

Promoting traditional food systems for better nutrition and the Bioversity International's nutrition strategy

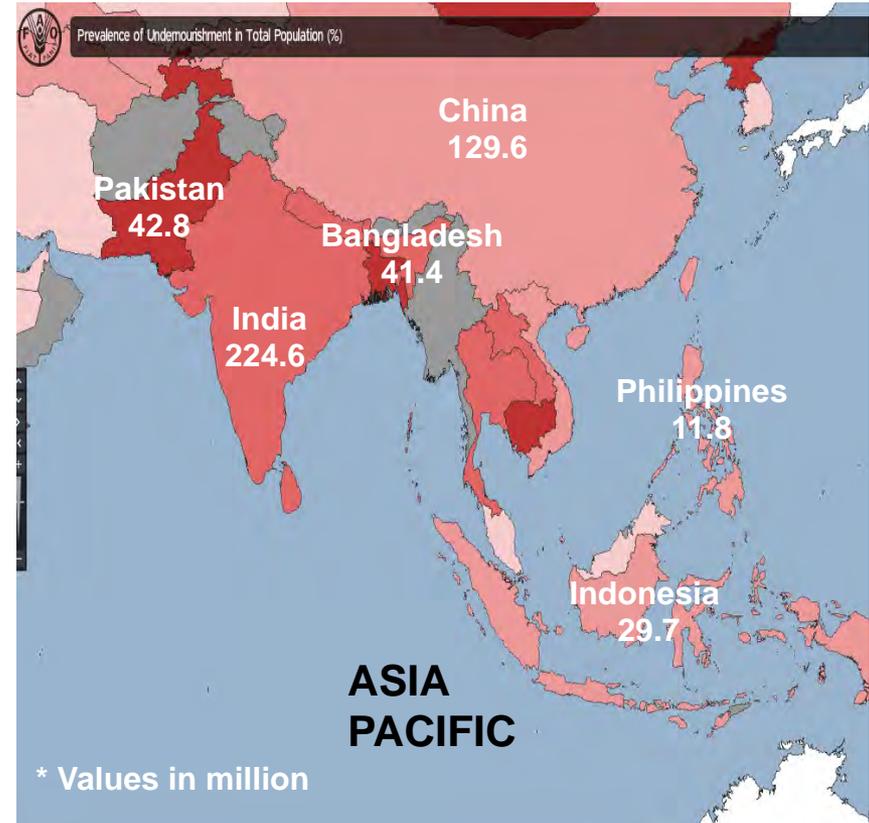


Leocadio Sebastian
Bioversity International

State of Hunger

FACTS:

- Globally, close to **one billion** people (925 million) experience chronic hunger.
- **578 million** (62% of global total) undernourished in Asia-Pacific region



*Data Sources: FAO Hunger Portal
2012, Konuma 2012*

Malnutrition and Hidden Hunger

- Missing micronutrients
 - At least 2 billion worldwide
 - Mostly women and children
- 60% of child deaths linked to poor nutrition



Diseases of 'affluence'

- Obesity
- Cardiovascular diseases
- Type II diabetes



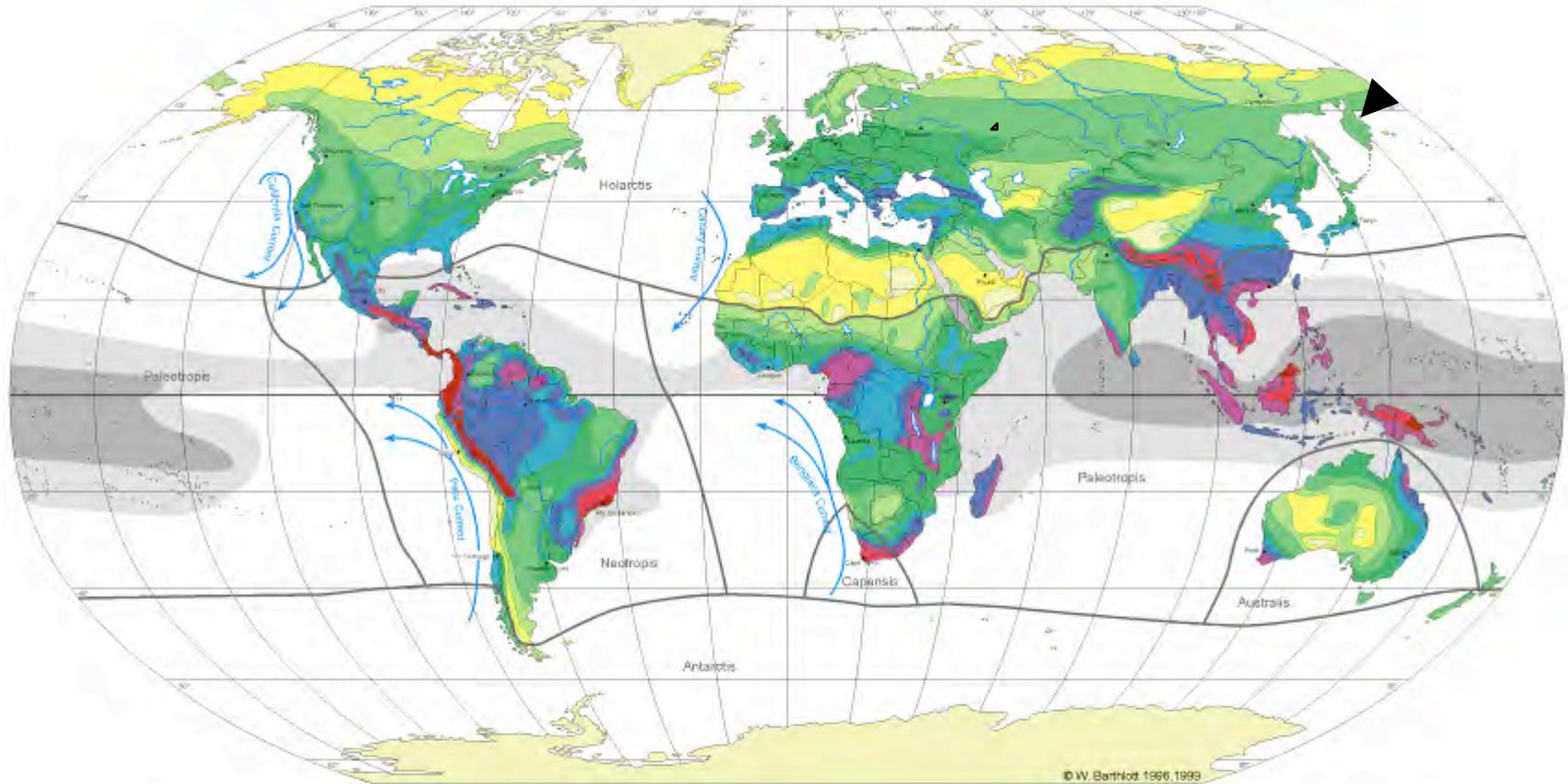
→ Increasing among poor people in both rural and urban areas

WHA resolution 57.17 urged member states to “... *adopt, among other things, increase consumption of fruits and vegetables, and legumes, whole grains and nuts, and to take measures to preserve and promote traditional foods and physical activity.*”

(World Health Assembly (WHA) resolution 57.17. 2004: Global Strategy on Diet, Physical Activity and Health)

Asia-Pacific is a mega diversity center.

GLOBAL BIODIVERSITY: SPECIES NUMBERS OF VASCULAR PLANTS



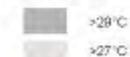
© W. Barthlott 1986, 1999

Robinson Projection
Standard Parallels 36°N und 39°S

Diversity Zones (DZ): Number of species per 10 000km²



sea surface temperature



cold currents

W. Barthlott, N. Bedinger, G. Braun, F. Feig, G. Kier, W. Lauer & J. Mutke 1999
modified after
W. Barthlott, W. Lauer & A. Placke 1996
Department of Botany and Geography
University of Bonn
German Aerospace Research Establishment, Cologne
Cartography: M. Gref
Department of Geography University of Bonn

'Medicalization' of Nutrition

- Dietary diversity option largely ignored
- Medical establishments see three approaches to tackling malnutrition:
 - supplements;
 - fortified foods; and
 - bio fortified staples.



Dietary Diversity- Part of Solution

- Broaden diversity in food
- Promote consumption of neglected and underutilized species
 - Indigenous, locally adapted and nutritious
 - Perceived as backward
 - Abandoned by research and policy
- Promote healthy diets, especially for women and children



Nutrition and Biodiversity

- Biodiversity - Basis of diets throughout human history
- Many traditional food systems have healthy elements based on local species of high nutritional value.
- Loss of traditional elements in modern diets
 - Nutrition transition/
change in diet culture



Dwindling Use: Underutilized

Overall, an estimated **10,000** plant species have been collected and cultivated for food...

...but only **30** contribute over **90%** of the world's caloric intake

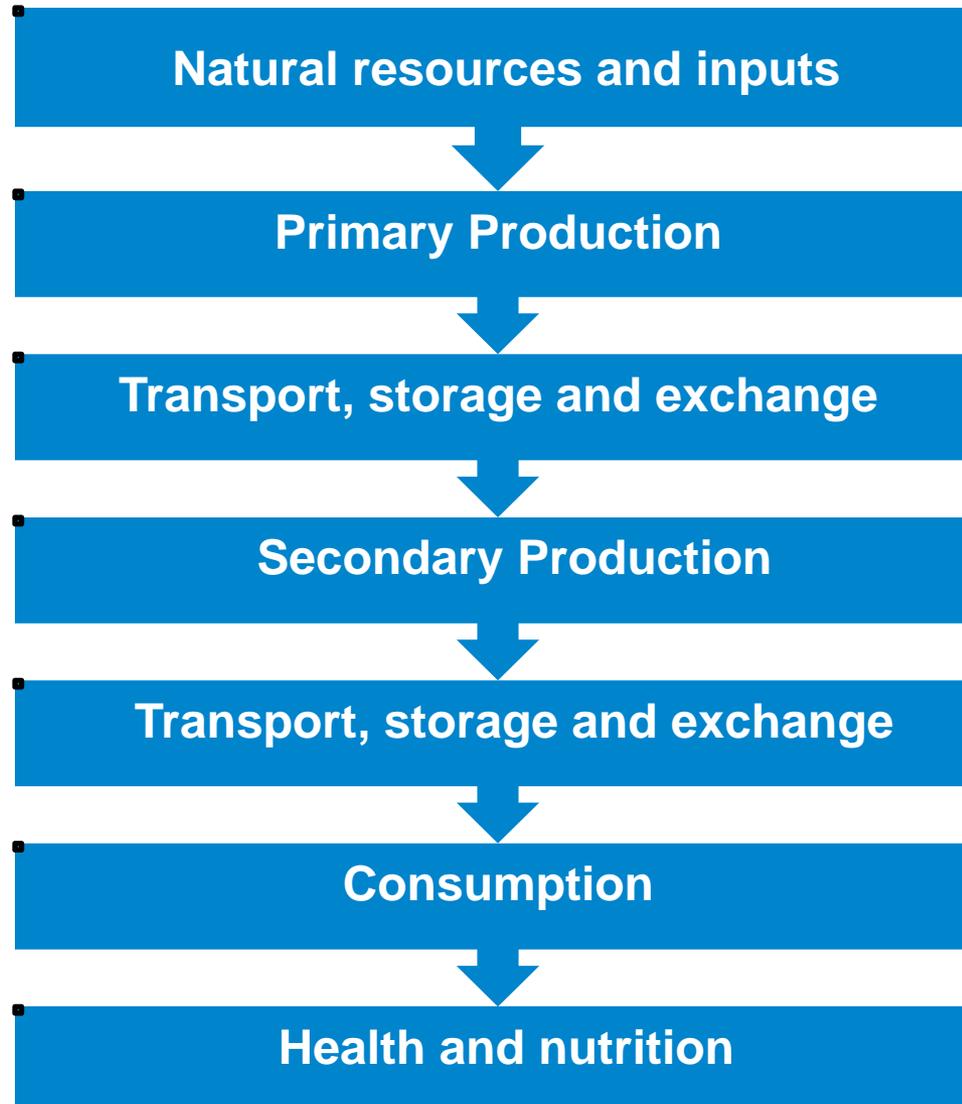


Non-Use → Increasing Loss

4 cases promoting traditional food systems

1. Millets of India-
Finger millet, little millet,
foxtail millet, barnyard
millet, proso millet, kodo
millet
2. African Leafy
Vegetables
3. Andean Grains –
Quinoa, Canihua,
Amaranth
4. Tropical Fruits –
*Mangifera, Garcinia,
Nephelium, citrus*





An illustration of the food system that can be used to plan interventions for improving the process efficiency and effectiveness.

*Source:
Anderson 2011*



Minor millets of India (Tamil Nadu)

- Reliable and thrive under difficult conditions, thus, sparing wider environment
- High nutrition and low glycemic index



Nutrition

	Protein	Fibre	Ca	Fe	Riboflavin
Brown rice	7.9	1.0	33	1.8	0.04
Wheat	11.6	2.0	30	3.5	0.10
Millet					
Finger	7.7	3.6	350	3.9	0.19
Foxtail	11.2	6.7	31	2.8	0.11
Little	9.7	7.6	17	9.3	0.09



Kodo millet



Finger millet



Barnyard millet



Little millet



Minor millets of India (Tamil Nadu)

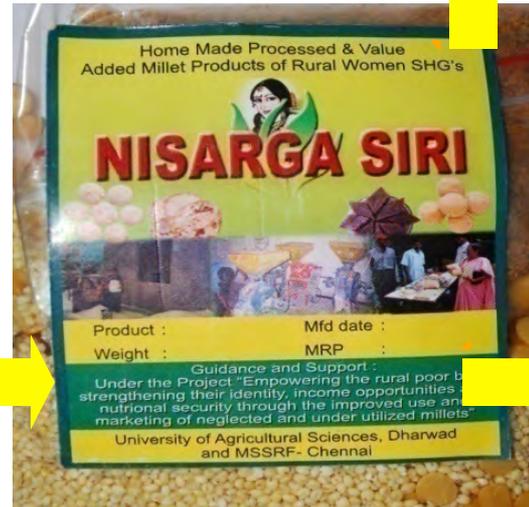
- Reduce drudgery
- Develop new products
- Education, public awareness and marketing

**Better nutrition
and livelihood**





Elimination of drudgery makes millets viable options and more attractive food for households.



Value-Added

- New Products
 - Cheaper
 - Healthier
- Marketing
 - Income
- Education
 - Empowerment
 - Self-esteem



African Leafy Vegetables

(Botswana, Cameroon, Kenya, Senegal and Zimbabwe)

Rural Outreach Program,
World Vegetable Center..

- Hundreds of species:
 - Much more nutritious
- Focus on women
 - Home gardens
 - Feeding the family



African Leafy Vegetables

(Botswana, Cameroon, Kenya, Senegal and Zimbabwe)

- New seed systems and agronomic techniques
- Market links and Value chain
 - Training for clean and high-quality produce
 - Partnered with Family Concern (NGO) and Uchumi Supermarkets

Sales
up by
1100%
in 2
years





Tropical fruits in SEA



Garcinia, Mangifera, Nephelium and Citrus

- Strengthen sustainable livelihoods and food security in rural communities
-Malaysia, India, Indonesia and Thailand
- Promote good practices for the management and conservation of tropical fruit genetic resources
- Enhance farmers' incentives to maintain these species on-farm

Conservation and Sustainable Use of Cultivated and Wild Tropical Fruit Diversity:

Promoting Sustainable Livelihoods, Food Security, and Ecosystem Services





Tropical fruits in SEA



- Promote their consumption
- Identify market and non-market values
- Strengthen market linkages

Conservation and Sustainable Use of Cultivated and Wild Tropical Fruit Diversity:

Promoting Sustainable Livelihoods, Food Security, and Ecosystem Services



1. Propagation and nursery management

Steps for side grafting

Steps of inarching



2. Production and management of tropical fruit tree genetic resources (TFTGR)

Maintenance of best rootstock block

Rangapur rough lemon is the best rootstock for Nagpur mandarin

- Long orchard life
- Good productivity
- Good price/unit of sapling

Commercial orchards do not maintain rangapur lemon for seed

- Practice of growing few trees in each garden

Seedling types

Commercial Varieties

Mango feasts

3. Linking farmers with markets (commercialization that support diversity maintenance and livelihood)

Value addition of local food culture: *Garcinia cowa* in Thailand

Value added local products

Local food culture

Cha muang

Income

Urban consumers

'Value chain concept'

Marketing local food culture and product diversification

(-)-Hydroxycitric acid

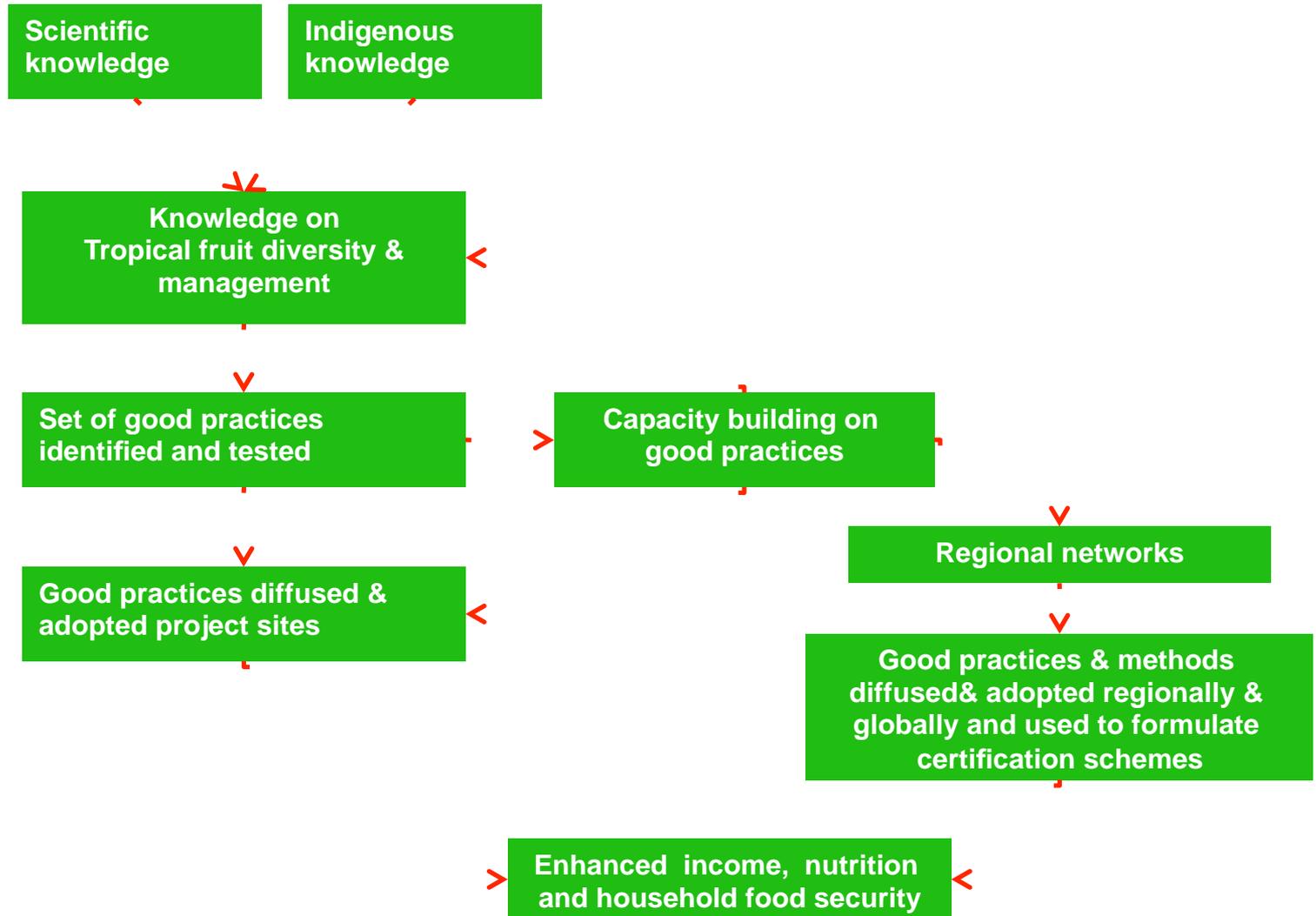
India: *Garcinia indica* (Kokum)

Indonesia: *Citrus maxima* (pummelo)

Malaysia: *Garcinia atroviridis* (Asam Gelugor)

Malaysia: *Garcinia forbesii* (Aroi Aroi)

Impact pathway



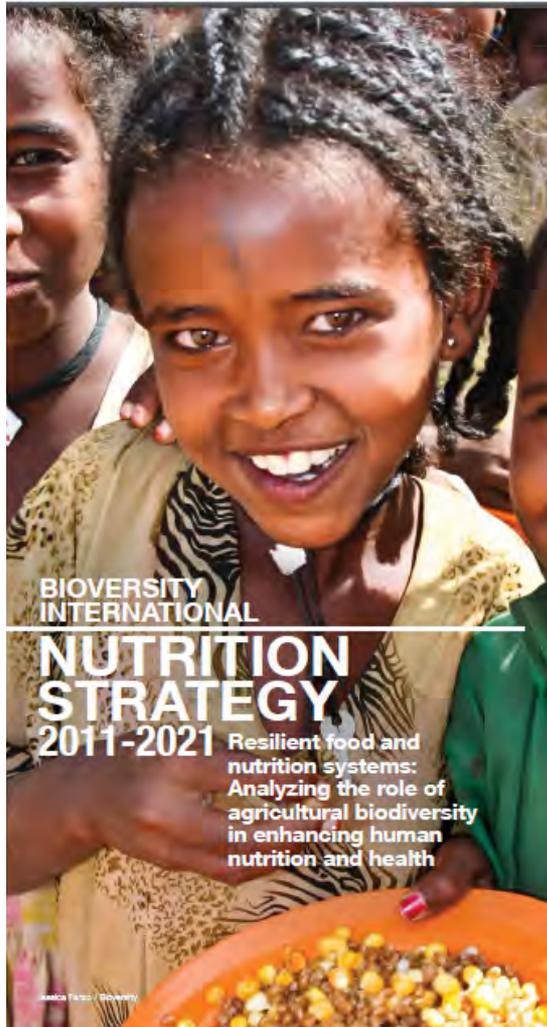
Challenges

- Link traditional food systems with nutrition condition of people
 - Rural smallholder farmers
 - Urban & peri urban population
 - Communities at risk of traditional food system loss
- Improve the knowledge about production management of specific agrobiodiversity;
- Nutrient content of the variety of food as affected by genetics and environment

Challenges

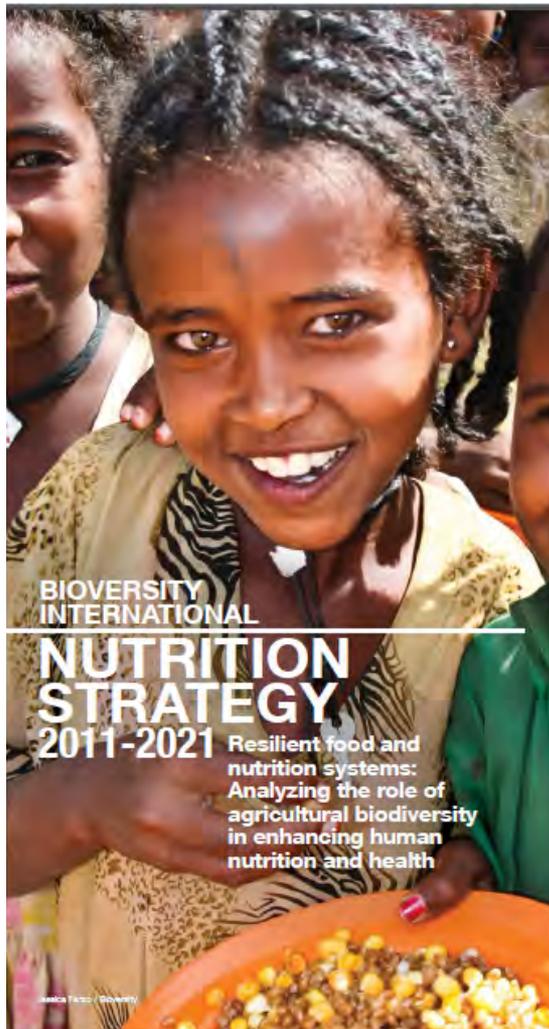
- Patterns of food production and consumption as it affects the positive links of agriculture, nutrition, and health
- Understanding how the global agricultural system and the benefits derived from agrobiodiversity influence the drivers of global dietary consumption patterns, nutrition and health status

Nutrition Strategy



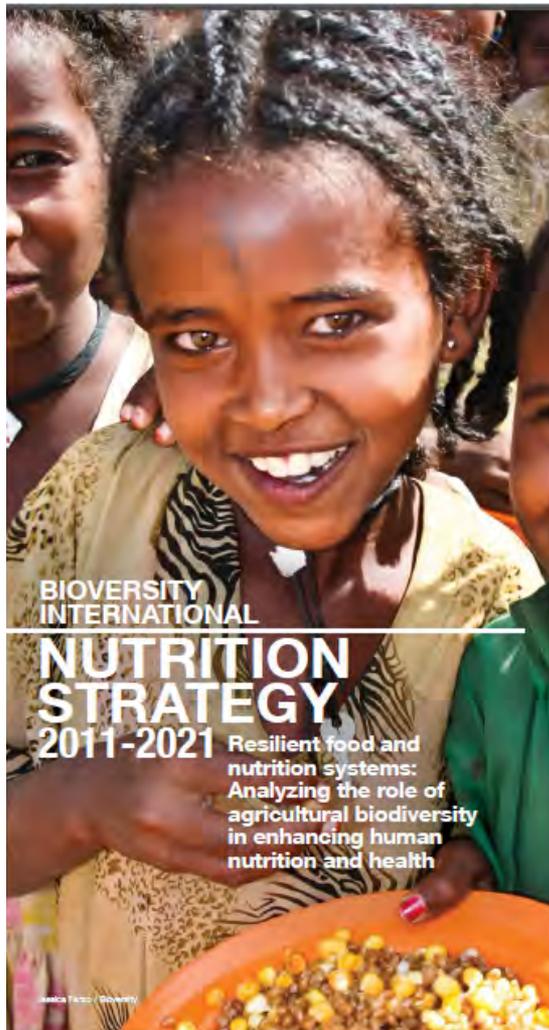
Bioversity's Nutrition Strategy for 2011-2021 **centres on using food and nutrition system approaches** to improve human nutrition and health.

Nutrition Strategy



To develop strong methodological and empirical evidence on how agricultural biodiversity contributes not only to livelihood and ecosystem benefits but more importantly to dietary diversity and nutrition.

Nutrition Strategy



With particular **focus on the role of local and traditional foods** as well as **neglected and underutilized species.**

[http://www.bioversityinternational.org/fileadmin/bioversityDocs/Research/Nutrition new/Bioversity Nutrition strategy fullversion.pdf](http://www.bioversityinternational.org/fileadmin/bioversityDocs/Research/Nutrition%20new/Bioversity%20Nutrition%20strategy%20fullversion.pdf)

Research Questions:

1. How does on-farm agrobiodiversity contribute to household consumption and to dietary diversity and quality?
2. How can we link agrobiodiversity to improved nutrition and health outcomes and benefits and do these links have an impact?
3. Can agrobiodiversity be scaled-out for commercial use while maintaining biodiversity and ecosystems and improving human health?
4. What does agrobiodiversity imply for peri-urban and urban markets and what do trends in urban markets imply for potential success of agricultural biodiversity?

Research Questions:

5. How can we better use and promote local knowledge of agrobiodiversity to improve the health of households?
6. What new tools and methodologies can be created and validated that measure agrobiodiversity associated with dietary patterns?

Objectives

- **To strengthen the empirical evidence** of agricultural biodiversity's role for nutrition and health
- **To ensure that the production of more nutritious foods**, through commercial pathways, reflects agricultural biodiverse practices and cultural and consumer preferences



**Research &
Evidence
Oriented**

Objectives

- **To determine best practices and delivery systems of agricultural biodiversity** in nutrition and health development programmes
- **To mainstream the role of agricultural biodiversity** into public health and nutrition policy and practice by sharing evidence and providing local solutions



**Development
& Policy
Oriented**

Initiatives, partnerships and platforms

- CGIAR Reform:
 - Integration of ABD and NUS elements into CRPs
- IFAD, FAO, CBD
- Platform Initiatives
 - CFF and CFFRC, PAR, GFAR-NUS
- FARA: - ABIA Initiative and Framework
- APAARI: Suwon Agrobiodiversity Framework
- GFAR-ITPGR Initiative on agrobiodiversity and traditional varieties

Recommendations:

In order for agrobiodiversity used in traditional food systems to unleash its potential as:

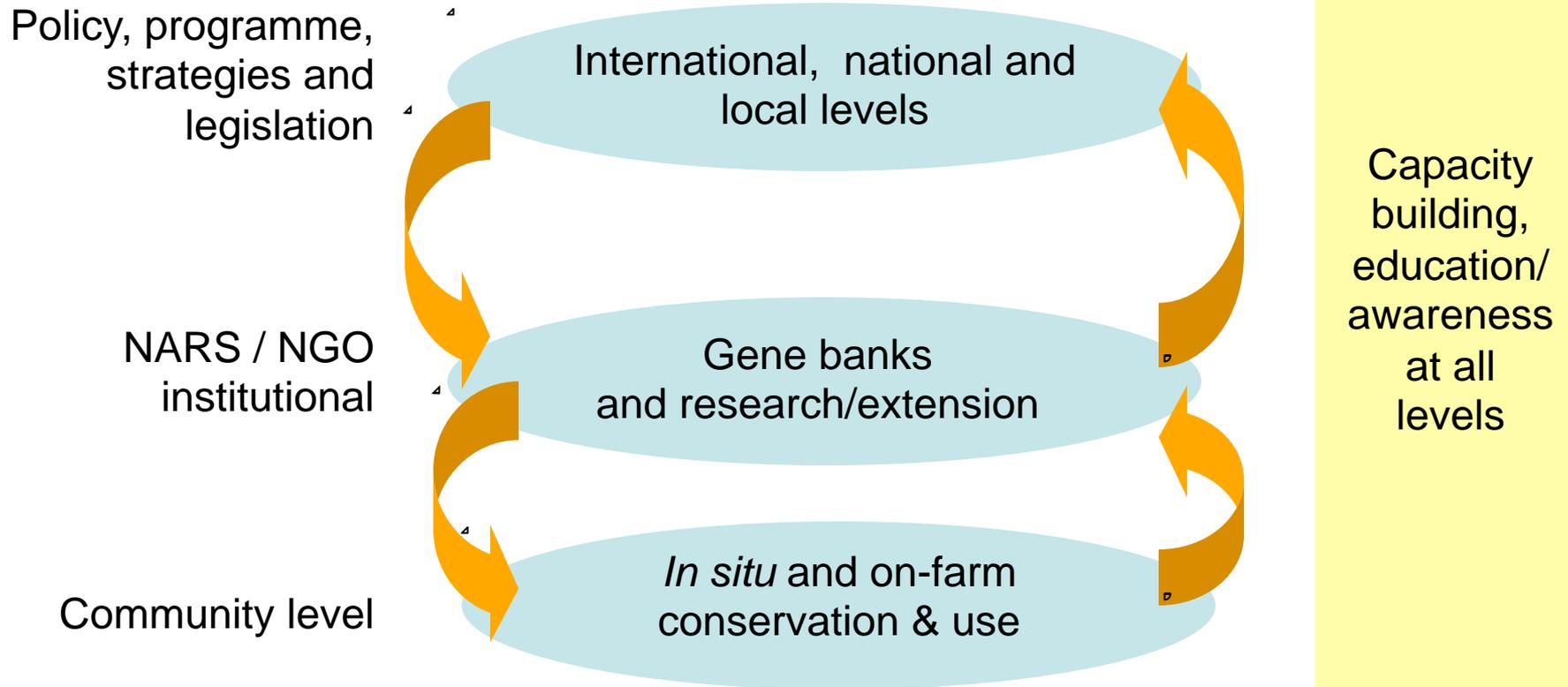
- a safety net against hunger;
- a rich source of nutrients for improved dietary diversity and quality; and
- a basis for strengthening local food systems and environmental sustainability (Frison et al. 2006).

Recommendations:

We have to strengthen the link agrobiodiversity with nutrition

- Develop methodological and empirical evidence
- Knowledge of nutritional content of varieties and species
- Incorporate in planning initiatives
- Integrate in national programs

Integration into overall agriculture and health programmes





Thank You!