



# World food security Challenges for Namibia

**A perspective from Dutch trade and agro-food cluster**

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Vice president platform MFS**



# QuaTerNes

Focus on Development

- **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)
  - ✓ Netherlands Agro, Food & Technology Centres (NAFTC)
  - ✓ Metropolitan Food Security (MFS)



## Summary

“We cannot solve our problems with the same thinking we used when we created them”

Albert Einstein



# Metropolitan Food Security

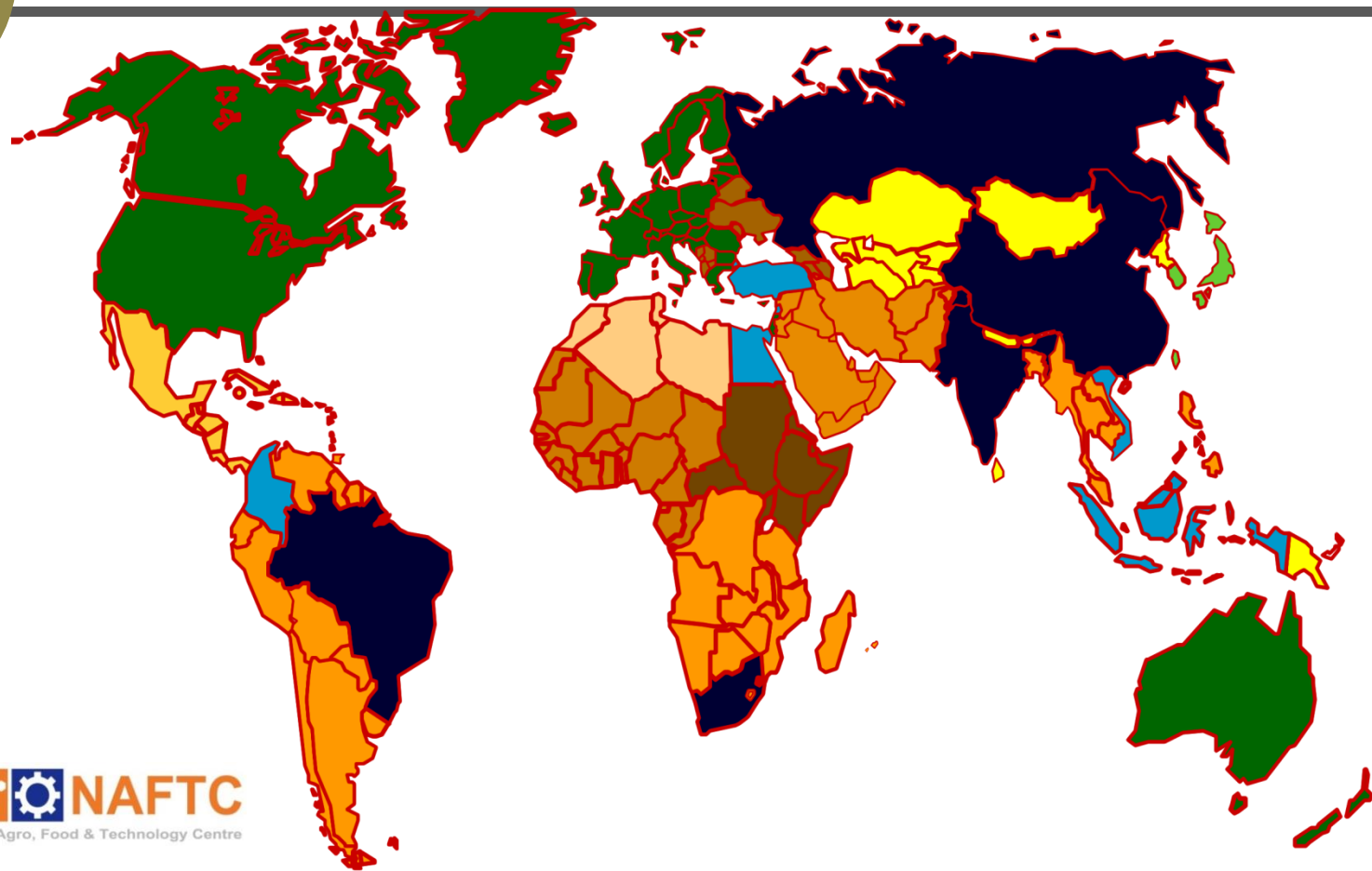
**Twice as Much Food • Twice the Quality • Half the Resources !**

- Provision of input, know-how and network access locally
- Industries, Academia & Education systems, Governments and Thematic organizations





# NAFTC: Netherlands Agro, Food & Technology Centers



- Emerging:** Brazil, Russia, India, China, Southern Africa
- Frontier:** Africa, South East Asia, Mid & South America, Middle East
- Innovation:** Western Europe, USA/Canada, Israel



# NAFTC

## Dutch Expert Centers

- Potatoes
- Fruits Vegetables
- Horticulture
- Liquid Foods
- Dairy
- Animal Protein
- Bakery
- Confectionery
- Packaging
- Biobased Systems
- Cold chain & Logistics



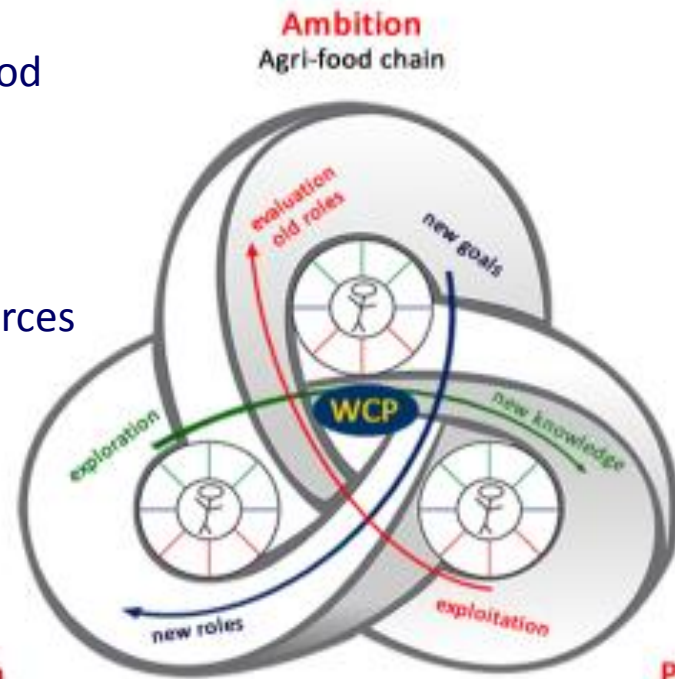


# NAFTC

## Ambitions

- Economic and efficient production of sufficient, safe and nutritious food
- Meet cultural and social (food) demands of society
- Sustain and enhance natural resources
- Maintain viable farming enterprises and contribute to sustainable communities

**Innovation**  
R&D, Education



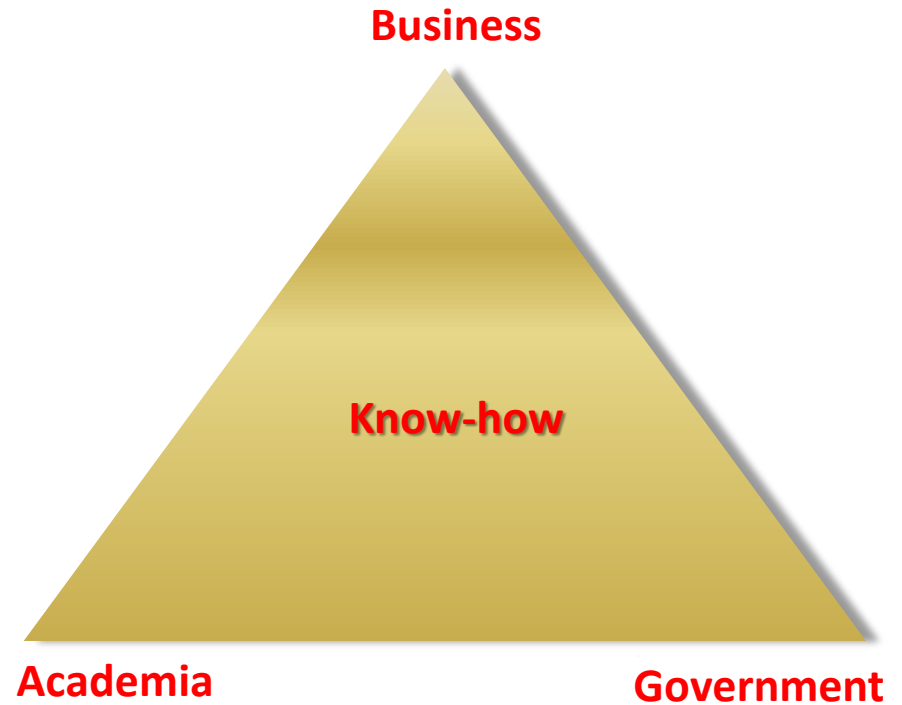
**Performance**  
Systems, Technology



# NAFTC

## Mission

- Dutch Hi-Tech Agro, Food and Technology Products for sustainable developments in agriculture, aquaculture, horticulture, water and food
- Supporting members and partners world wide
- Cooperation in Dutch Golden Triangle







## The Netherlands

- **World Leading Technology Companies**  
*Turn-over 2012: EUR 18 billion in high tech systems, 42% outside EU  
(80% poultry, 70% cheese and > 50% potato processing systems)*
- **World Leading Food Companies**  
*Turnover 2012: EUR 87 billion in agri-food products;  
(2<sup>nd</sup> Largest world exporter)*
- **High-Tech in Agro-Food, Horticulture and Water:**

**“Powered by Dutch Technology:  
Food, Health and Living Environment”**



Powered by  
**DUTCH**  
TECHNOLOGY



## Dutch Excellence

- **Location near the sea:**
  - ✓ Prevalence of diseases
  - ✓ Fertile soils - Absence of rocks, flatness of land
- **Climate**
- **Long tradition of growing**





## Dutch Excellence

- **High skill level farmers**
- **Advanced technological level**
- **High degree of mechanization**





## Dutch Excellence

- **Strict quality inspections, certification (NAK)**
- **First-rate knowledge and various research institutions**
- **Hundreds of 'growers' study clubs**
- **Innovation!**





# Focus on Innovation

**Nutrition and health**



**Sensory and structure**



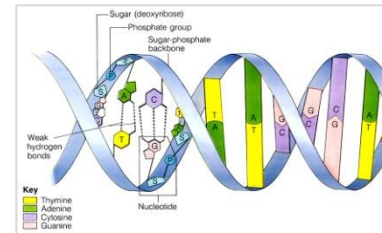
**Bio ingredients and functionality**





# Focus on Innovation

## Genomics



## Precision agriculture



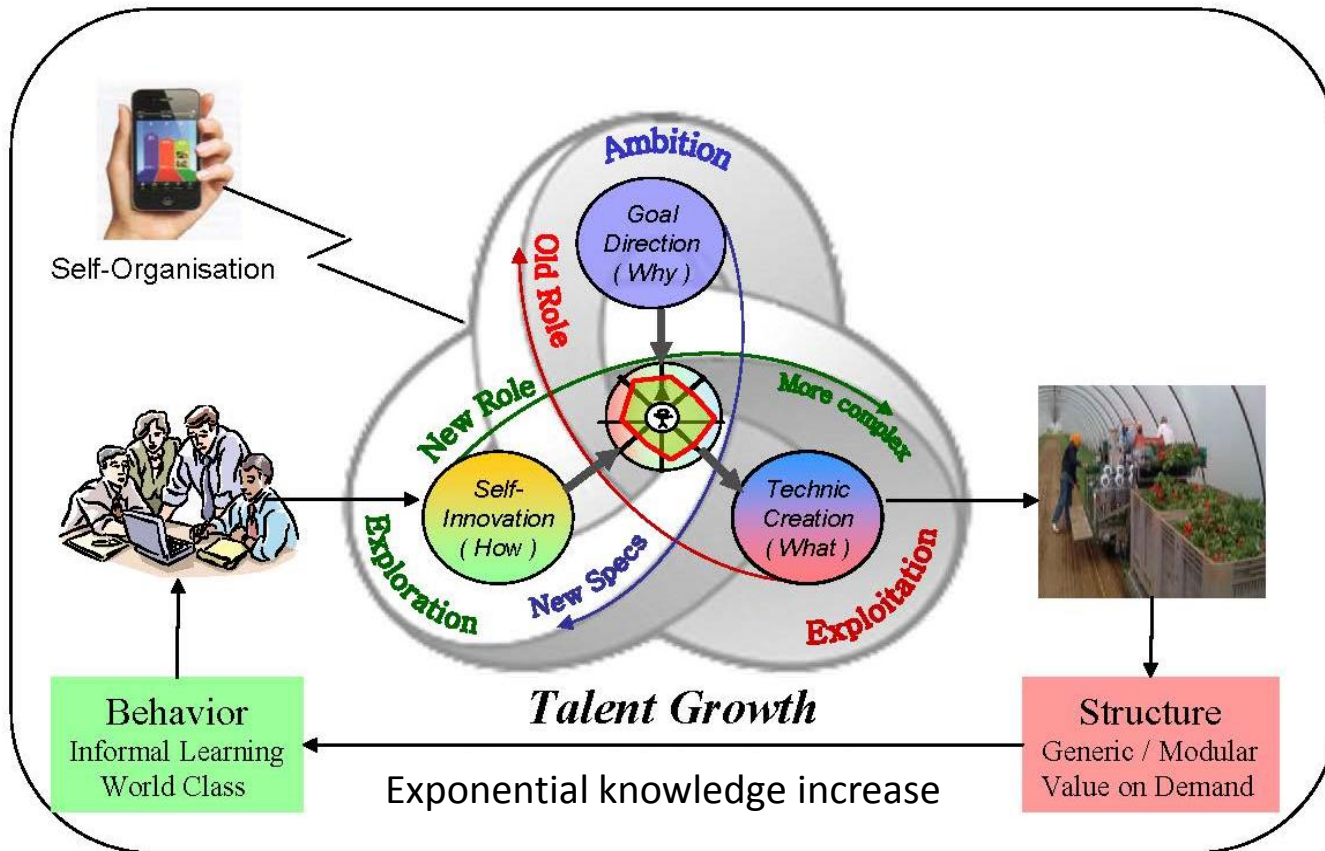
## Advanced processing and logistics





# Actor Model

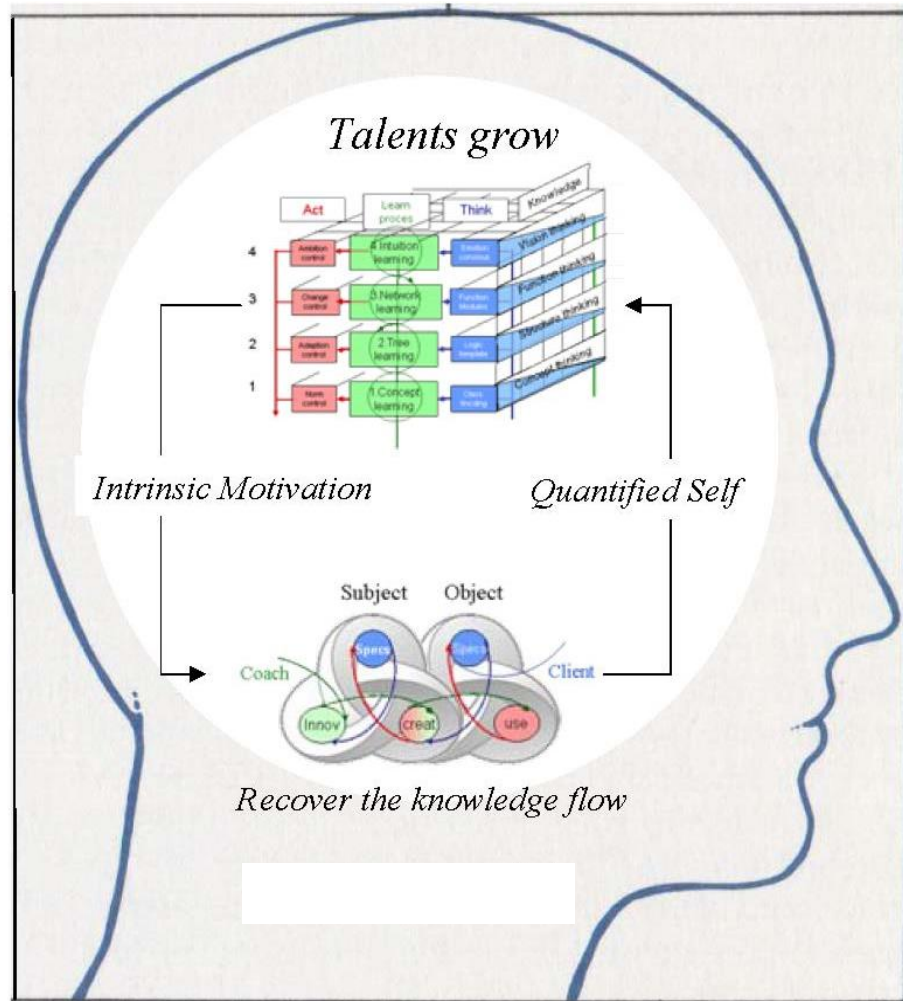
## Talent Growth





# Activity Model

## Intrinsic Motivation



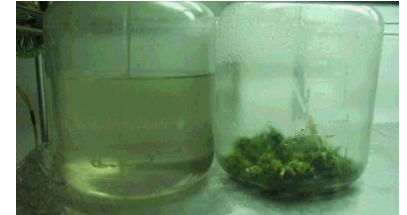




# Developments

## Primary Material

Clean room systems, gen technology



## Cultivating

Drip irrigation, crop rotation, management



## Harvesting

Low damage lifting and handling





# Developments

## Storage

Storage climate control, conditioning



## Processing

Energy, efficiency, by-products, waste



## Packaging, distribution

CO<sup>2</sup> footprint, cross docking, MFS





# Trends

## Freshness



## Technologies



## Packaging



## Society





# Freshness

- Packaging differentiation by "Green" aspects
- Innovator: Best practices in fresh produce
- Intelligent and active packaging
- Freshness Phobia





# Packaging

- **Functionality and Sustainability**
- **Sustainable Packaging**
- **Paper-based Packaging**
- **Stand-up Pouches**
- **Bio-plastics**

**Finding the balance**

**Focus on recyclability**

**Keep the Molecule in Play**

**Maximum Flexibility,**

**Sustainability and Convenience**

**A viable eco-friendly solution?**





# Technologies

- **Pulse Electric Field (PEF)**  
*High voltage pulses*  
*Lengthens storage life*
- **Ultra High Pressure (UHP)**  
*High Pressure conservation with*  
*pressure up to 1,000 MPa*  
*Disables micro-organisms and enzymes*
- **Cold Plasma**  
*Cold gases with electrical charge*  
*Disinfect the surface*





## European Society



### Needing social cohesion (and safety)

- Especially older generation
- In more individualistic world



### Increasing suspicion (decreasing authority)

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



# European Society

## 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





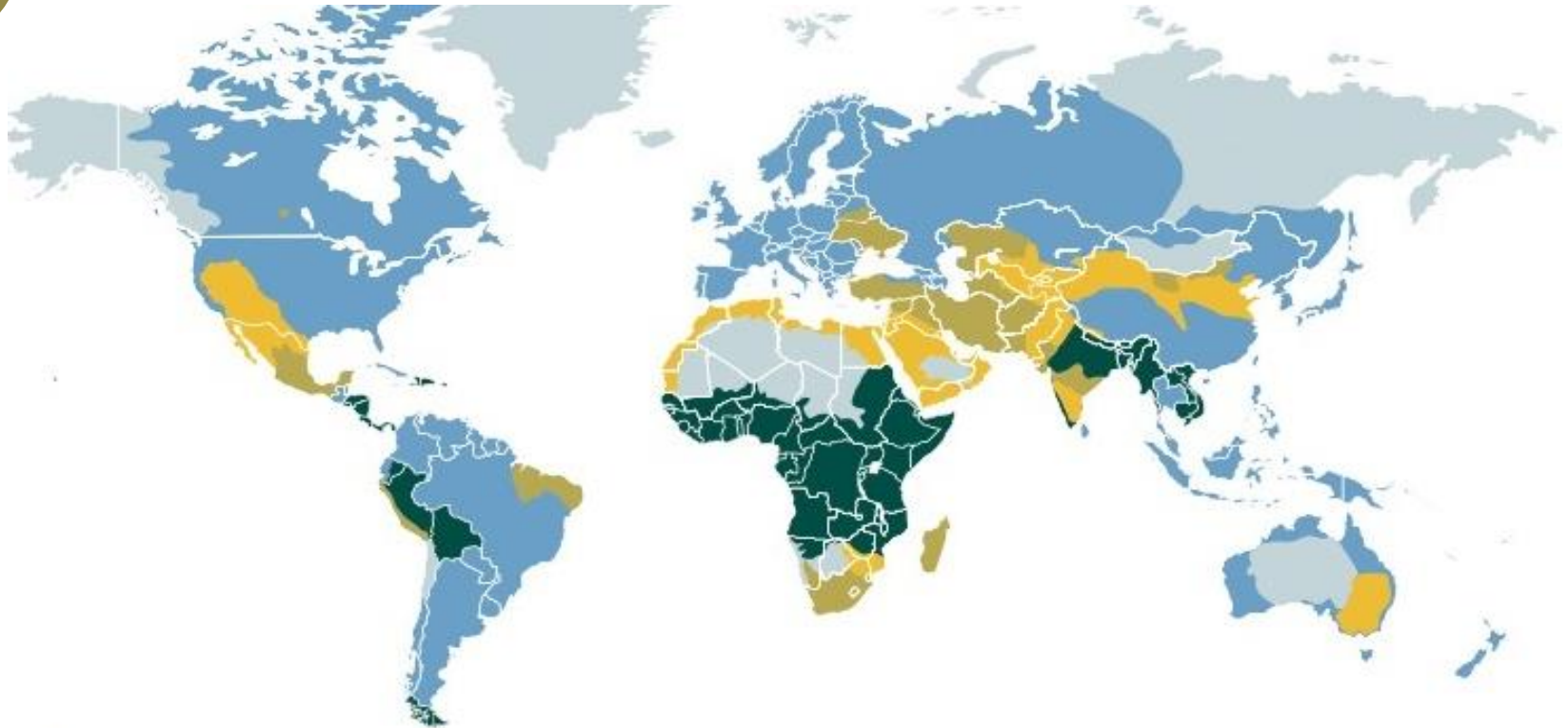







## Globalization

- Growing importance of China, India and Africa  
(demand outside Europe doubled in 10 years)
- Global shift in consumption of food products
- Impact of urbanization on food demand and supply
- Equipment manufacturers and system integrators, acting global
- Increased competition:  
buying power major retail and food service chains



# Water, Ecology and Weather

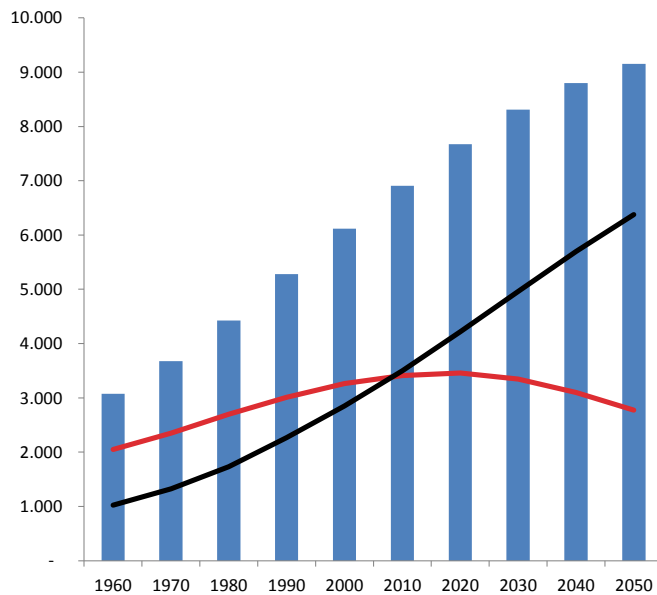


-  Sufficient water available. (Temporary drought can occur)
-  Water scarcity expected in the future (More than 60% of available water is being used)
-  Physical water scarcity. (More is used than responsible. Future water supply in danger.)
-  Economic water scarcity. (Sufficient water available, but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

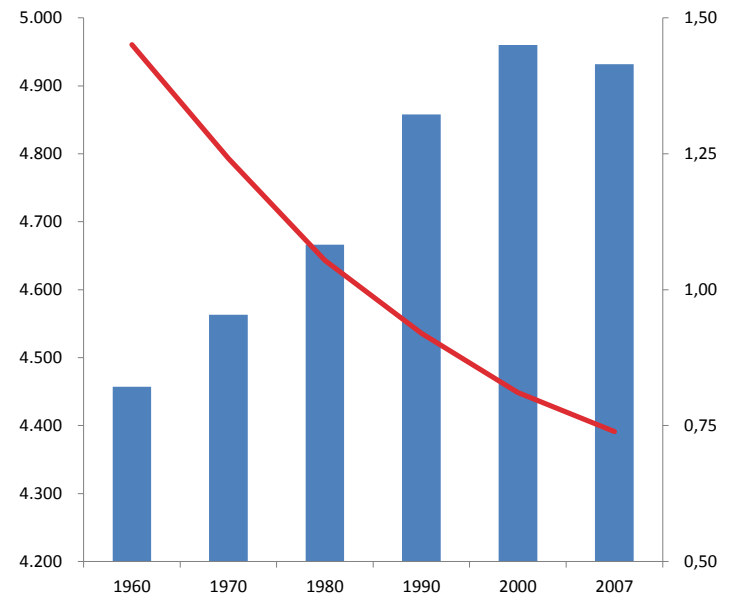


# More People, Less Land

### Global population (in millions)



### Agricultural land (1,000 ha)



■ Agricultural land area    — Agricultural land area per capita

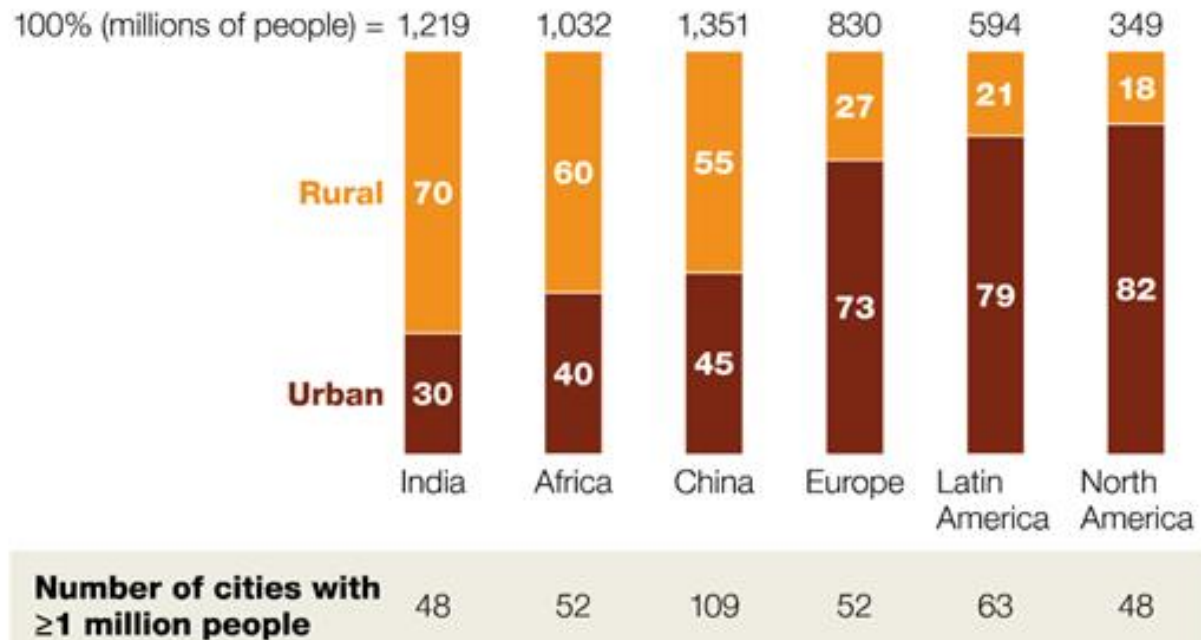
**90% of population growth will occur in  
Sub-Saharan Africa (one billion or 49%)  
and Asia (900 million or 41%)**

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



# Urbanization

Share of population by region, 2010, %



Source: United Nations; McKinsey Global Institute analysis



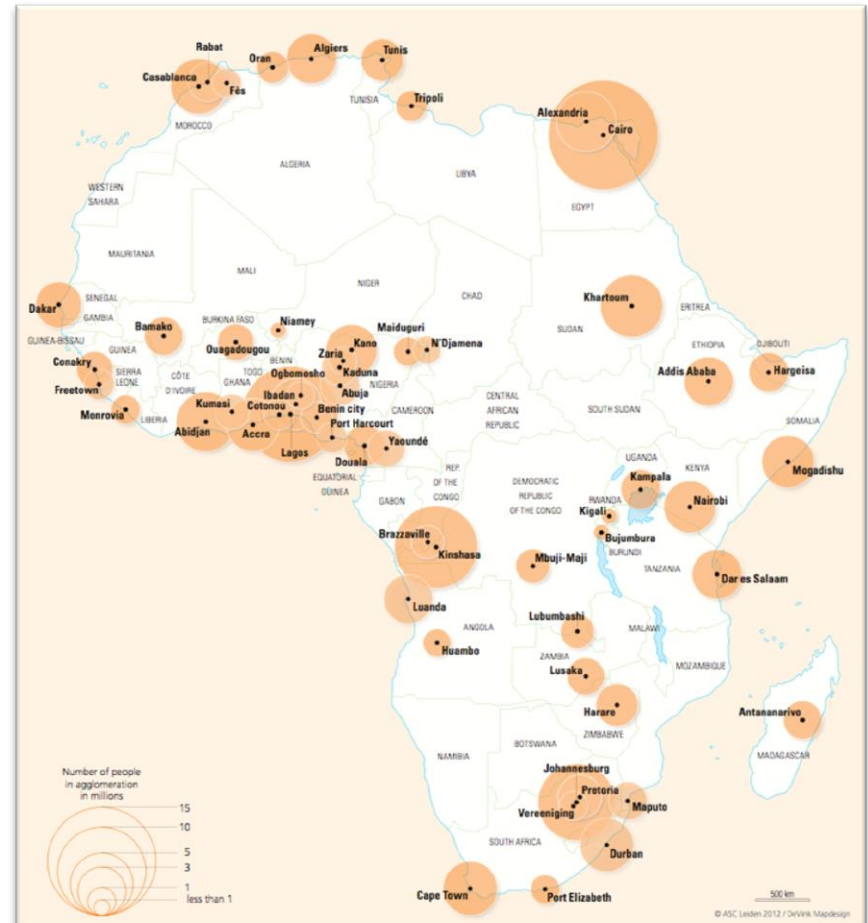
# Urbanization in Africa

**From:**

- Continent of States

**To:**

- Continent of Cities



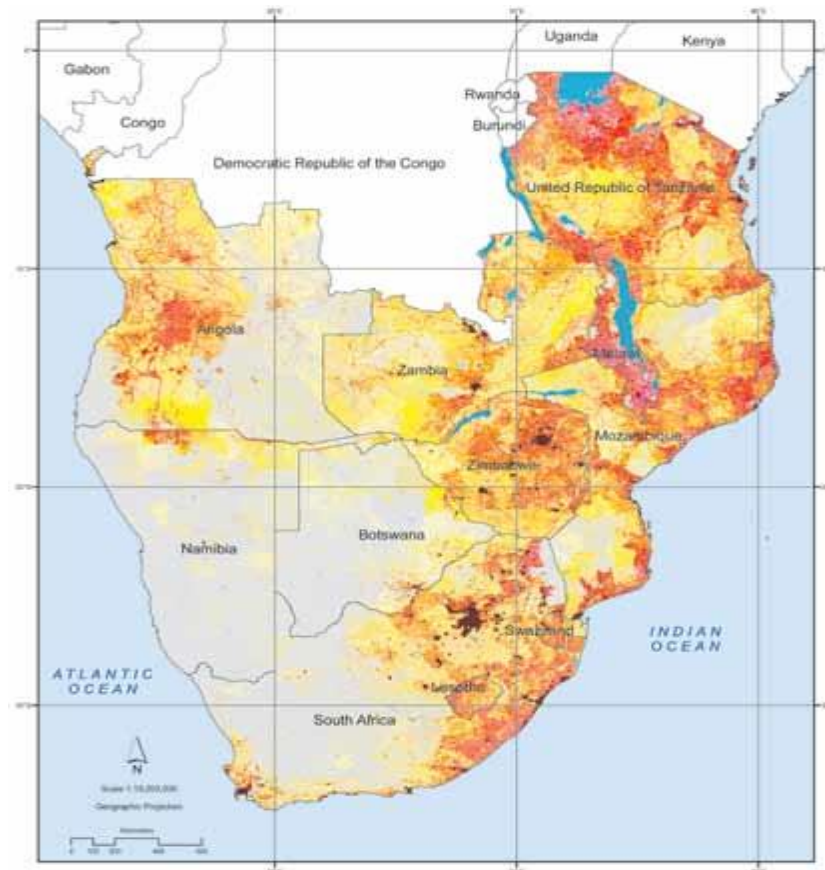
Source: ASC Leiden (Africa 2012 – African Studies Centre)



# Growing Cities

Urban and rural population density  
Competing urban areas

FIGURE 5.7  
Urban and rural population density



Courtesy of FAO 'Integrated Crop Management',  
Vol. 14-2012



# Growing Wedge

## Agricultural growth lags behind on economic growth

TABLE 5.3  
Total land and total available land by country

Country	Total land	Land excluding conflicting usages	Land for agriculture expansion	Land for agriculture intensification
	'000 ha	'000 ha	'000 ha	'000 ha
Angola	124,945	88,407	79,333	9,074
Botswana	57,178	45,949	36,581	9,368
Lesotho	2,968	2,950	2,300	650
Malawi	9,483	7,359	5,217	2,142
Mozambique	77,636	50,223	37,814	12,409
Namibia	82,083	65,121	61,560	3,561
South Africa	120,067	105,405	83,549	21,856
Swaziland	1,637	1,250	939	311
Tanzania	88,107	56,876	38,264	18,612
Zambia	73,638	45,745	40,313	5,432
Zimbabwe	38,318	32,487	21,787	10,700
<b>Total</b>	<b>676,060</b>	<b>501,773</b>	<b>407,657</b>	<b>94,116</b>

Courtesy of FAO 'Integrated Crop Management',  
Vol. 14-2012

FIGURE 5.5  
Agricultural expansion and intensification areas





## Social Transformation

- **Rapid urbanization** > radical transformation of lives > driver and consequence of economic growth.
- **Rural remoteness** > urban centrality
- **Breakdown of social & economic village structures** > frantic individual search for replacement > energy emerging in spaces left empty (not created) by government.
- **Disappearing old rural networks** > individual actors > “ fend for yourselves” > surge for individual entrepreneurship (creating individual businesses)





# Economic Growth (2010-2025)

**Growth: 75% comes from emerging economies, 82% from large cities**

**Emerging 440 cities are poised to deliver close to half of global GDP growth**

Contribution to global GDP and GDP growth %

- Emerging 440
- Other emerging large cities
- Emerging small cities and rural areas
- Developed 160
- Other developed large cities
- Developed small cities and rural areas

**GDP, 2010**

100% = \$63 trillion RER<sup>4</sup>



**GDP growth, 2010-25**

100% = \$50 trillion RER<sup>4</sup>





# Top 20 Hotspots for growth by 2025

**TOP 20 HOT SPOTS FOR GROWTH BY 2025** CITIESCOPE RANKINGS BY GROWTH, 2010-25

Emerging regions  
Developed regions

Rank	Elderly, higher-income consumers <sup>1</sup>	Young entry-level consumers <sup>2</sup>	Laundry care products <sup>3</sup>	Commercial floor space <sup>4</sup>	Municipal water demand
1	* Shanghai	Lagos	São Paulo	New York	Mumbai
2	* Beijing	Dar es Salaam	Beijing	Beijing	Delhi
3	Tokyo	Dhaka	Rio de Janeiro	Shanghai	* Shanghai
4	* Tianjin	Quagadougou	Shanghai	Los Angeles	* Guangzhou
5	Mumbai	Khartoum	Mexico City	Tokyo	* Beijing
6	São Paulo	Ghaziabad	Moscow	Washington, D.C.	Buenos Aires
7	Osaka	Sanaa	Bangkok	Dallas	Kolkata
8	* Chongqing	Nairobi	Istanbul	São Paulo	Khartoum
9	Delhi	Luanda	Manila	Guangzhou	Dhaka
10	* Nanjing	Baghdad	Johannesburg	Chicago	Istanbul
11	* Guangzhou	Kampala	Belo Horizonte	Houston	Dallas
12	New York	Ibadan	Porto Alegre	Tianjin	Pune
13	Seoul	Lusaka	Buenos Aires	Moscow	Las Vegas
14	* Hong Kong	Kinshasa	Tianjin	Atlanta	Karachi
15	* Wuhan	Kano	Tehran	Miami	São Paulo
16	Kolkata	Abidjan	New York	Hong Kong	Hyderabad, India
17	* Shenyang	Abuja	Foshan	Mexico City	Lagos
18	Los Angeles	Bamako	Santiago	Shenzhen	Moscow
19	Toronto	Chittagong	Shenzhen	Phoenix	* Wuhan
20	Ahmedabad	Port Harcourt	London	Istanbul	Manila

1 GROWTH IN POPULATION AGED 65+ WITH HOUSEHOLD INCOME > \$20,000 AT PPP.

2 GROWTH IN POPULATION AGED ≤ 14 WITH HOUSEHOLD INCOME \$7,500-\$20,000 AT PPP.

3 PREDICTED GROWTH IN CONSUMER SPENDING ON LAUNDRY CARE PRODUCTS BASED ON A CITY-LEVEL MARKET DEMAND GROWTH MODEL.

4 INCLUDING REPLACEMENT FLOOR SPACE.

SOURCE: MCKINSEY GLOBAL INSTITUTE ANALYSIS





# Diversification, From food to fashion to pharmaceuticals



## Pharmaceuticals

*Functional foods,  
Pharmaceuticals*



## Fashion

*Flowers, Flavors,  
Fragrances*

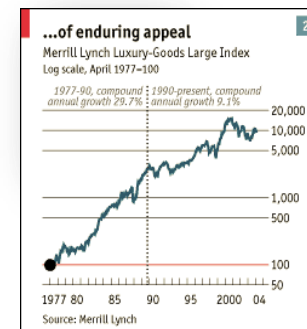


## Food

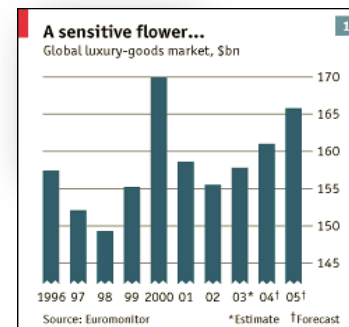
*Fodder, Food Crops,  
Vegetables, Fruits*

## Energy

*Fuel, Fibers*



*A 100-fold increase  
between 1977 and 2005*



*World spending on luxury goods  
in 2005: US\$ 165 bln*



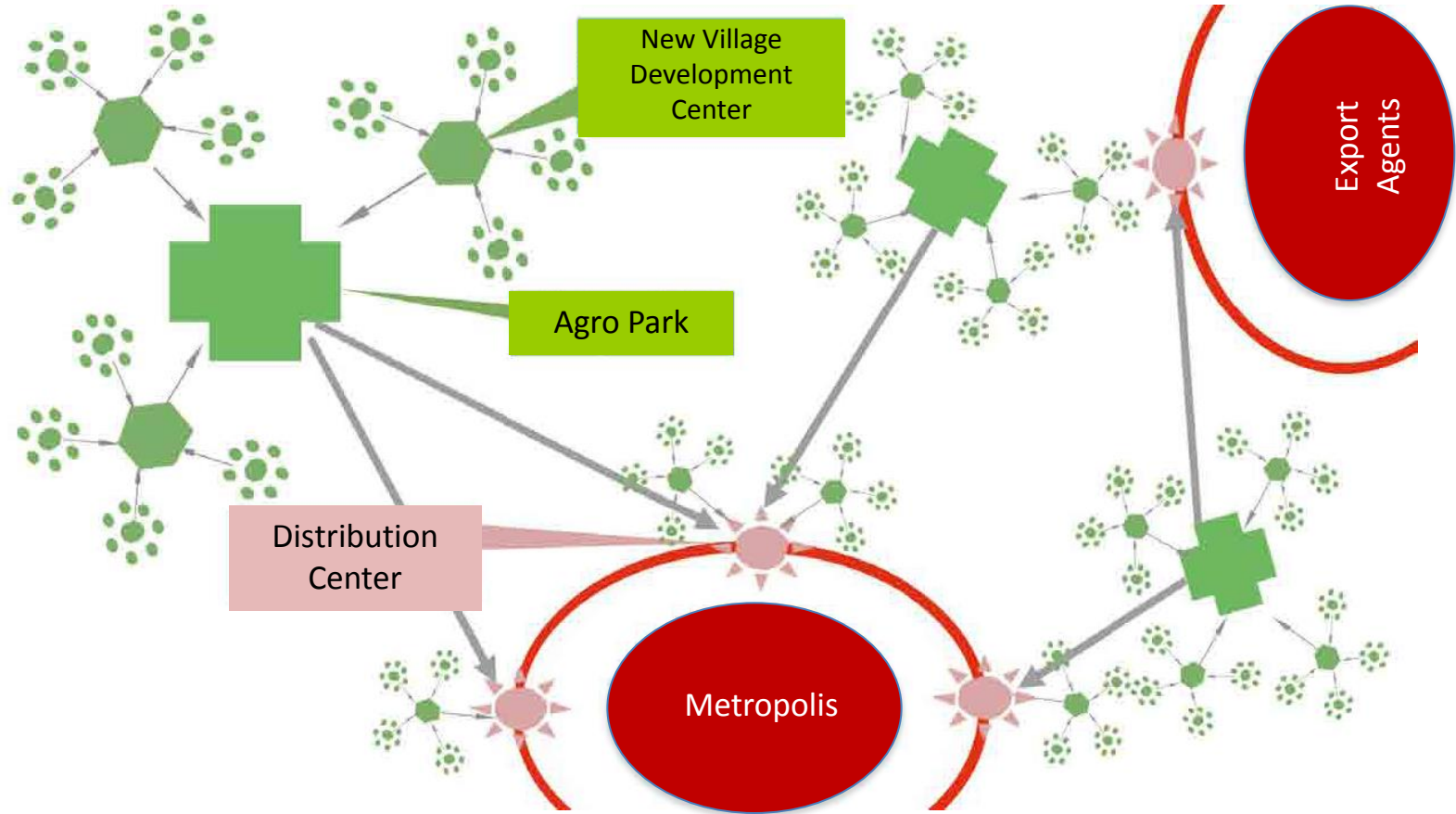
## Power shift to retailers and food service



**Closest to the consumer, Multi-channel strategy, Vital marketing information, 70 - 80% Buying decisions at P.O.P., Co-marketing**

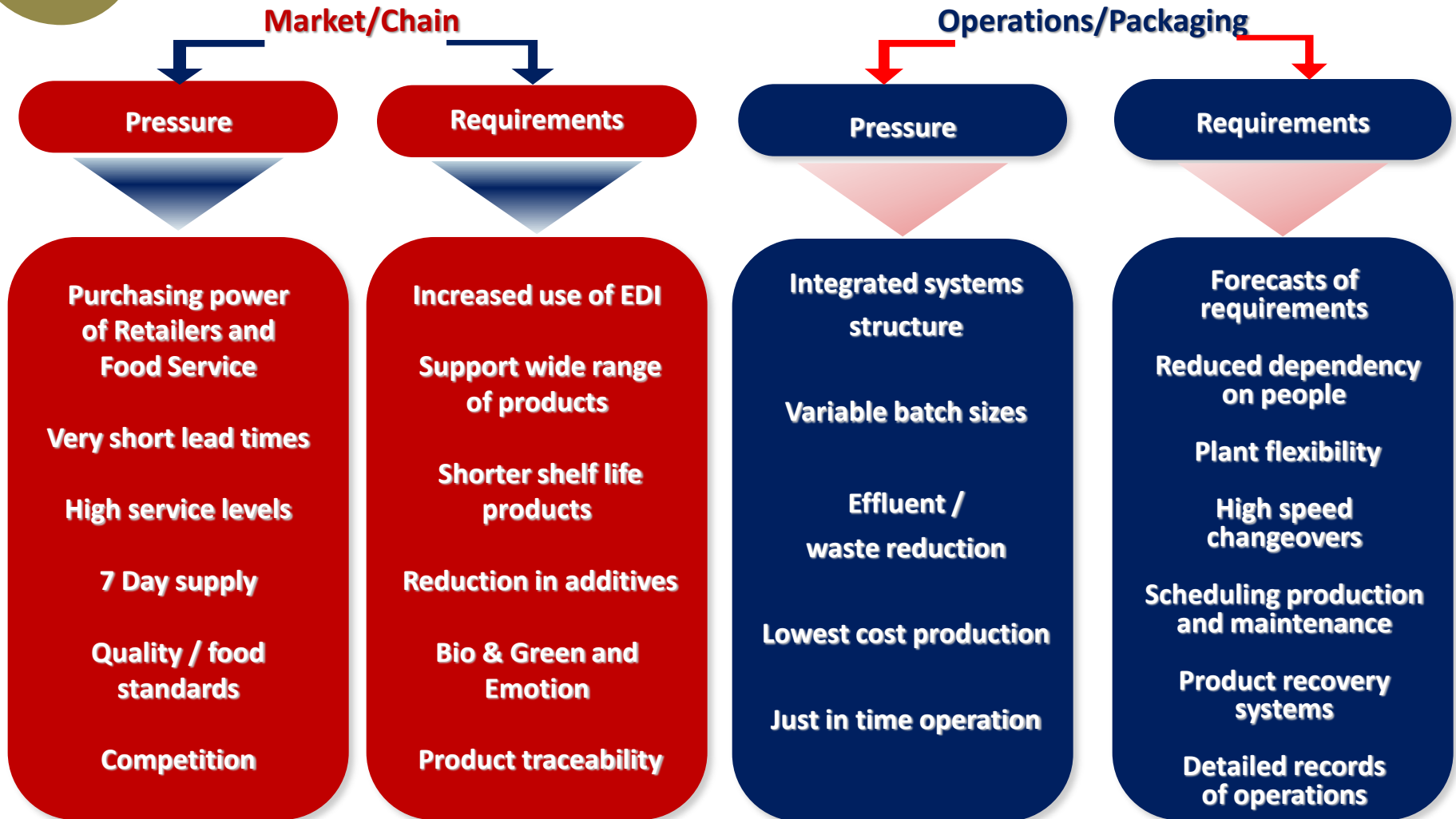


# Intelligent Agro Logistic Networks





# Market Pressure ↔ Requirements





# Focus in the Food Value Chain

## Create more added value

- **Healthier, convenience**

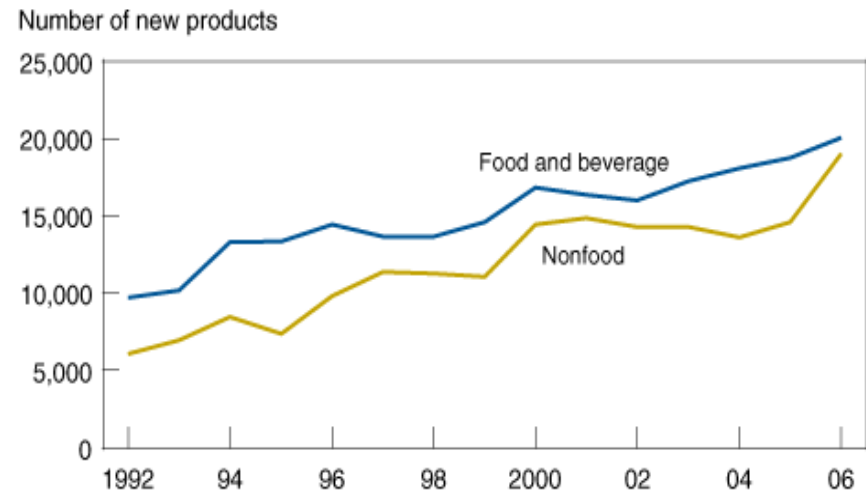
## Distinguish yourself

- **More variations**  
*(functional, organic, exceptional)*
- **Competition**  
*(new packaging ideas, developments on shop floor)*

## Reach new customers

- **Consumer groups**

Food and beverage introductions up 106 percent in 1992-2006

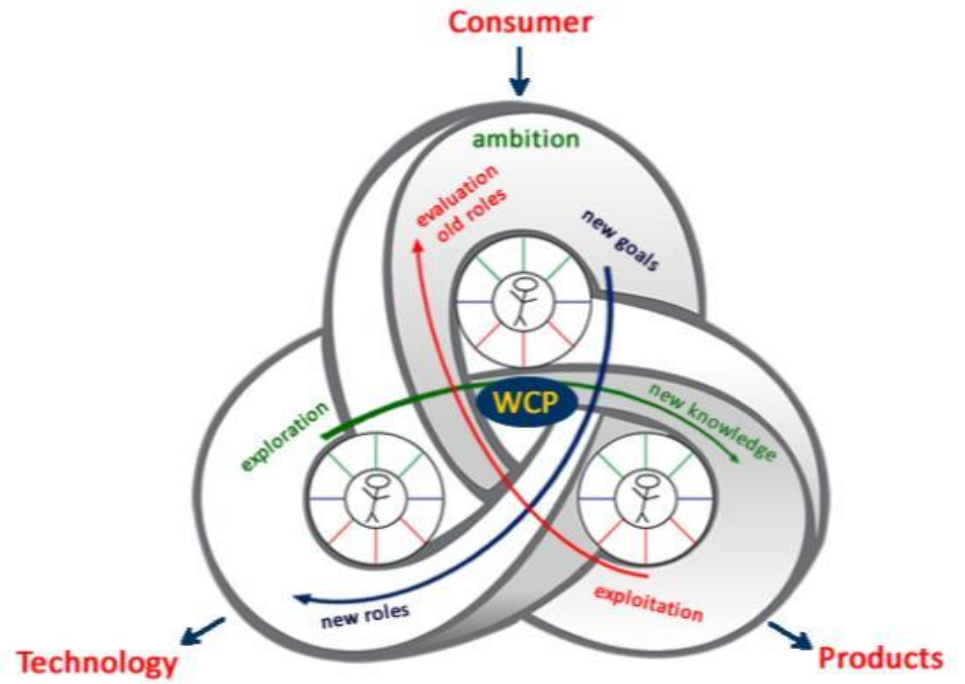
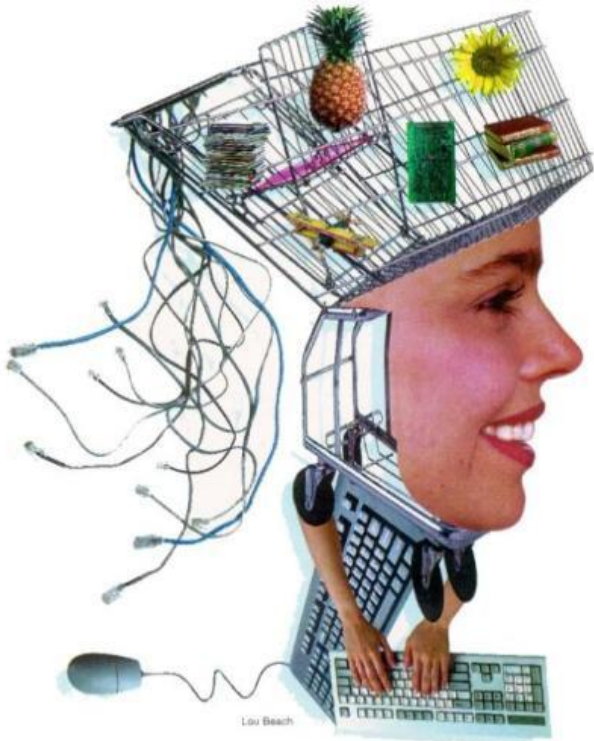


Note: Nonfood items include health and beauty aids, household products, pet products, and miscellaneous items (e.g., tobacco, car care, lighters).

Source: Datamonitor, Productscan Online.



# Challenges for Namibia Market-led Approach

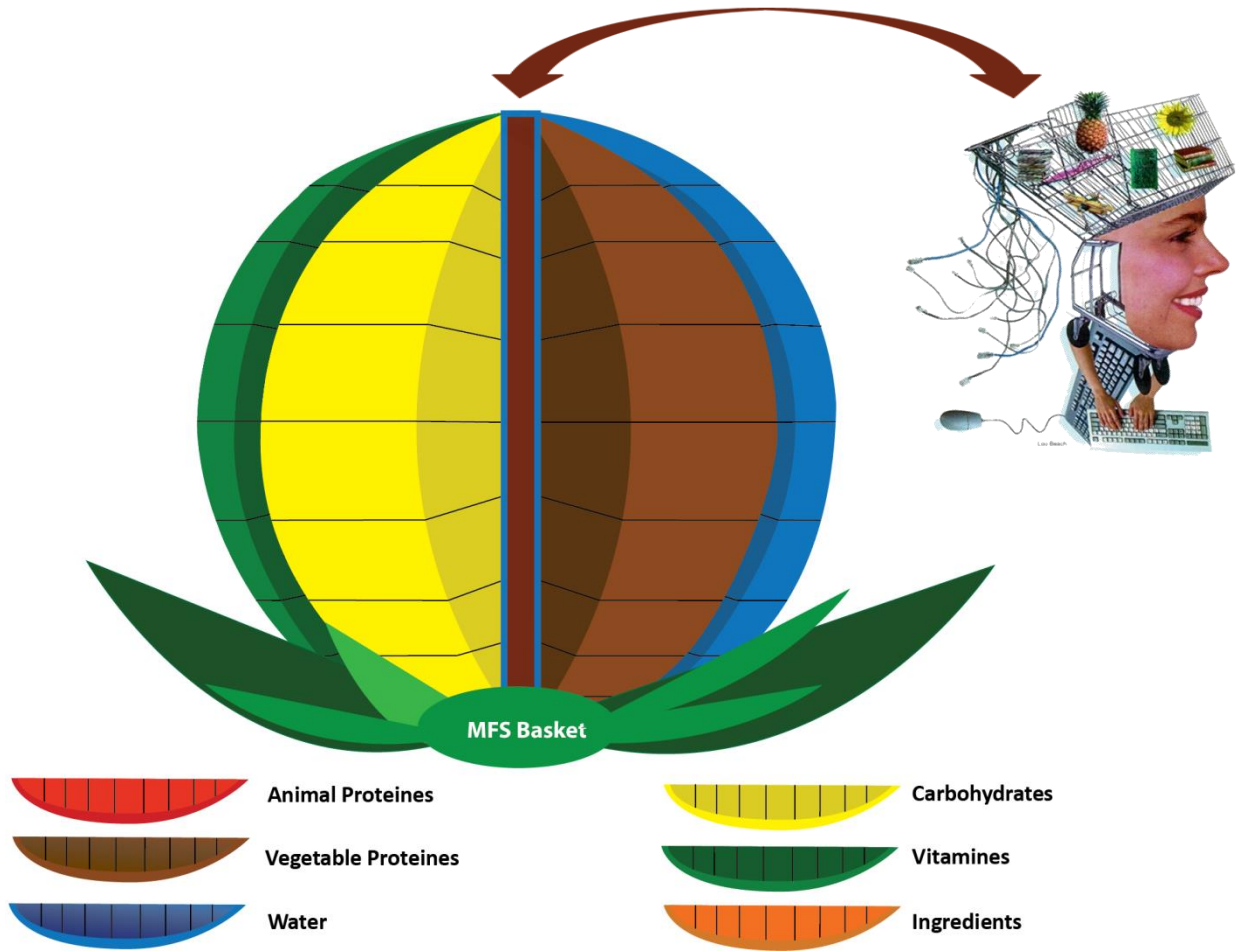






# Challenges for Namibia

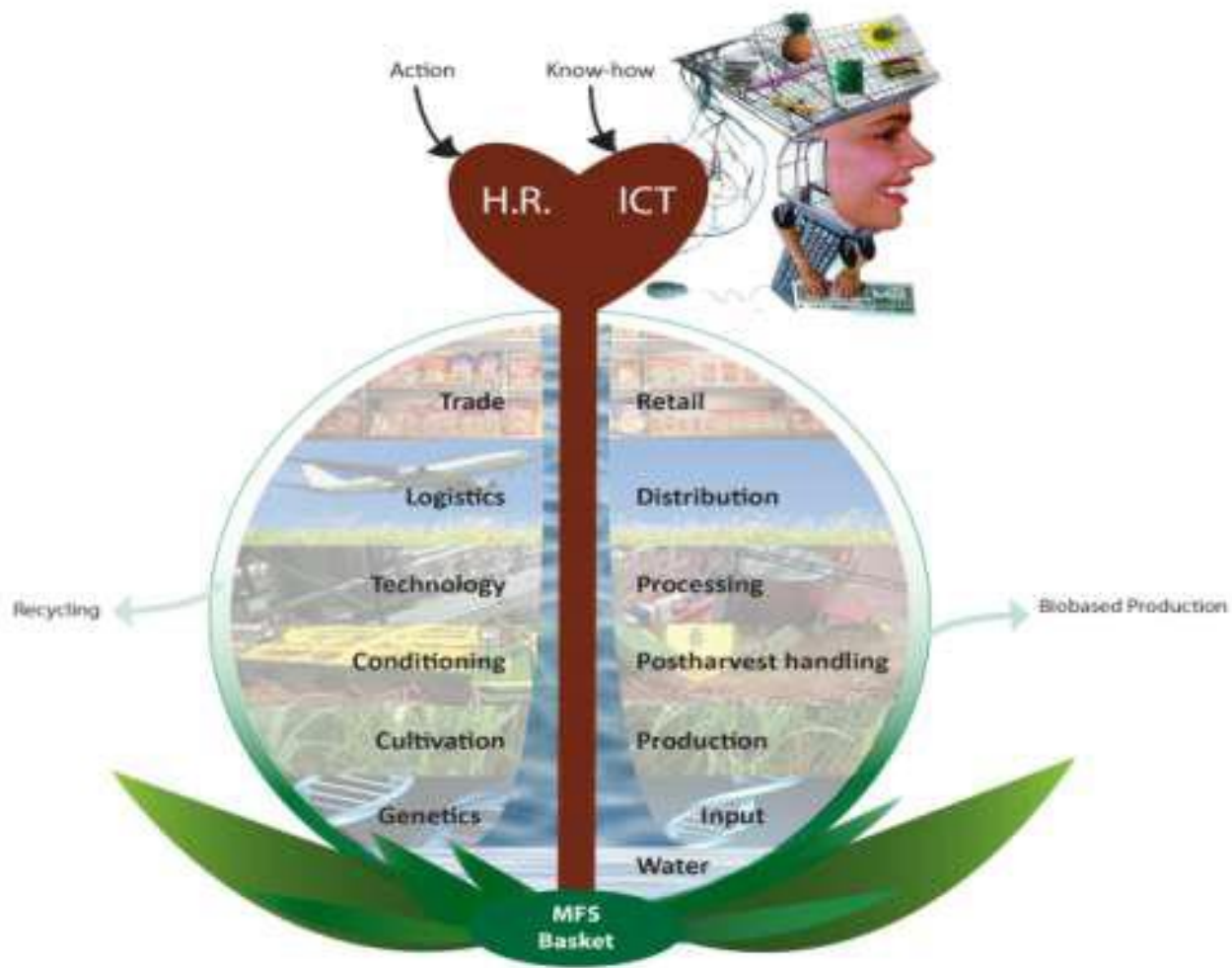
## MFS Basket





# Challenges for Namibia

## Technology Approach

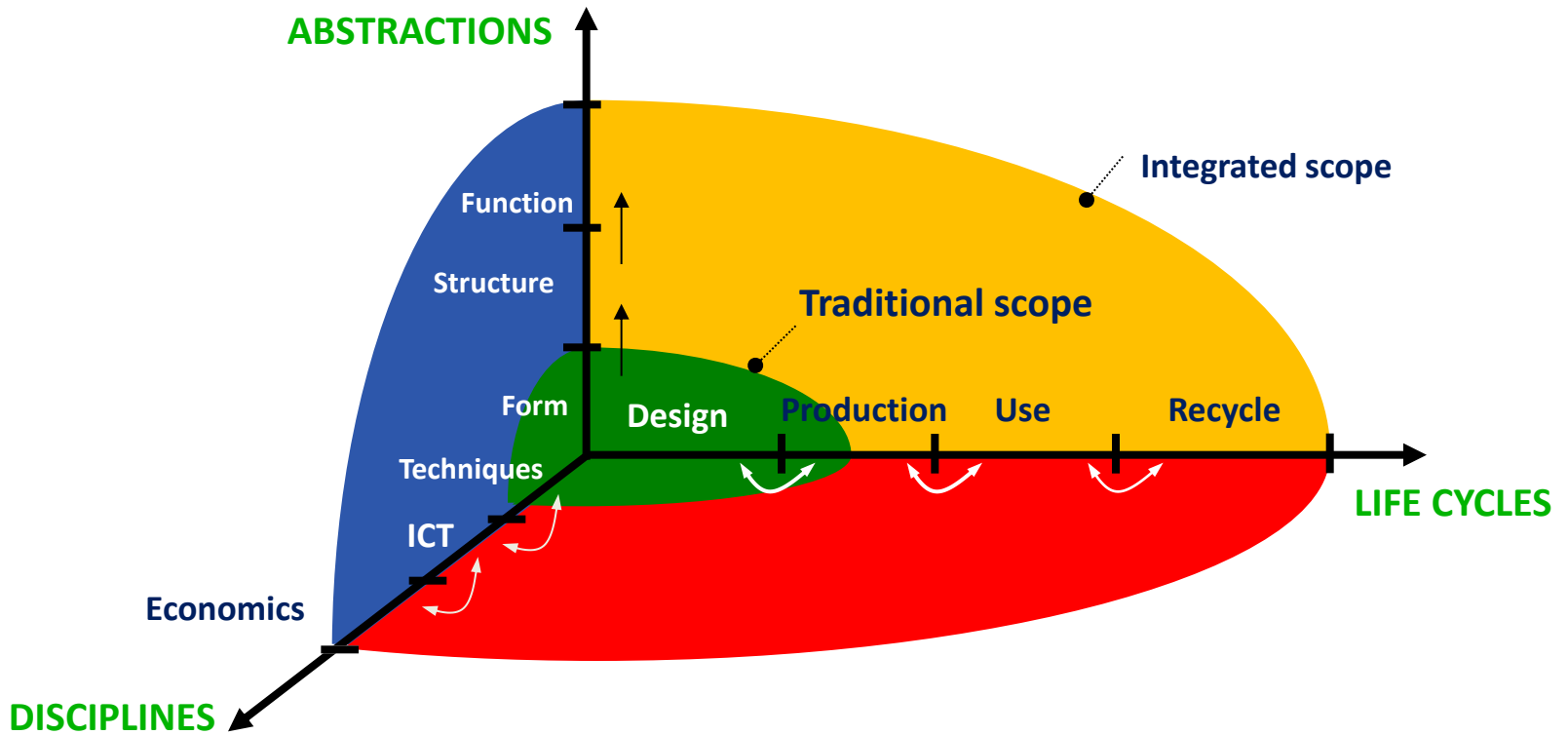




# Challenges for Namibia

## Holistic Approach

### Integrated product and process development





# Challenges for Namibia

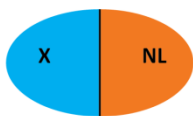

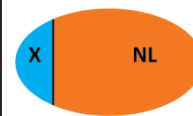
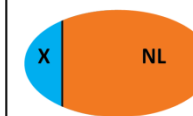
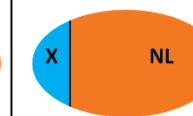
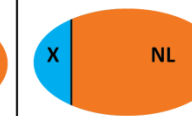
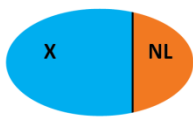
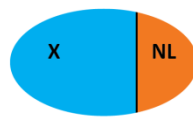
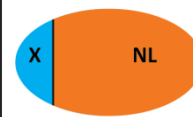
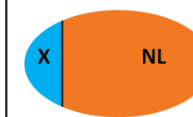
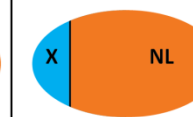
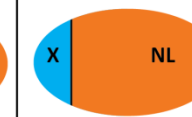
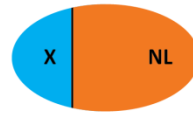
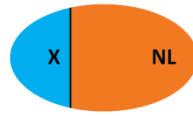

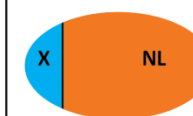


## Hardware, Orgware and Software

Hardware	Orgware	Software
Contextual relationships	Implementation and operation	Knowledge management
Infrastructure	Business planning	R&D
<b>Centers of Excellence</b>	Investment in infrastructure	Team development
Trade facilities	Types of consortia	Management of emotions
Production facilities	<b>Stakeholders network</b>	Communication
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	<b>Capacity building</b>
<b>What can be held</b>	<b>What can be organised</b>	<b>What can be thought and felt</b>



# Challenges for Namibia

## Strength – Weakness Matrix

<b>Flow</b> <b>Know-how</b>	<b>Input</b>	<b>Production</b>	<b>Processing</b>	<b>Logistics</b>	<b>Trade</b>	<b>Consumer</b>
<b>Hardware</b>						
<b>Software</b>						
<b>Org. ware</b>						

X = Partner Country / Area



# Challenges for Namibia

## Incubators, Demos and Training

### EMPOWERING THE NATION THROUGH DISCOVERY AND INNOVATION

NSF STRATEGIC PLAN FOR FISCAL YEARS (FY) 2011-2016

Transform the Frontiers	
T1 ✓	Transformative Research Methods Brainlike
T2 ✓	STEM workforce Motivation Intrinsic Motivation
T3 ✓	International Partnership China
T4 ✓	Research infra to support capabilities Talents Growth

Innovate for Society	
I1 ✓	Usefull to Society Export growth
I2 ✓	Adressing Societal Challenges FoodSecurity
I3 ✓	Innovative Learning System Learn to innovate

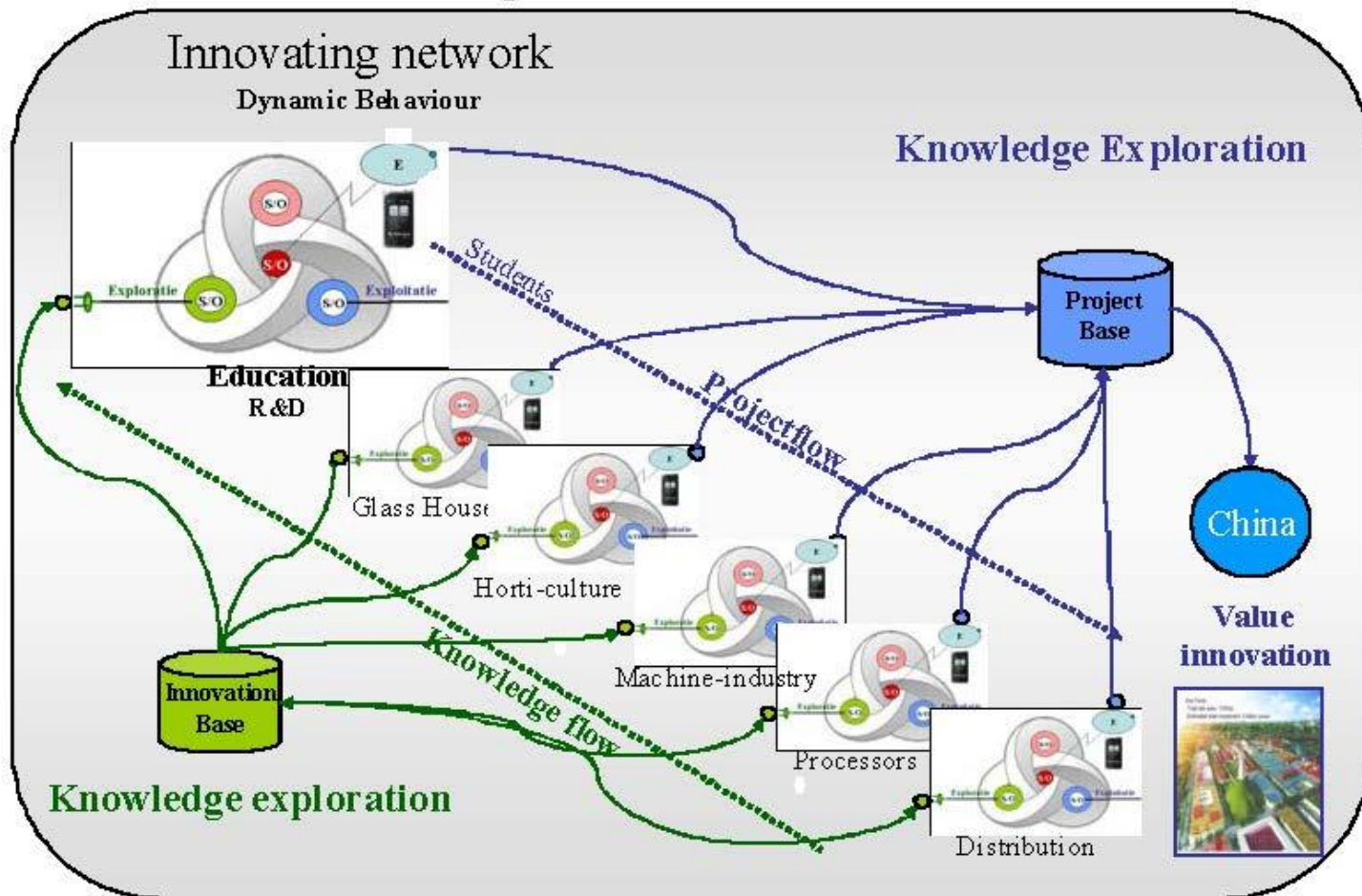
Perform as a Model Organisation	
M1 ✓	Excellence through Leadership Self Organisation
M2 ✓	Infuse learning on Professional Level Intrinsic Motivation
M3 ✓	Culture of Creativity and Innovation Team-learning
M4 ✓	High level of Customer Satisfaction Co-Innovation

✓ High Ranking Sino-Dutch Pilot on NSF scale.



# Challenges for Namibia

## Integrated Total Solutions





## Challenges for Namibia

- (Integrated) urban demand approach
- Improve market value chain
- Water, genetics and primary sector development
- Use technology (adapt mechanization for women and elderly)
- Private sector leading > farmers, food chain
- Create Brainports / Innovation Centers



**CENTERS OF EXCELLENCE !**





# Metropolitan Food Security

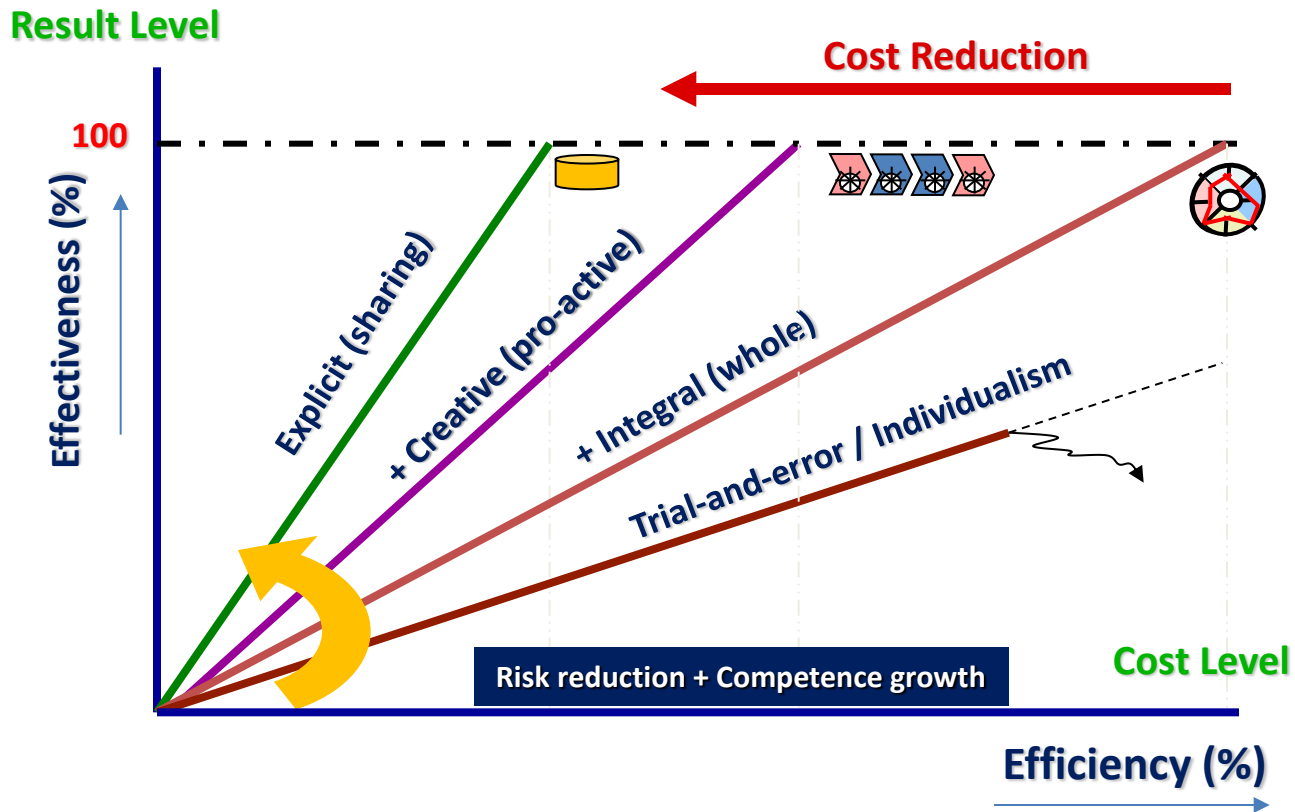
## Centers of Excellence

- **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





# Conclusion: Result Orientation





## Conclusion: Success



## 7 P's

1. **People**
2. **Professionals**
3. **Plan**
4. **Pro-active**
5. **Performance**
6. **Planet**
7. **Prosperity**



Thank you!



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More information:

[www.quaternes.nl](http://www.quaternes.nl) | [www.naftc.nl](http://www.naftc.nl)  
[www.metropolitanfoodsecurity.nl](http://www.metropolitanfoodsecurity.nl) | [www.gmv-fme.nl](http://www.gmv-fme.nl) | [www.sanec.org](http://www.sanec.org)

