



## Sustainable Nutrition and the Eradication of Hunger

Anne Roulin  
Nestlé



# Feeding the world's population – drivers of change



**Population growth**, ie in urban areas: from today's 7.1 billion towards 10 billion over the next 50-80 years?



**Food vs. nutrition security:** from under nutrition to obesity pandemic



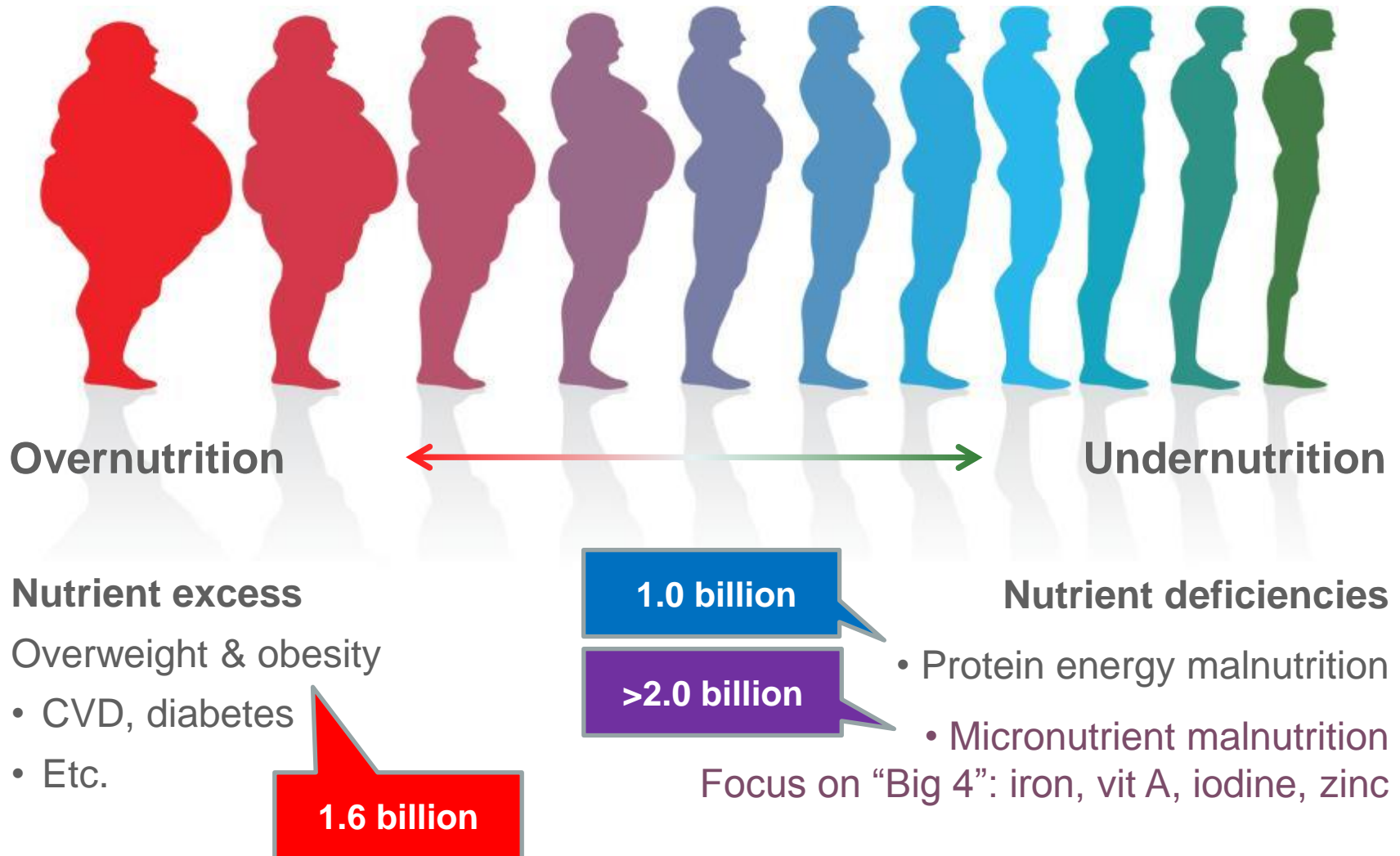
**Globalization** will further expose the food system to novel economic and political pressures

**Production & climate change:** competition for land, water and energy

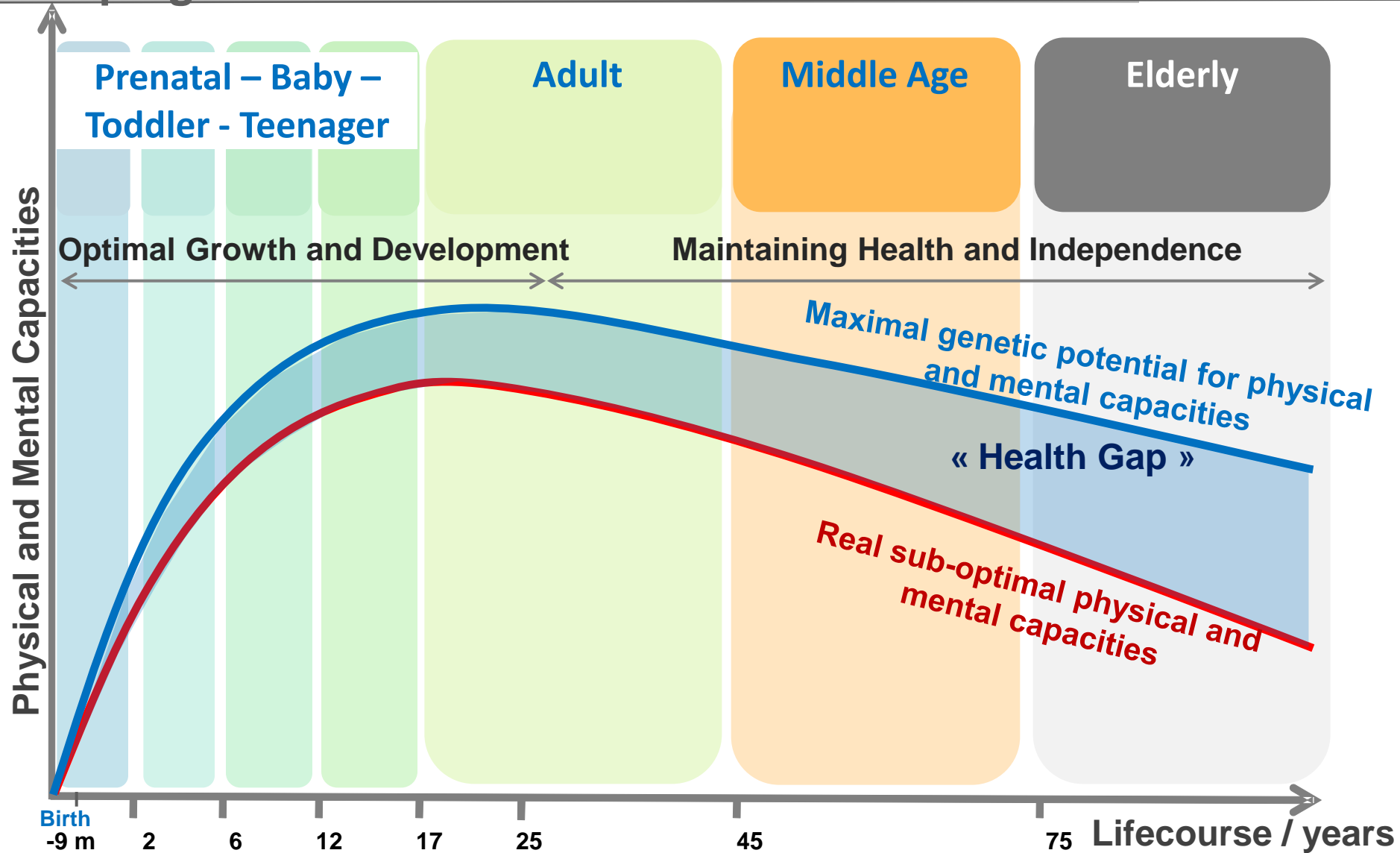




# The spectrum of malnutrition



## Helping consumers reach their Genetic Potentials



The physical and economic access to sufficient, safe and nutritious food and water to fulfill dietary and cultural needs to enable an active and healthy lifestyle.....without compromising the ability of future generations to meet these needs

# Micronutrient fortification

Commitment 1:  
Sell **200 billion servings** of fortified products by 2016.

Current status:  
More than 167 billion servings (2013)



Commitment 2:  
Use **biofortified materials** in commercial products by 2015

Nestlé is engaging in biofortification of maize, cassava, wheat and other crops.

Establishment of the supply chain is essential to create the 'pull'

Planting & consumption by smallholder farmers will improve the nutritional status of the rural poor

# Health Economics Study: The Value of Fortification

## Develop alternative business models

Partnership with gov't/NGO nutrition programs

## Malnutrition

36% of all children suffer from at least one micronutrient deficiency

**Burden of disease  $\approx$  \$ 0.6 bn**

## Food Science & Technology

Fortified Milk  
Iron, Vit C, Zinc



## BEAR BRAND Campaign

► Increasing mums **awareness** about iron from 19 to 30%



## Health Economics



- Higher income: 12%
- GDP Gain: 0.2% ( $\approx$  \$0.35bn)
- Productivity gain 5-17%

## Improved Nutrition

Anemia reduction 50%  
Improved cognition 10%



Zurich University of Applied Sciences



Zurich University of Applied Sciences



FNRI: Philippines Food and Nutrition Research Institute



**Nestlé**

Dairy SBU

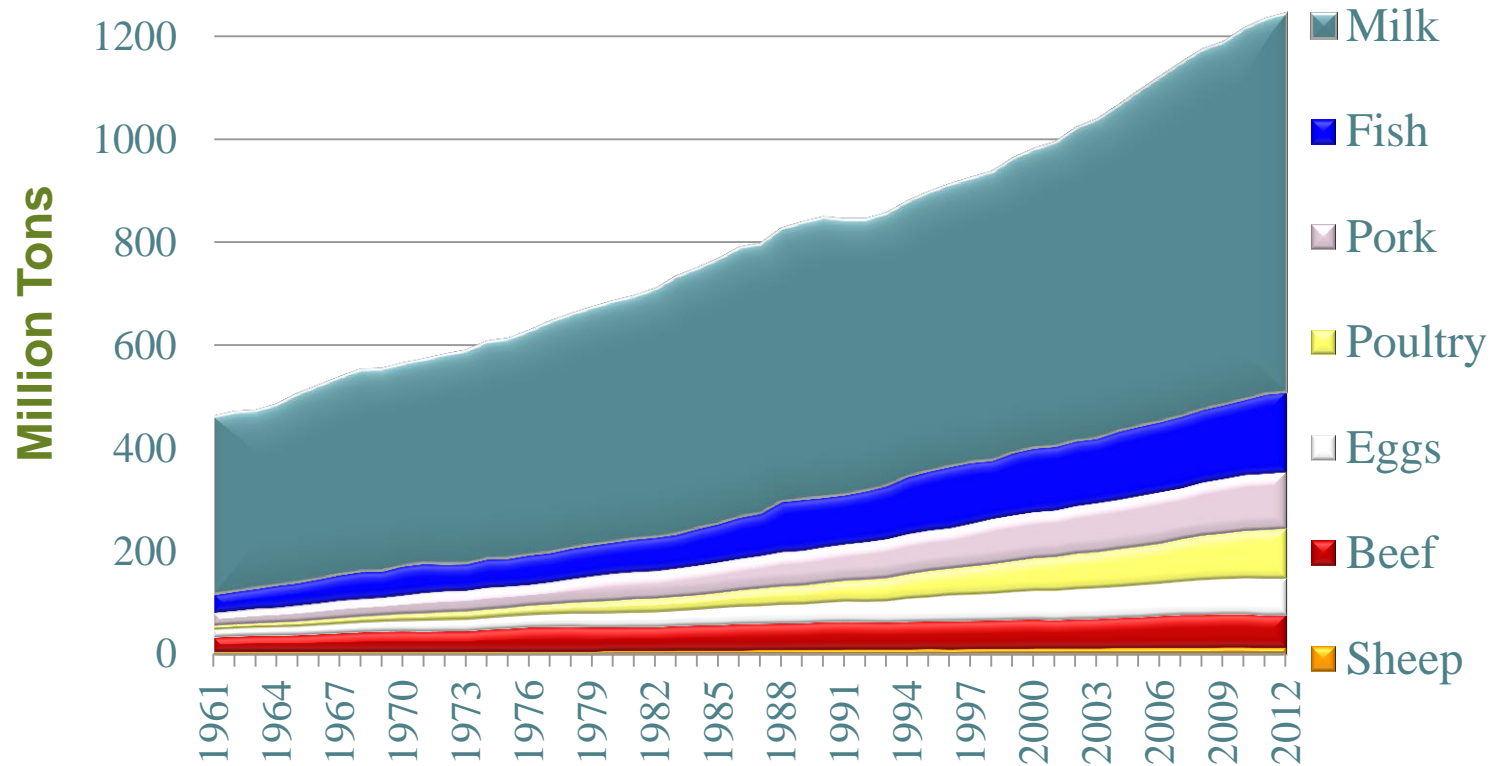




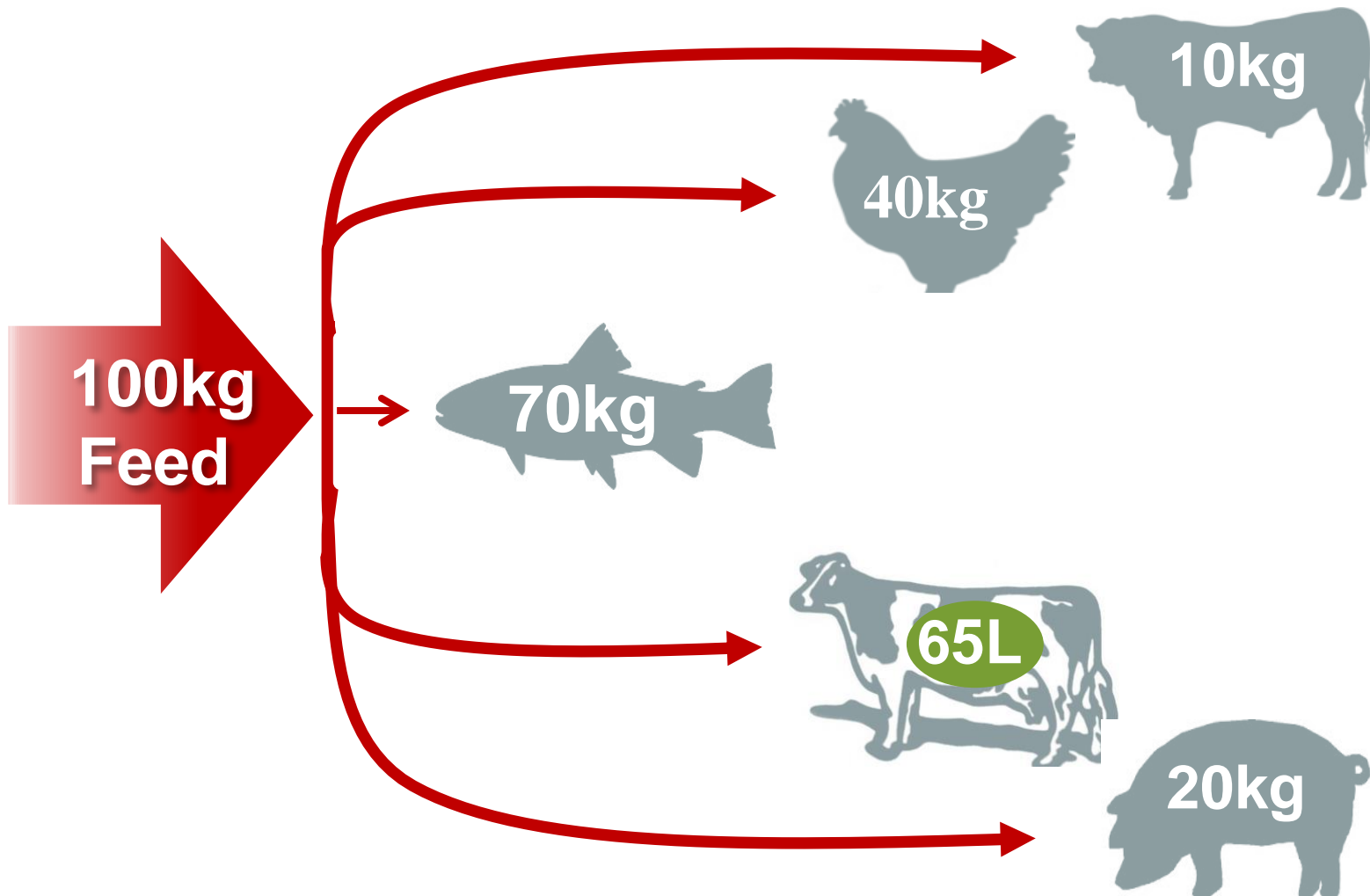


# Growth in Animal Protein

## Animal Protein Production (1961 to 2012)



# Feed to Food Conversions



# Protein

Most plant source foods contain more than the required Indispensable Amino Acid profile



Good Food, Good Life

Today



Accelerate usage of available protein ingredients

Tomorrow

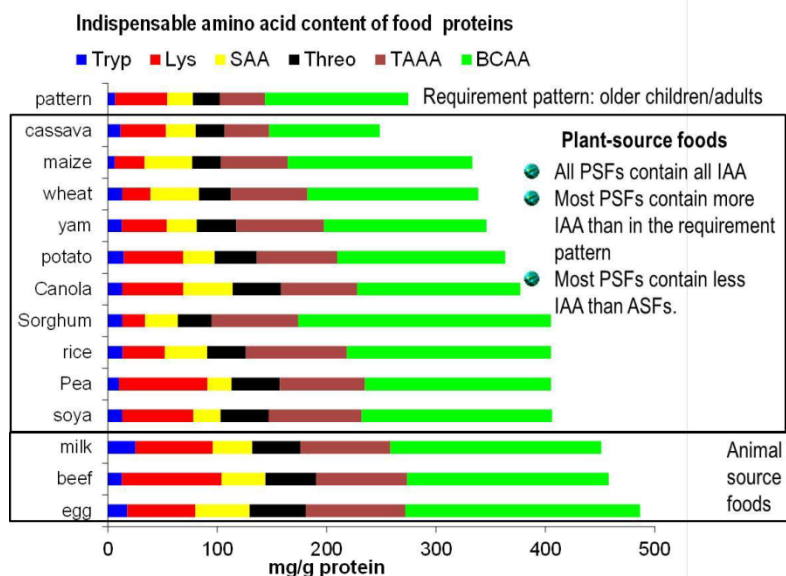


Optimize functionality of newly available solutions

Future



Develop novel protein sources and technologies



FAO, 2013

Nestlé aims to **broaden the portfolio of solutions based on protein sources** to meet the challenges of growing population's **nutritional need** with reduced **environmental impact**, good **sensorial properties** and at **commercially viable costs**.

TAAA, total aromatic amino acids, SAA, Sulphuric Amino acids, BCAA, branched chain amino acids.



# Food Safety

Up to 30% of cereal crops in Central and West Africa are lost to contamination



Good Food, Good Life

- The Grains Quality Improvement Project was launched to reduce mycotoxin contamination levels in Ghana and Nigeria by 60%.
- > 50'000 farmers trained in Western Africa on "Good Agricultural Practices & Good Storage Practices"
- 150 villages in the projects. Farmers achieve a price premium for quality.
- Factory rejection rate decreased from 50 to 2 % between 2007 and 2012







## Key features of EcodEX:

Takes into account  
the entire life cycle



Representative set of  
relevant indicators



Greenhouse gas  
emissions (kg CO<sub>2</sub>eq)



Water consumption (m<sup>3</sup>)



Non-renewable energy  
& minerals (kg Sb eq)

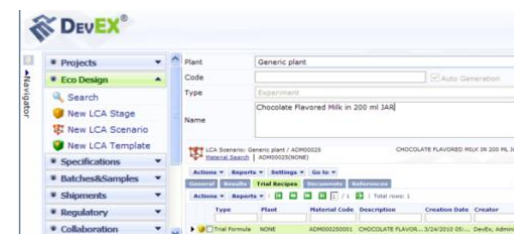


Impacts on ecosphere  
(PDF×m<sup>2</sup>×year)



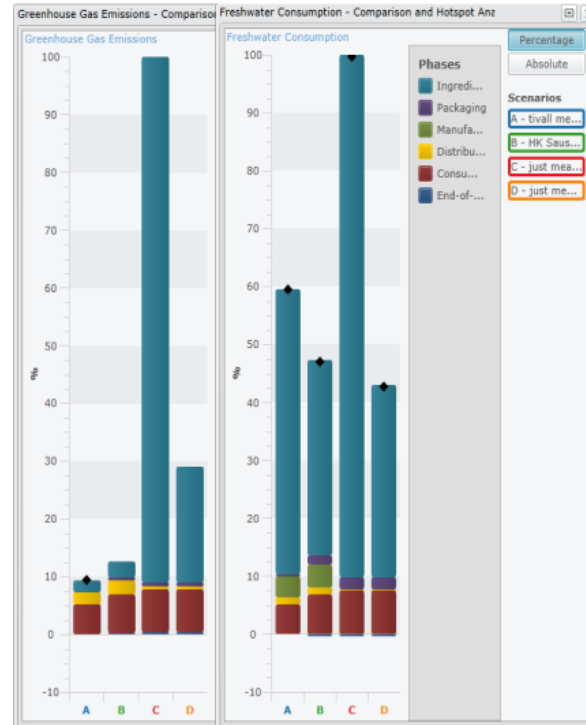
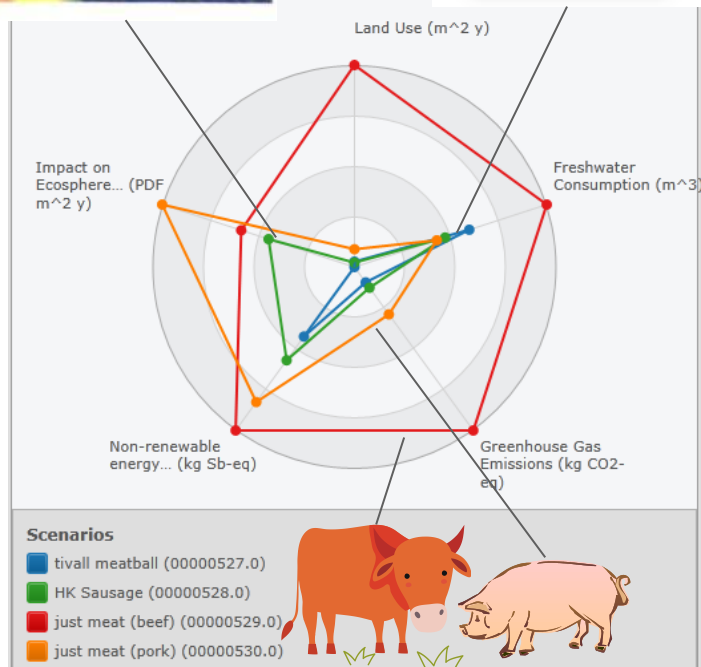
Land use (m<sup>2</sup>)

For non-expert use,  
quick results generation



**Harmonized LCA Methodology**  
(ISO 14'000ff, EU Food SCP Rt, Sustainability Consortium)

# Environmental impact of products from various protein sources



Massive improvement of environmental performance of plant based protein products as compared to conventional meat

# The Nutrient Balance Concept



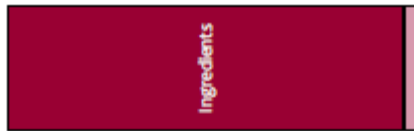
*A novel way of thinking about  
foods, food products and diets.  
Integrating the 30 essential nutrient  
(vitamins, minerals, protein etc)*



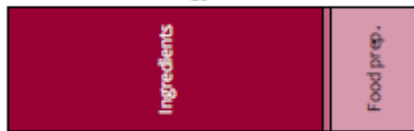
# Environmental Impact versus Nutrition



Greenhouse Gas Emissions (kg CO<sub>2</sub> eq.)



Non-renewable Energy and Minerals (kg Sb eq.)



Freshwater Consumption (m<sup>3</sup>)



Land Use (m<sup>2</sup> x annum)



Ecosystems Quality (PDF x m<sup>2</sup> x annum)

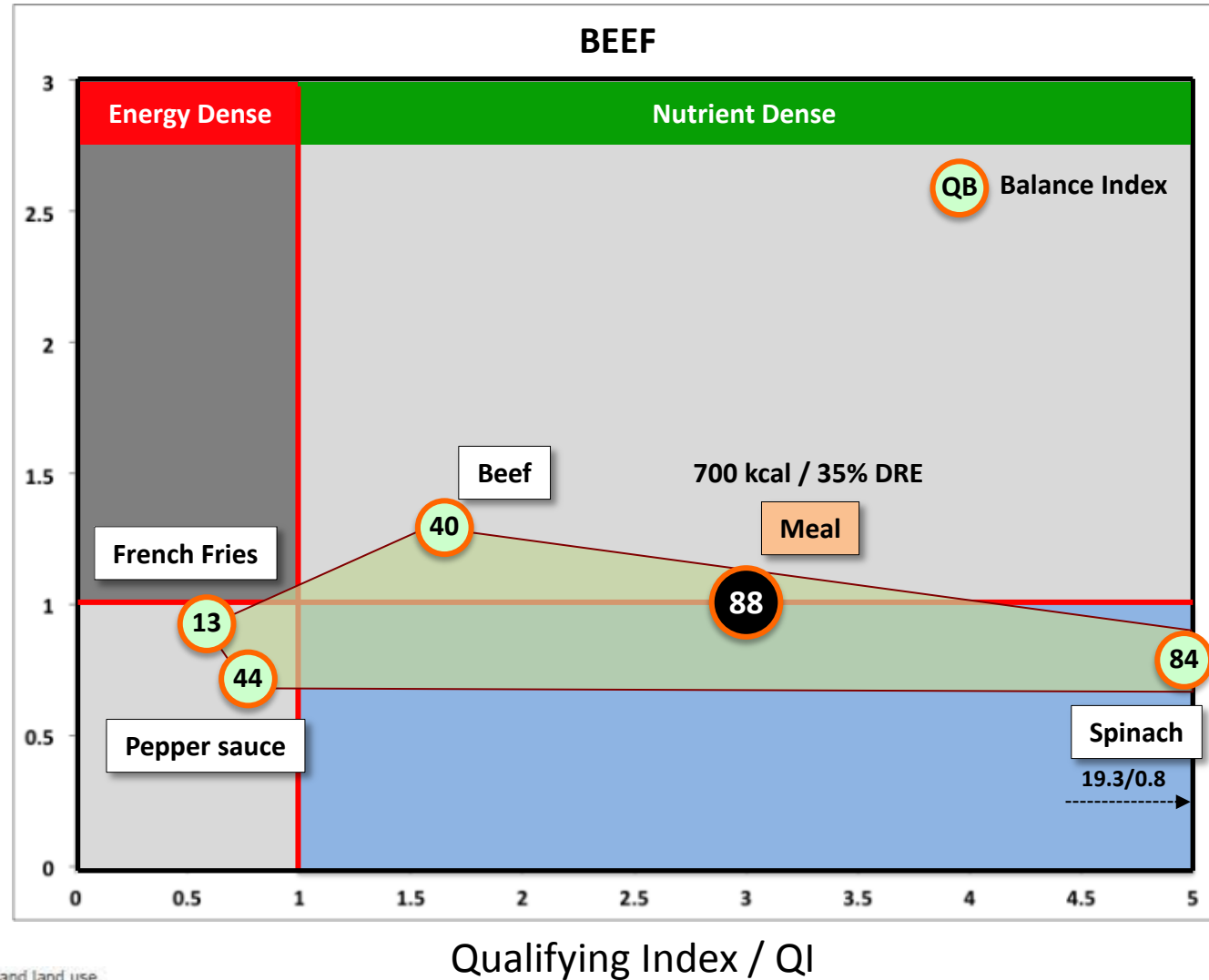


## Legend



- Highest impact on GHG emissions and land use, mainly due to extensive beef rearing
- Locally sourced ingredients do not translate into low overall impacts

Disqualifying Index / DI



# Environmental Impact versus Nutrition

Filets de sole tropicale grillé



Greenhouse Gas Emissions (kg CO<sub>2</sub> eq.)



Non-renewable Energy and Minerals (kg Sb eq.)



Freshwater Consumption (m<sup>3</sup>)



Land Use (m<sup>2</sup> x annum)



Ecosystems Quality (PDF x m<sup>2</sup> x annum)

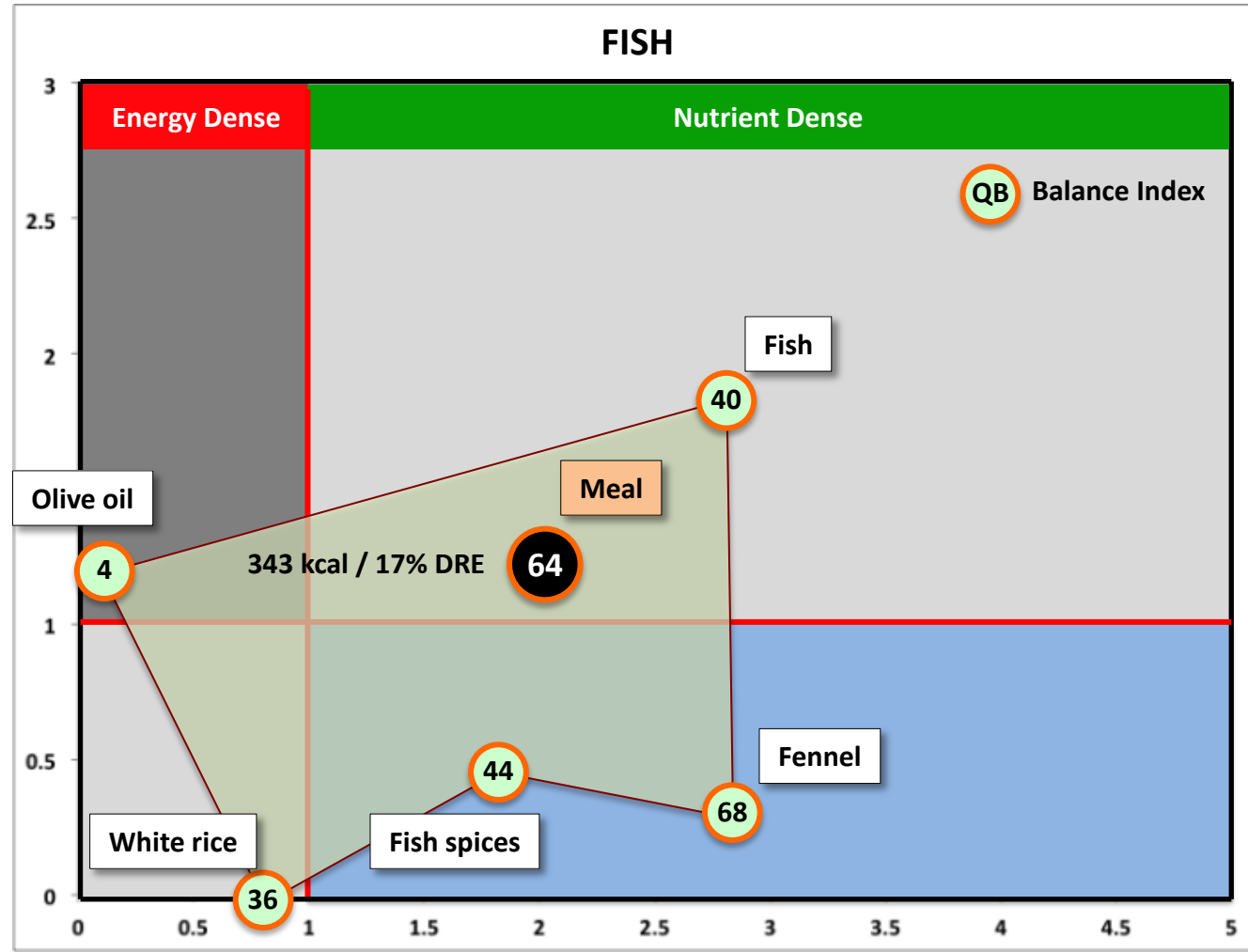


Legend



- Longest transportation: sole from Senegal, rice from India, but transport is not the highest contributor to overall impact
- Rice irrigation accounts for high fresh water consumption

Disqualifying Index / DI



Qualifying Index / QI

# Environmental Impact versus Nutrition



Greenhouse Gas Emissions (kg CO<sub>2</sub> eq.)



Non-renewable Energy and Minerals (kg Sb eq.)



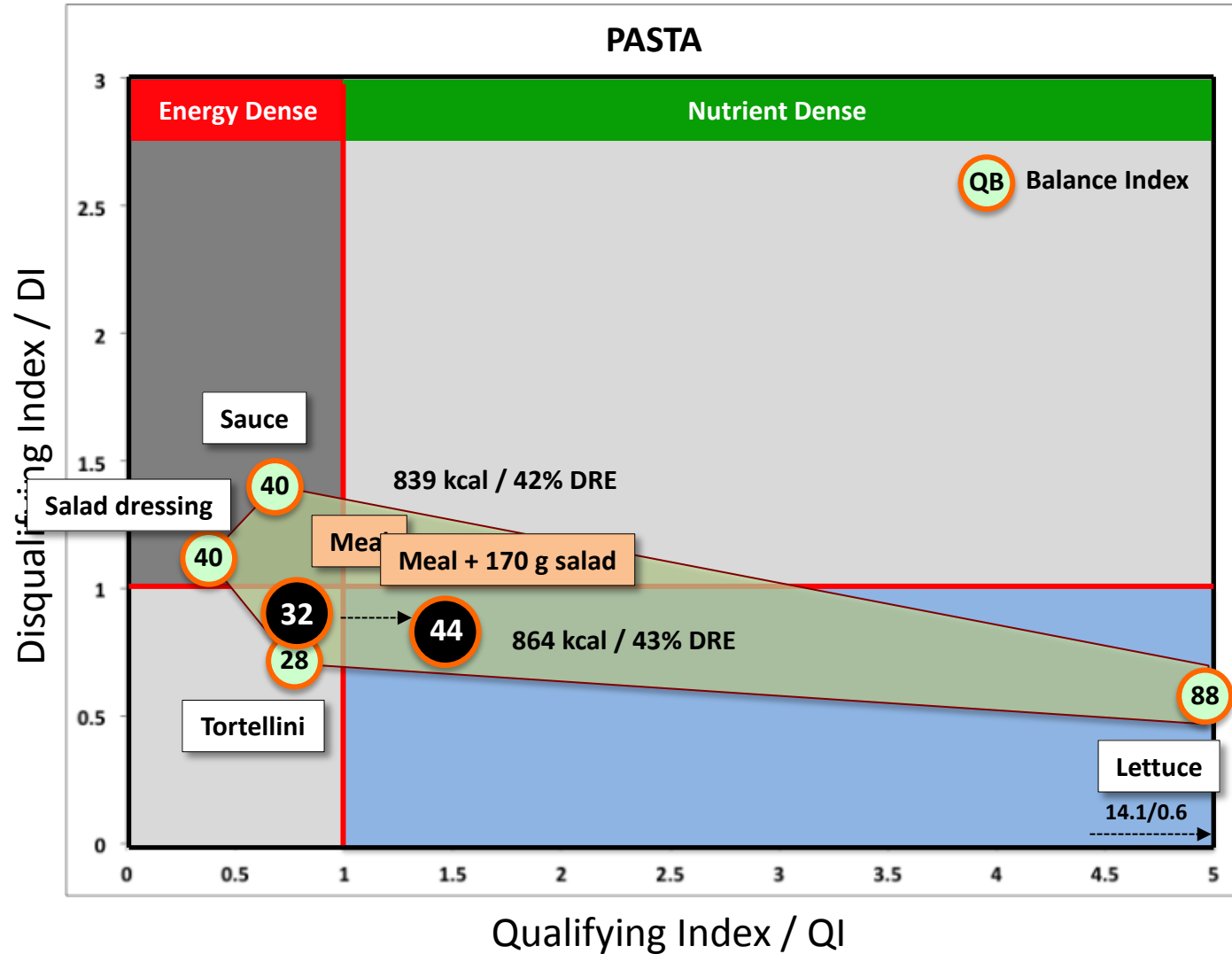
Freshwater Consumption (m<sup>3</sup>)



Land Use (m<sup>2</sup> x annum)



Ecosystems Quality (PDF x m<sup>2</sup> x annum)



"A beautiful and important book about one of the world's most important subjects." —Eric Schlosser, author of *Fast Food Nation*

# HUNGRY PLANET



## WHAT THE WORLD EATS

PETER MENZEL and FAITH D'ALUISIO • Foreword by Marion Nestle

<http://www.time.com/time/photogallery/0,29307,1626519,00.html>



# Mexico – Casales Family



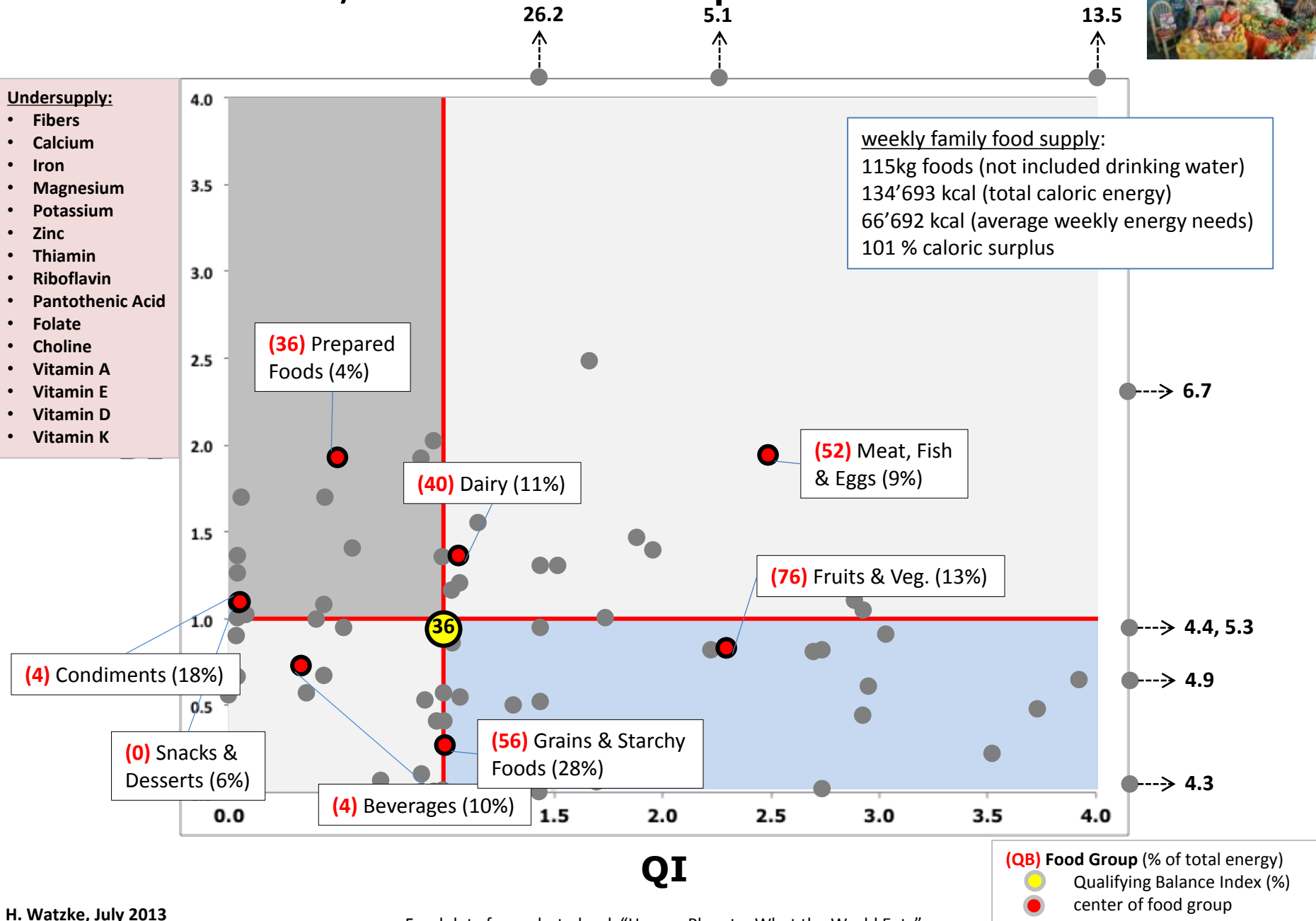
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# Mexico – Family Casales 189 USD per week

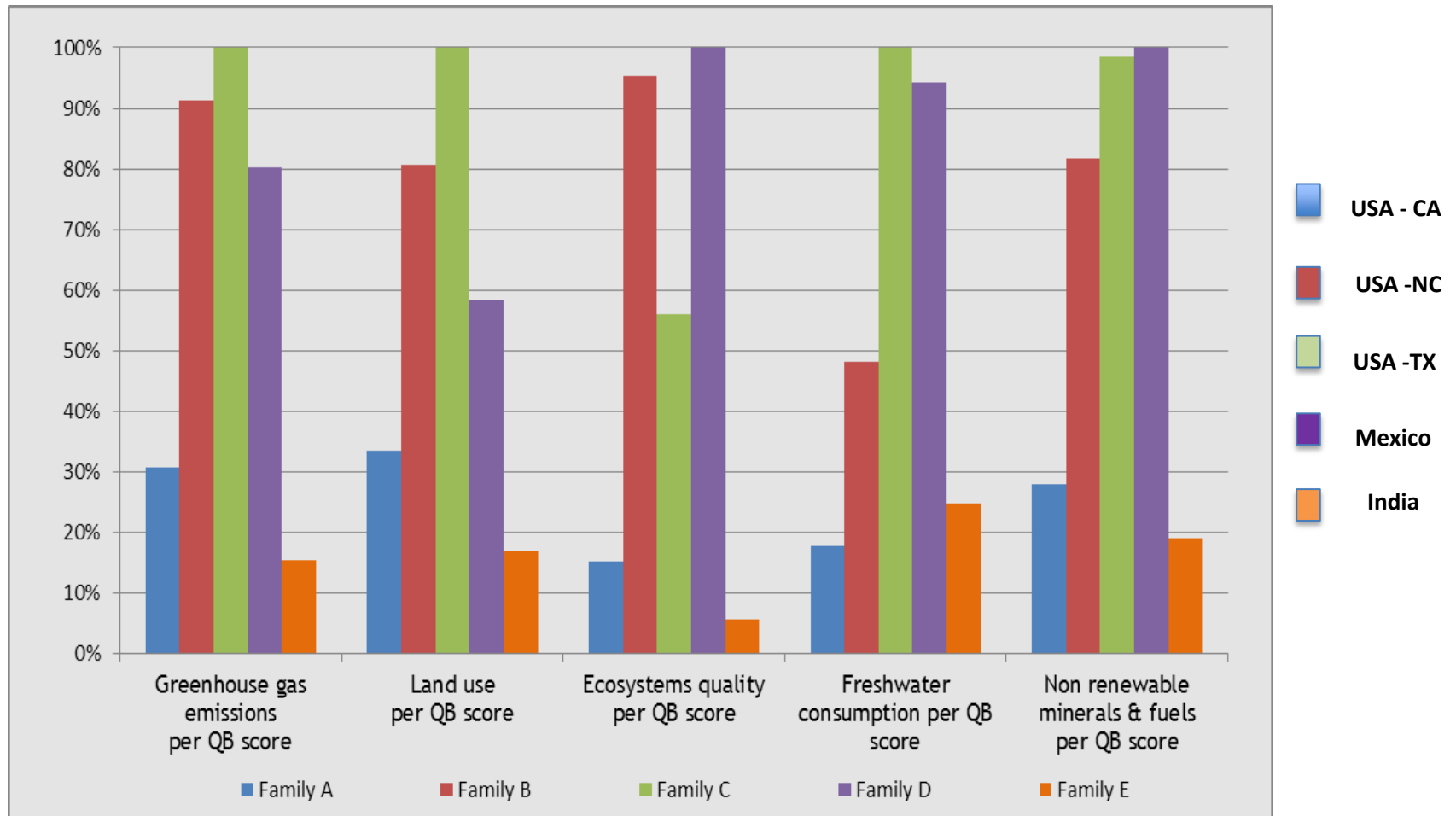


## Undersupply:

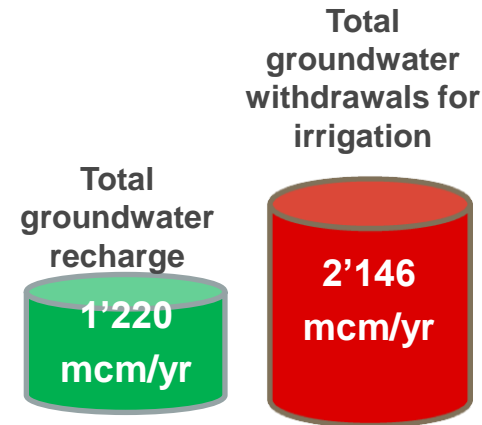
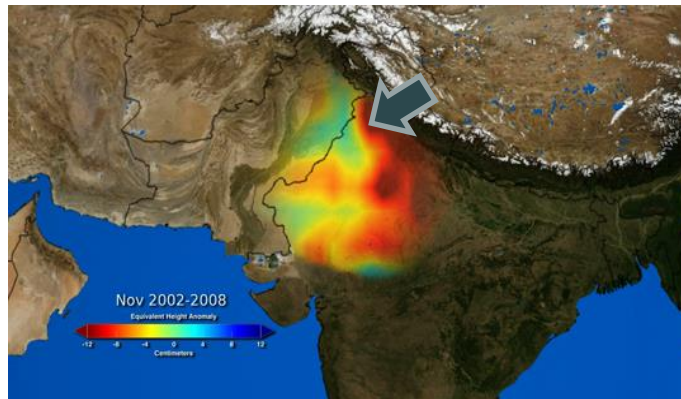
- Fibers
- Calcium
- Iron
- Magnesium
- Potassium
- Zinc
- Thiamin
- Riboflavin
- Pantothenic Acid
- Folate
- Choline
- Vitamin A
- Vitamin E
- Vitamin D
- Vitamin K



# Environmental impact vs nutrition



# Moga/India: farming in a hot spot for water scarcity



- ✓ All cultivated land is irrigated (97.6% with groundwater)
- ✓ 1 million tubewells in Indian Punjab



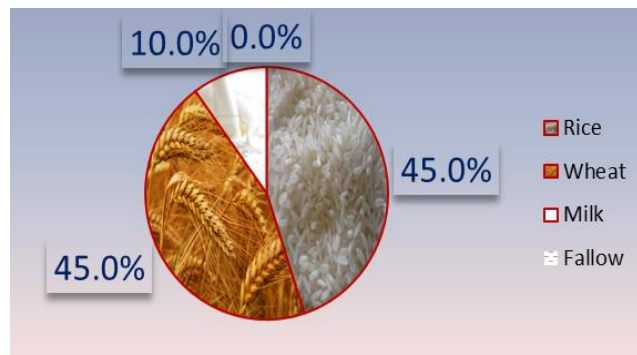
# Selecting what we grow can have a significant impact on both Nutrition and Natural Resource Efficiency

## Punjab - 6 hectares with 3 buffalos

### Base Scenario



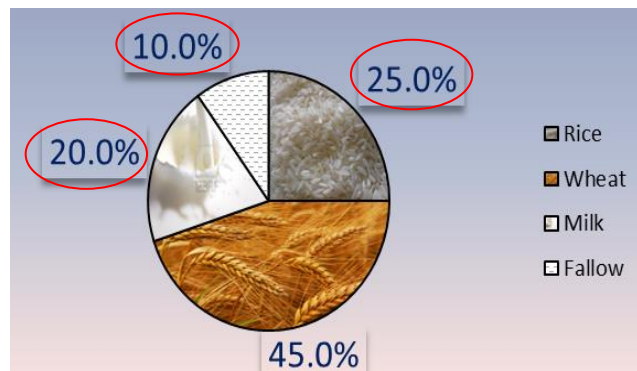
= 10.5L/d per cow



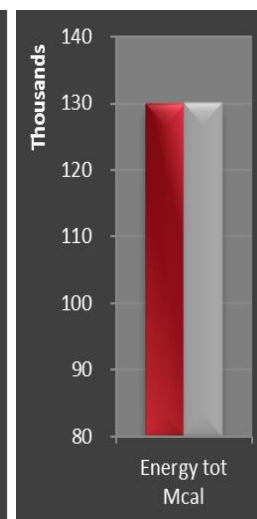
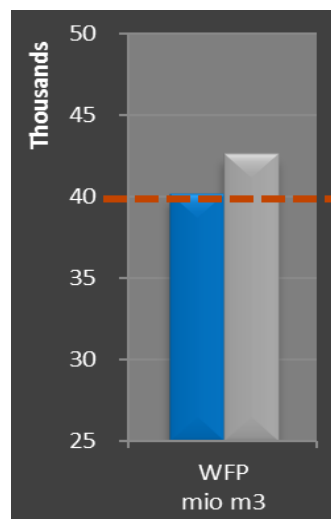
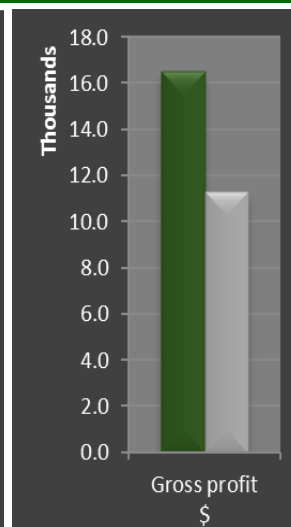
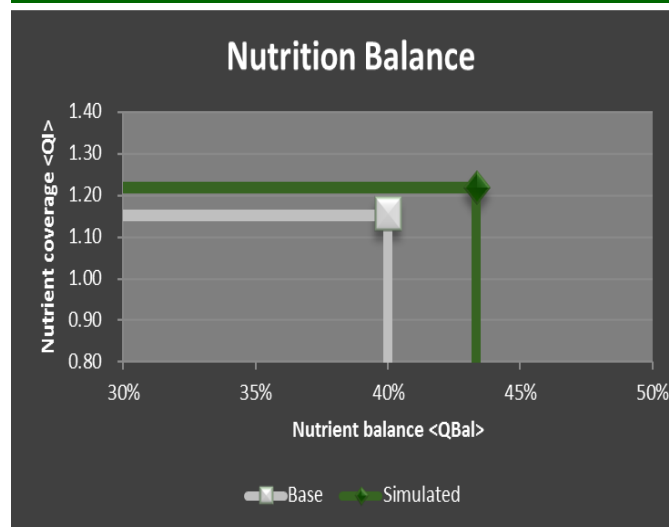
### Simulated Scenario



= 15L/d per cow



Growing more milk and less rice in the Punjab can lead to:



- ✓ Less water used
- ✓ Improved Nutritional value
- ✓ Better returns for farmers

# Creating Shared Value

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“... beyond sustainability, to create value for shareholders and society - integrally linked to our core business ...”

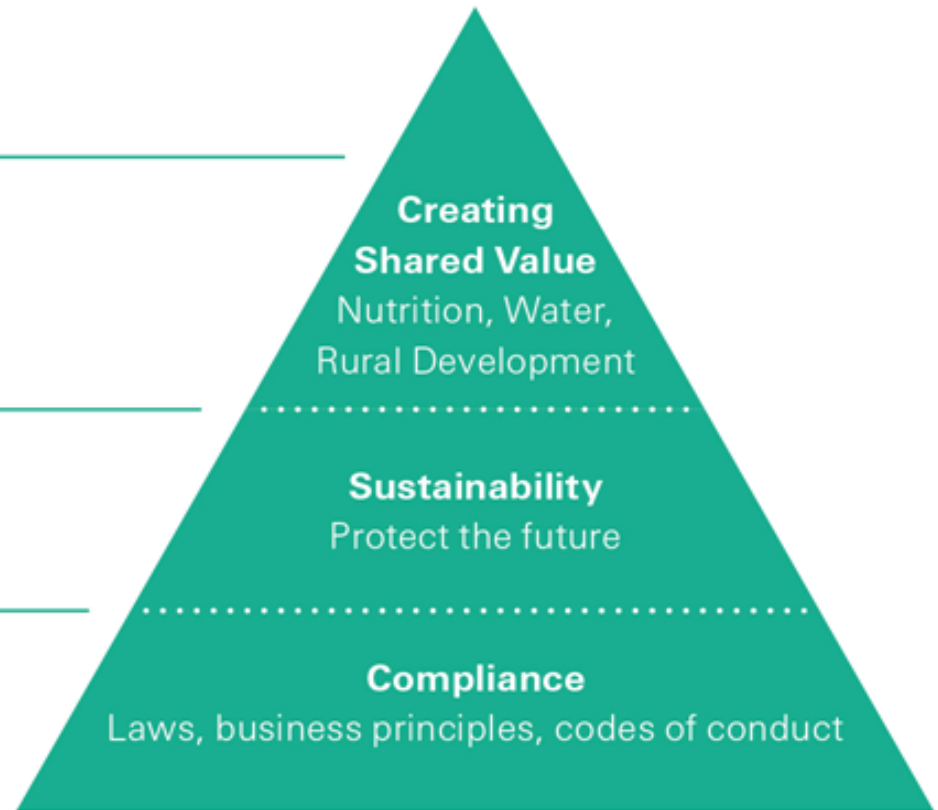
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“... meet the needs of the present without compromising future generations ...”

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“... comply with the highest standards ...”

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### ➤ DATA

- Environmental impact data for raw materials - agricultural impacts
  - Dietary intake data. Eating patterns & deficiencies
- 
- ### ➤ Integrated tools covering social, environmental & economic aspects of sustainability
- 
- ### ➤ Bring Nutrition into agricultural research