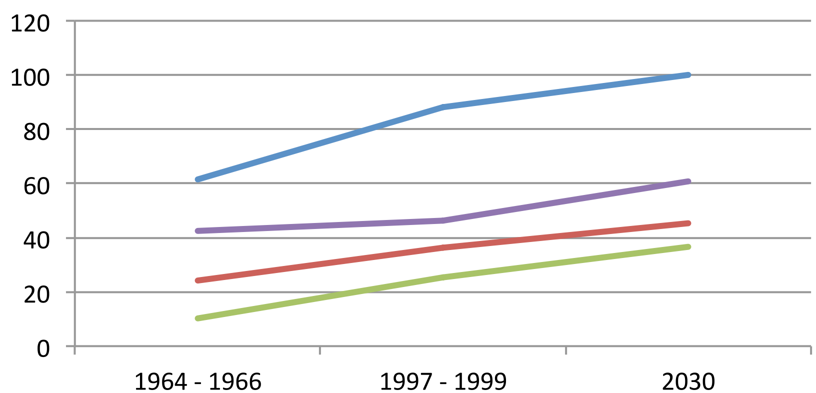
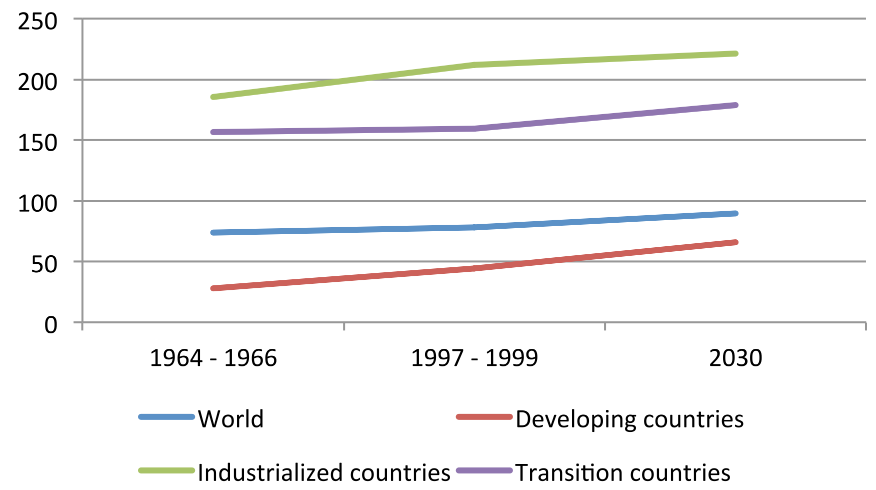
Changing Consumption

Per capita meat consumption (kg/year)



Source: World Health Organization

Per capita milk consumption (kg/year)



2. Trends

Consumer Preferences > Shift in consumption

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Urban population has more purchasing power

Per capita meat consumption is set to rise from 37 kg to approx. 52 kg in 2050. More grain and water are needed to produce meat.

Example

2 to 4 kg of grain and 3.900 liter of clean water produce 1 kg of poulty

7 to 10 kg of grain and 15.500 liter of clean water produce 1 kg of beef.

Source: FAO, 2009 in: 'Framework for an Inclusive Food Strategy', Rabobank (2012)

2. Trends
Consumer Preferences

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Trends in European society

(According to Wim Lageweg, MVO -2011)

Needing social cohesion (and safety)

- Especially older generation
- In more individualistic world

Increasing suspicion (decreasing authority)

- Especially young generation
- Towards: institutions, banks, large corporations

2. Trends

Consumer Preferences

Needing "Roots and Wings" (and origin)

- Especially cultural ''creatives'', self determination
- Regional identify, interest in origin and process

Stressing sustainability

- Especially awareness of scarcity

Increasing transparency

- Especially sharing knowledge
- Pressure on media, social media

3. Challenges & Solutions

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Key Areas

- Water, genetics and primary sector development ("2x more, with 2x less")
- Hi-tech systems, remote sensing - crop management
- Post harvest handling, processing and logistics
- Integrated solutions for food security in rapidly growing urban areas

3. Challenges & Solutions

Managing perceptions

Challenge of healthy and nutritious food trends

Managing perceptions and priorities:

- Organic farming still has lower yields than traditional farming and puts higher pressure on the environment (organic manure needs cows and meadows).
- Chicken produced in *environmentally* friendly ways are not seldom mass produced.

3. Challenges & Solutions

Solution Directions

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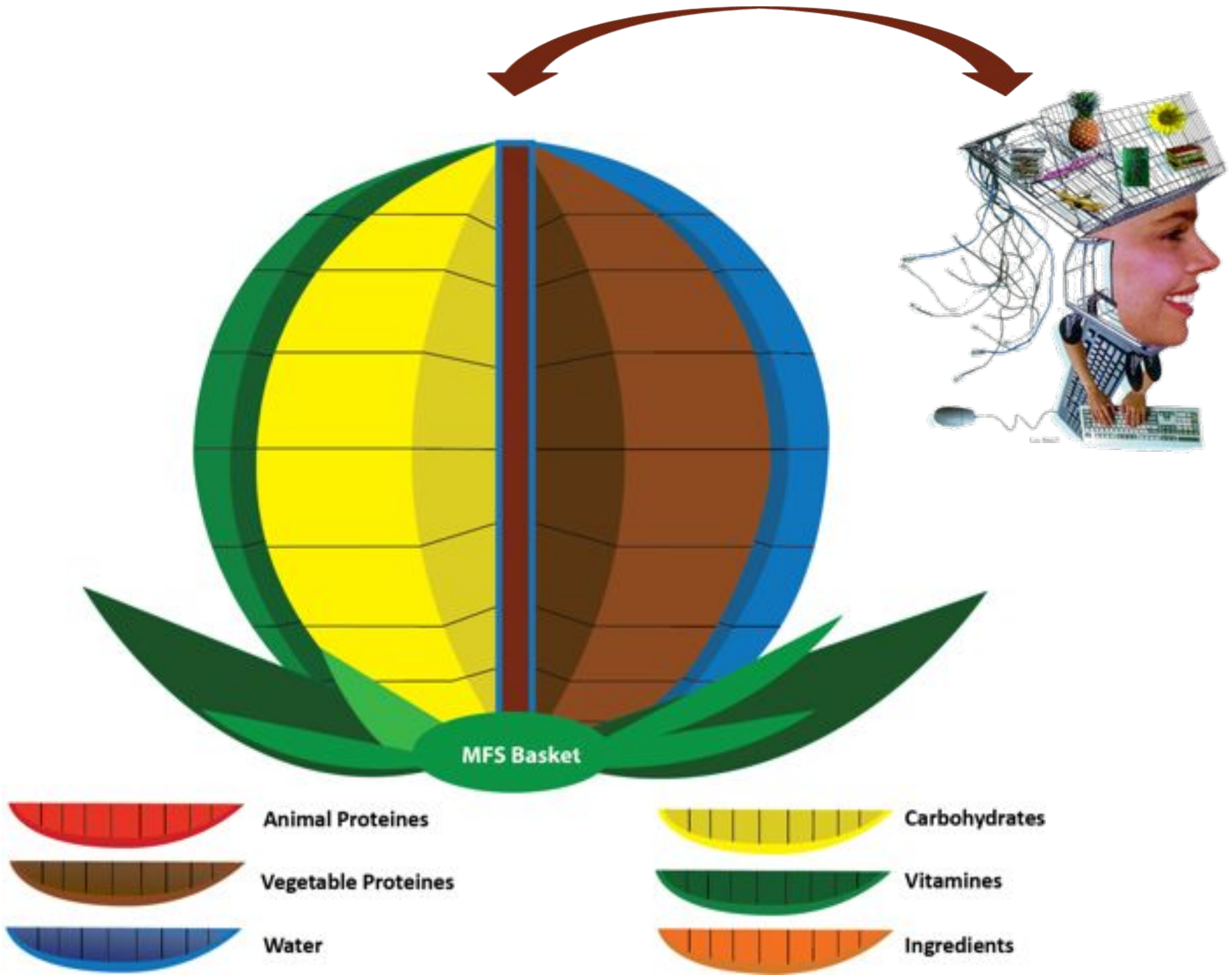
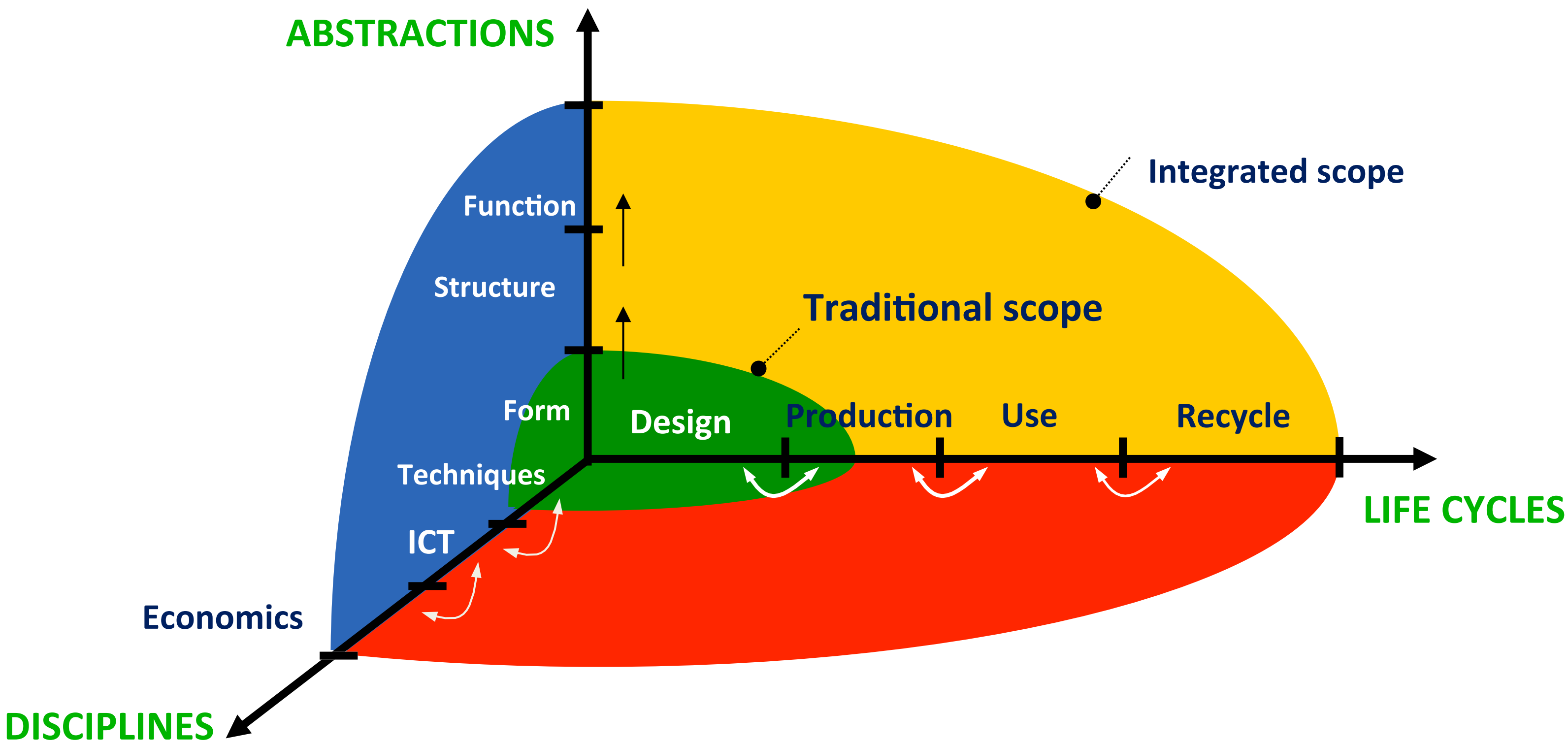
- Increase yields
- (Integrated) Supply chain approach
- Improve Market functioning
  - Market chain and Operations/Packaging
- Technology (adapt mechanization for women and elderly)
- Centers of Excellence
- Private sector leading > farmers, food chain

3. Challenges & Solutions

Solution Directions > Supply Chain Approach



Integrated Approach of product and process development



3. Challenges & Solutions

Solution Directions

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Market/Chain

Pressure

- Purchasing power of Retailers and Food Service
- Very short lead times
- High service levels
- 7 day supply
- Quality / food standards
- Competition

Requirements

- Increased use of EDI
- Support wide range of products
- Shorter shelf life products
- Reduction in additives
- Bio & Green and Emotion
- Product traceability

Operations/Packaging

Pressure

- Integrated systems structure
- Variable batch sizes
- Effluent / waste reduction
- Lowest cost production
- Just in time operation

Requirements

- Forecasts of requirements
- Reduced dependency on people
- Plant flexibility
- High speed changeovers
- Scheduling production and maintenance
- Product recovery systems
- Detailed records of operations

3. Challenges & Solutions

Solution Directions > Cooperation

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Strength – Weakness Matrix

Flow / Know-how	Input	Production	Processing	Logistics	Trade	Consumer
Hardware	SA NL	SA NL	SA NL	SA NL	SA NL	SA NL
Software	SA NL	SA NL	SA NL	SA NL	SA NL	SA NL
Org. ware	SA NL	SA NL	SA NL	SA NL	SA NL	SA NL

SA = South Africa (Partner Country)/ NL = Netherlands

3. Challenges & Solutions

Solution Directions

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Hardware	Orgware	Software
Contextual relationships	Implementation and operation	Knowledge management
Infrastructure	Business planning	R&D
Centers of Excellence	Investment in infrastructure	Team development
Trade facilities	Types of consortia	Management of emotions
Production facilities	**Stakeholders network**	Communicatie
Processing facilities	External relations	Marketing
Industrial ecology	Policy and Politics	Branding
Energy management	Procedures and protocols	Quality management
Landscape and nature	Licences and approval	HRM
Routing	Supply chain management	Education
Design	Project management	**Capacity building**
What can be held	**What can be organised**	**What can be thought and felt**

4. Implications for Southern Africa

- Metropolitan Food Security (MFS) & Centers of Excellence
- Manage resources (water, infrastructure etc.)
- Increase yields (genetics, agricultural practices, distribution, technology)
- Invest in smallholders, producers (farmers: training, access to finance, pride)
- Private sector
- International cooperation




4. Implications for Southern Africa

Centers of Excellence

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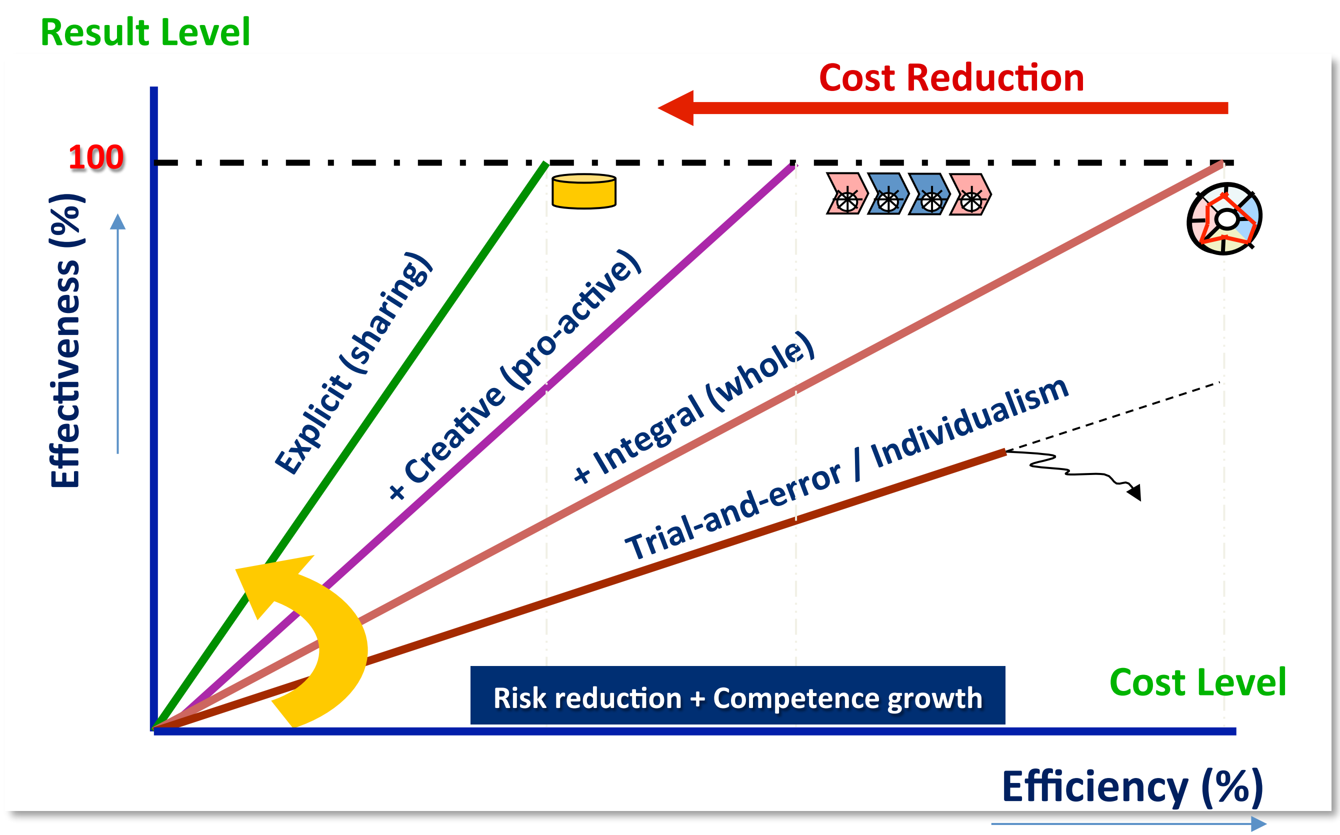
Metropolitan Food Security

Centers of Excellence

Entrepreneurship:	Key to development and food security
Own experience:	Learning, building a sustainable knowledge base
Lead:	Private sector
Trust:	Power of Entrepreneurs
Concern:	Impact on small holders

4. Implications for Southern Africa

Result Orientation



4. Implications for Southern Africa

International Cooperation

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International cooperation through
'NAFTC – Southern Africa' with The Netherlands:

Food Valley
World Leading Food Companies

Turnover 2011: EUR 70 billion in agri-food products;
Staff 2011: 10% of labour force is dedicated to the Agro & Food Section
(2nd Largest world exporter)

High-Tech in Agriculture, Food, Horticulture and Water'
World Leading Technology Companies

Turn-over 2012: EUR 13 billion in high tech systems, 42% outside the EU
(80% poultry, 70% cheese and > 50% potato processing systems)

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Strategy to Success - 7 P's:

1. **P**eople
2. **P**rofessionals
3. **P**lan
4. **P**ro-active
5. **P**erformance
6. **P**lanet
7. **P**rosperity

Thank you !

More information:

www.quaternes.nl | www.metropolitanfoodsecurity.nl | www.gmv-fme.nl
example: www.naftc-india.com | www.nabc.nl | www.sanec.org