

Will the Combined Catalytic Roles of Nutrition, Food and Agriculture Buck the Trend in Lifestyle Diseases?



"Health comes from the farm and not from the pharmacy"

30th April 2013

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World Food and Nutrition Security – Key Facts

- 842 million people worldwide *suffer from hunger or undernourishment*.
- Two billion people worldwide have *inadequate iodine nutrition*.
- 140 million preschool children and more than 7 million pregnant women suffer from *Vitamin A deficiency*.
- *Iron deficiency anaemia* among pregnant women is associated with an estimated 100,000 maternal deaths every year.
- WHO (2010) has revealed that **1.6 billion adults** are overweight and **400 million** are obese worldwide.
- **155 million children** worldwide are overweight or obese.

Malaysian Scenario – Key Facts

	NHMS I (1986)	NHMS II (1996)	NHMS III (2006)	MyNCDs1 (2005)
Age group	≥ 25 years	≥ 30 years	≥ 30 years	25-64 years
Prevalence of diabetes	6.3%	8.3%	14.9%	-
Overweight (BMI ≥ 25 & < 30kg/m ²)	-	16.6%	29.1%	30.9%
Obesity (BMI > 30kg/m ²)	-	8.3%	14.9%	16.7%

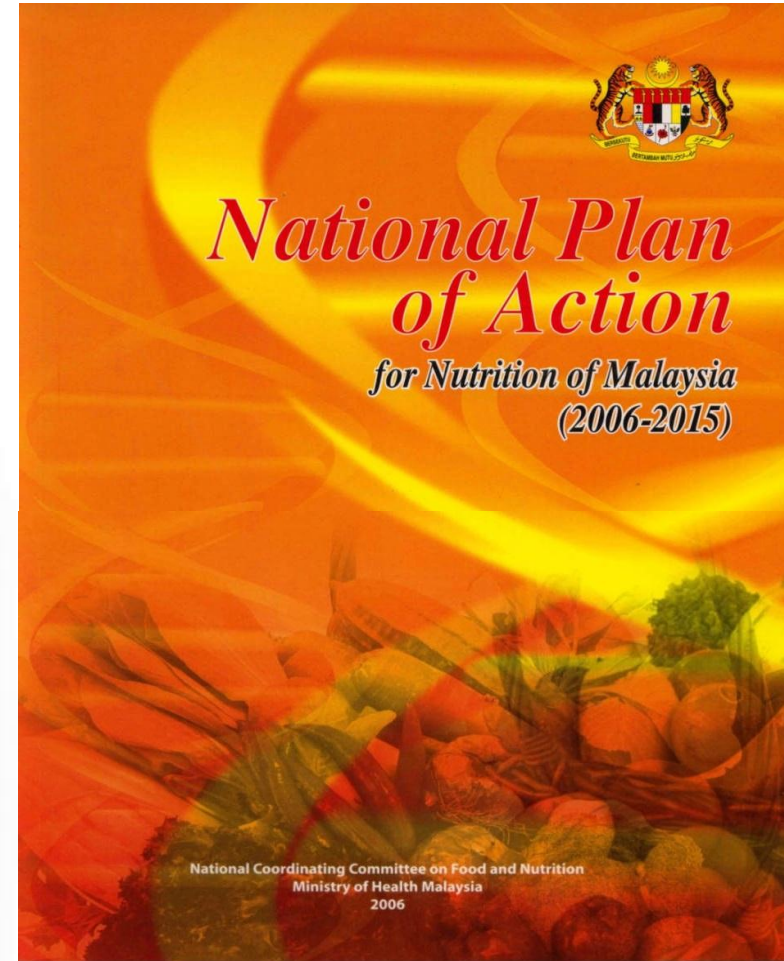
NHMS: National Health and Morbidity Survey

MyNCDs1: Malaysian Non Communicable Disease Study

Source: Ministry of Health Malaysia, 2010

National Plan of Action for Nutrition II (NPANM II) (2006-2015)

- **General Objectives of NPANM II:**
 - To achieve and maintain optimal nutritional well-being of Malaysians
- **Specific Objectives:**
 - To enhance the nutritional status of the population
 - To prevent and control diet-related non-communicable diseases



Food Plus Direction – going back to basics

“The use of underutilised plant species to improve nutritional security through breeding, production, agroprocessing and marketing in the dietary diversification



Problem Statement

Problem 1: Lack of Dietary Diversity

- **Wheat**

- **Rice**

- **Maize**

- **Potato**

- **Cassava**

- **Soybean**

- **Sweet Potato**

- **Sorghum**

- **Yam**

- **Plantain**



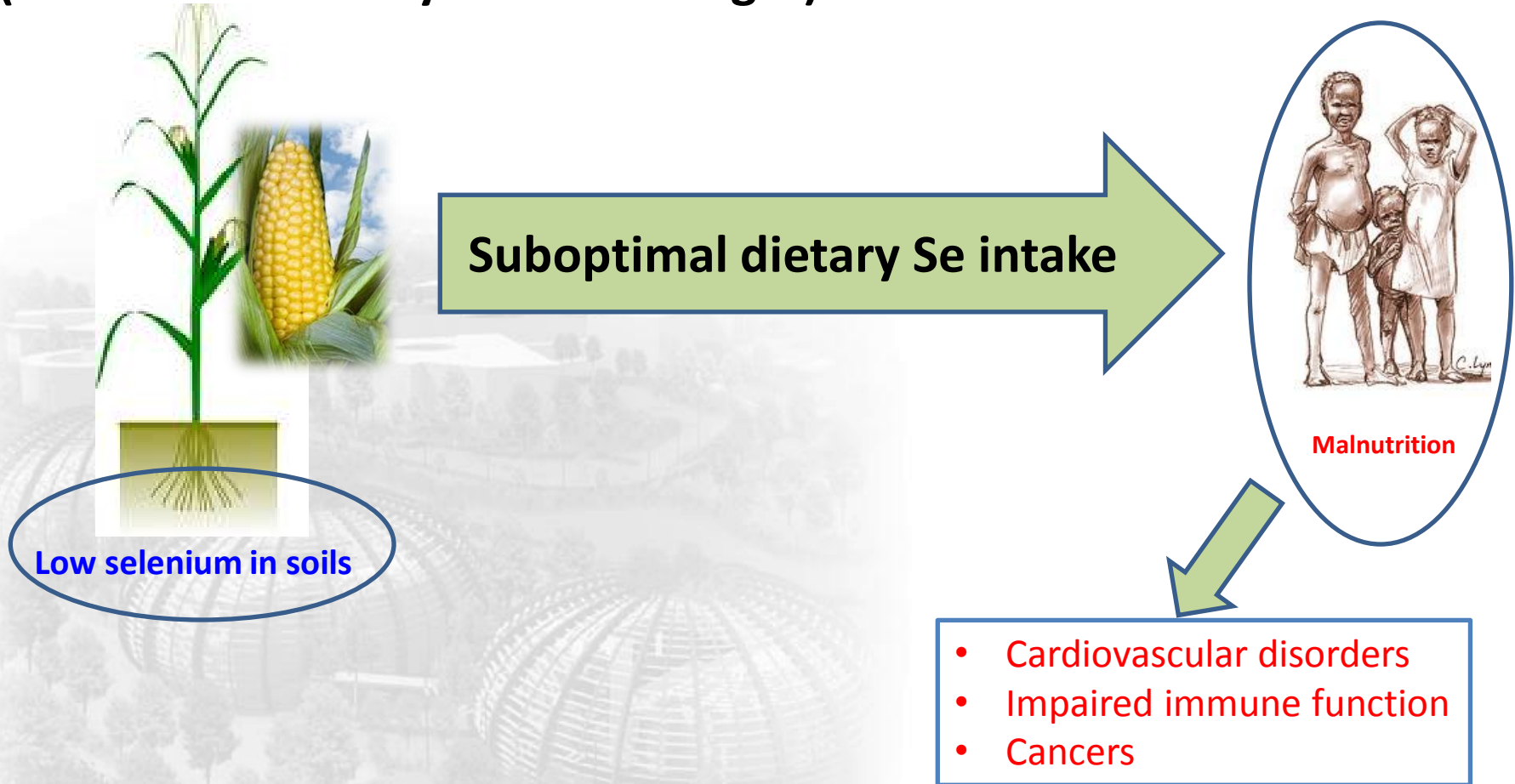
More than half of the world's food.

Ten crops account for more than 75% of the food consumed in the world.

(International Development Research Centre, 2006)



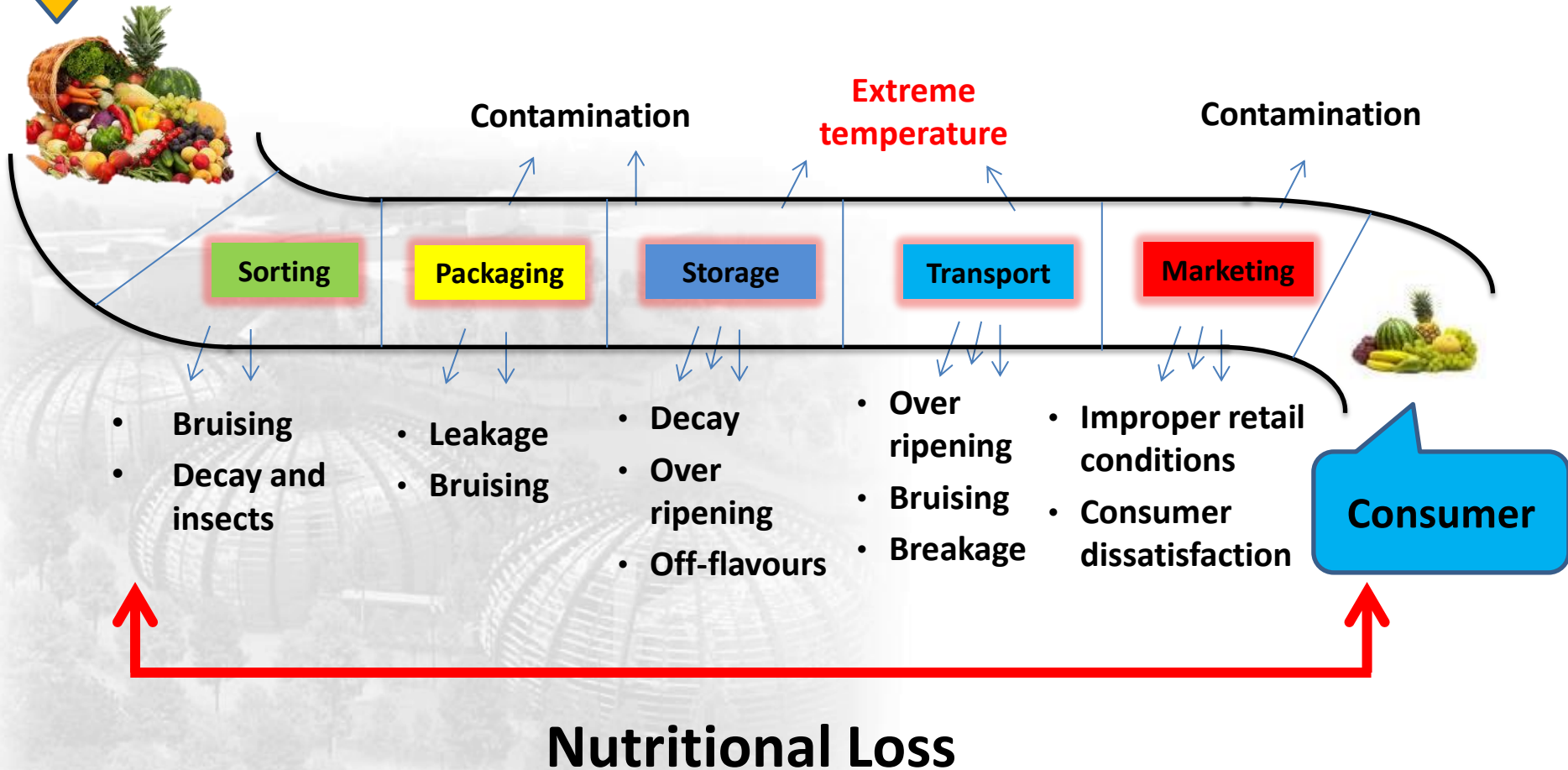
Problem 2: Poor Availability of Micronutrients in plants and soil and the need for Biofortification (Malawi Case Study: Hidden hunger)



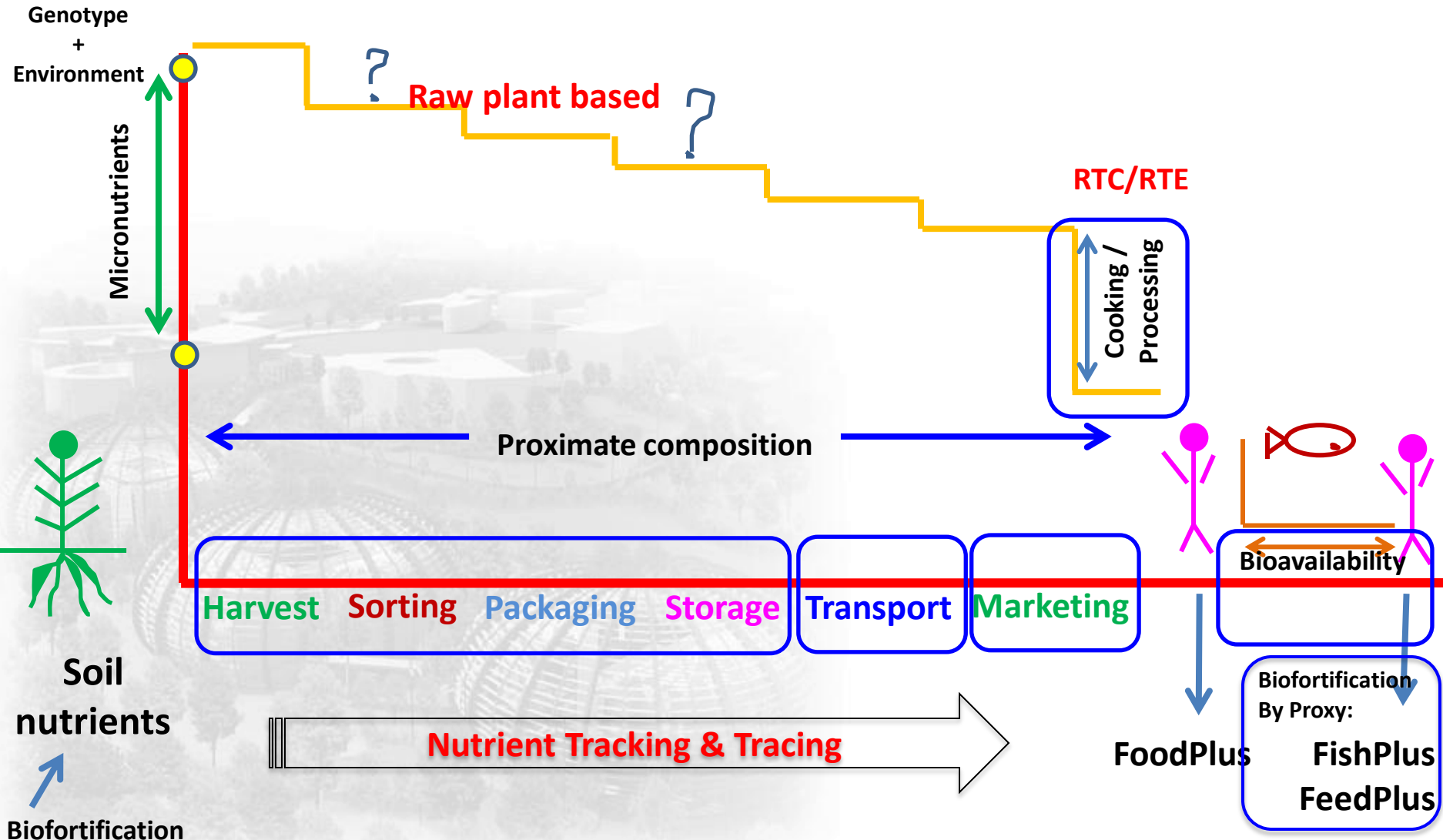
Martin R. Broadley *et al.*, 2012

Problem 3: Postharvest Nutritional Losses

Producer

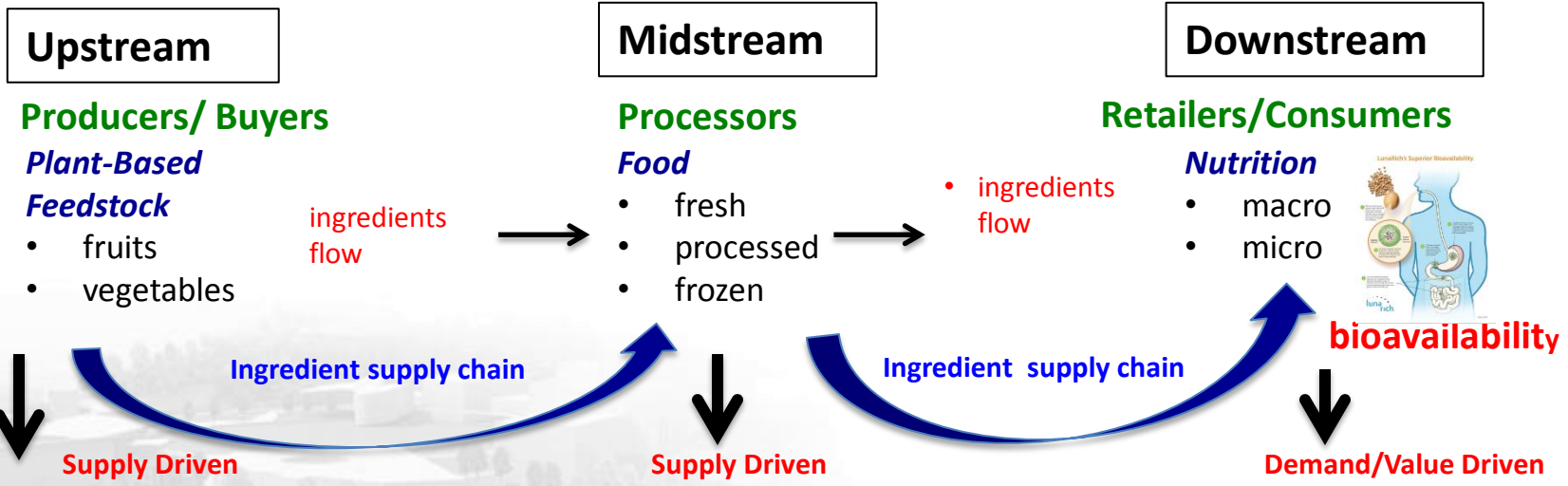


Problem 4 : More Losses in the Vertical and Horizontal Food Chain

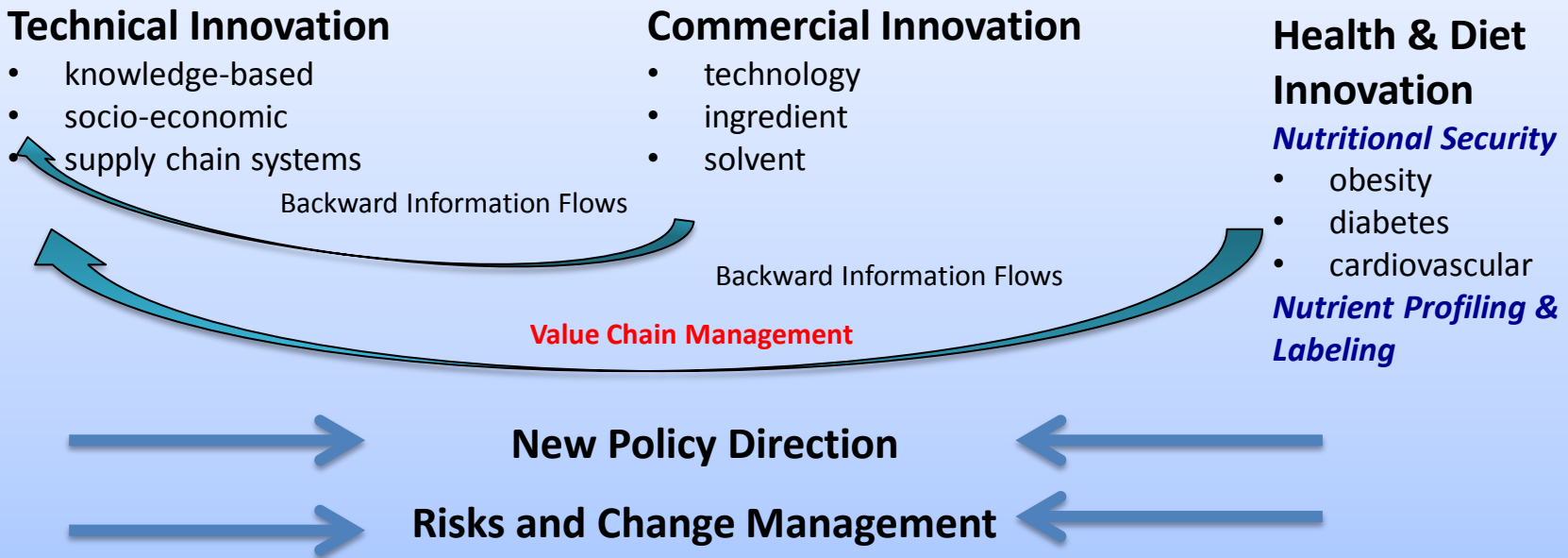


Problem 5: The Integration of the National Agriculture – Food – Nutrition into a single Policy Direction

Ingredient Chain of Custody



Value Chain Innovations



Putting FoodPlus Strategy in a Nutshell

- Postharvest physiology
- Supply chain management
- Nutritional analysis

Biofortification

Soil + Breeding



Underutilised
crops

Harvested
product

Fresh/Raw

Marketing of
products



End user

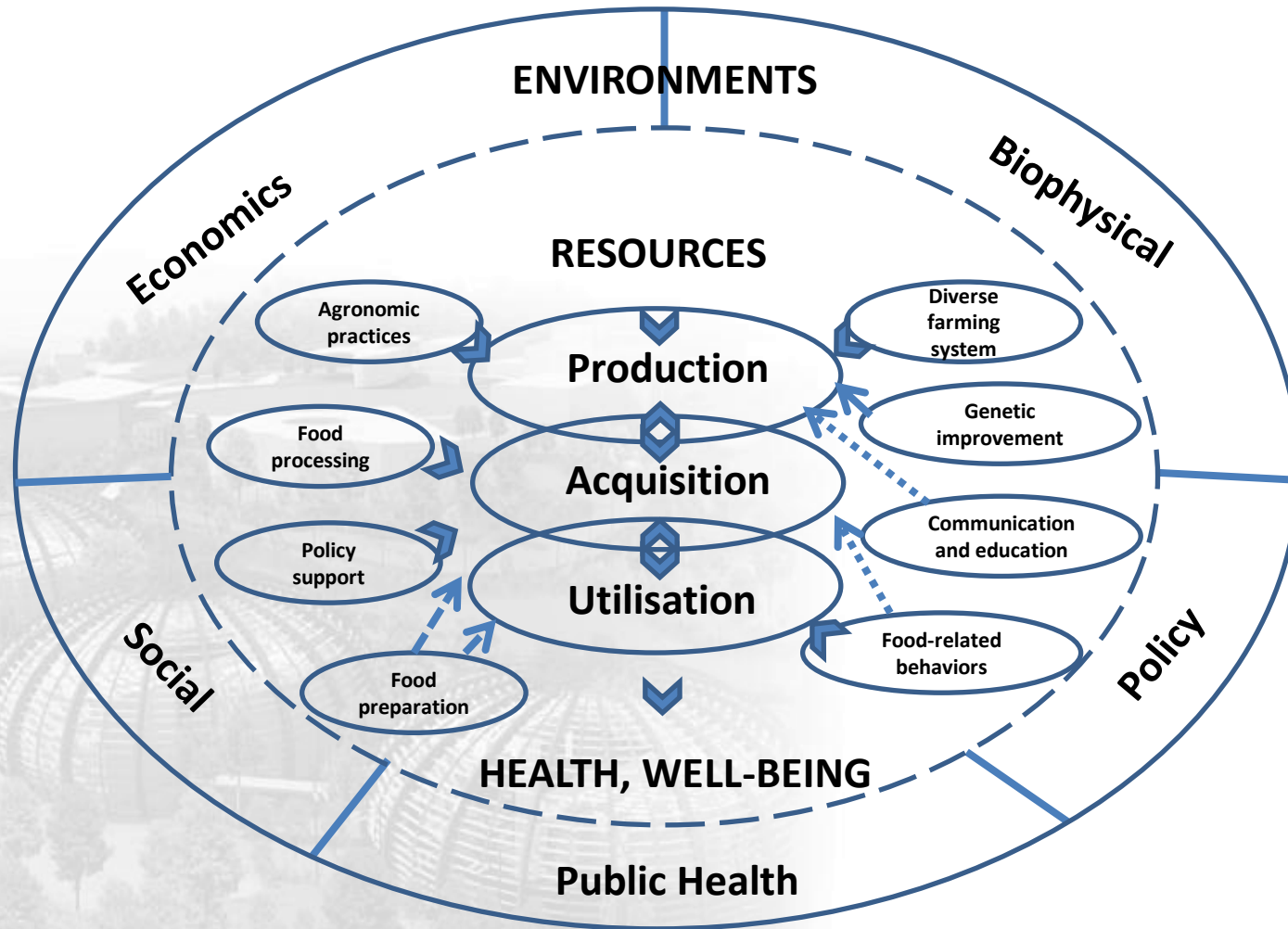
Processed

- Food processing and preservation
- Nutritional analysis

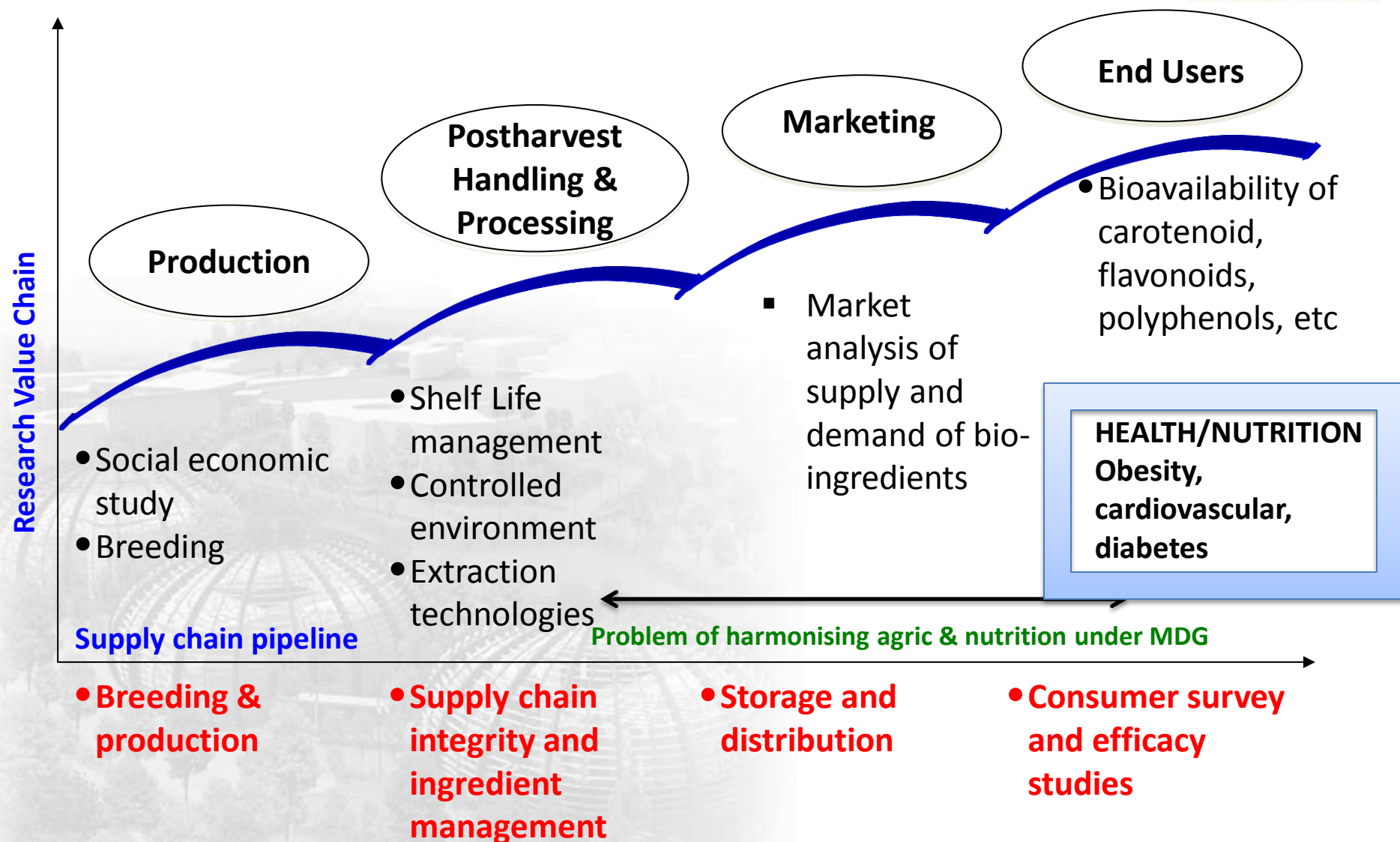
- **Bioavailability** of
micronutrients

Traceability of micronutrients from soil → End user

The Holistic Food System Model for Communication and Evidence-Based Policy Direction



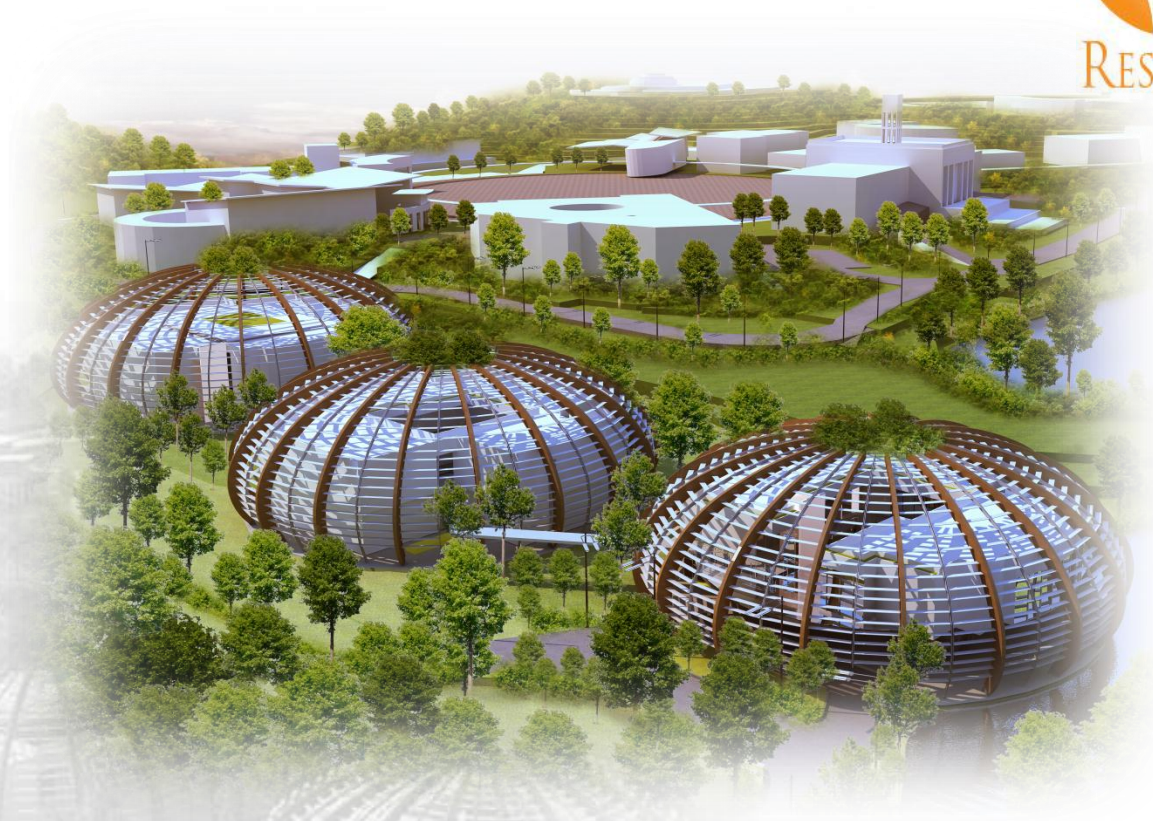
FoodPlus R & D Modeling – Cross functional Research Value Chain for Policy Direction and Market Development



Recapping

- The need to diversify our diets through plant based (underutilised crops) sources and not too dependent on drugs.
- Customised biofortification of soils and plants to improve the supplement of specific micronutrients for functional foods.
- The need to profile the micronutrients in raw and processed forms through ingredient proximate in the food chain system.
- High level intervention in policy direction through an integrated approach in the policy formulation involving agriculture, food and nutrition.
- Invitation to R & D institutions and commercial organisations to invest in this joint research.





Thank You