INTRODUCTION TO RICE FORTIFICATION

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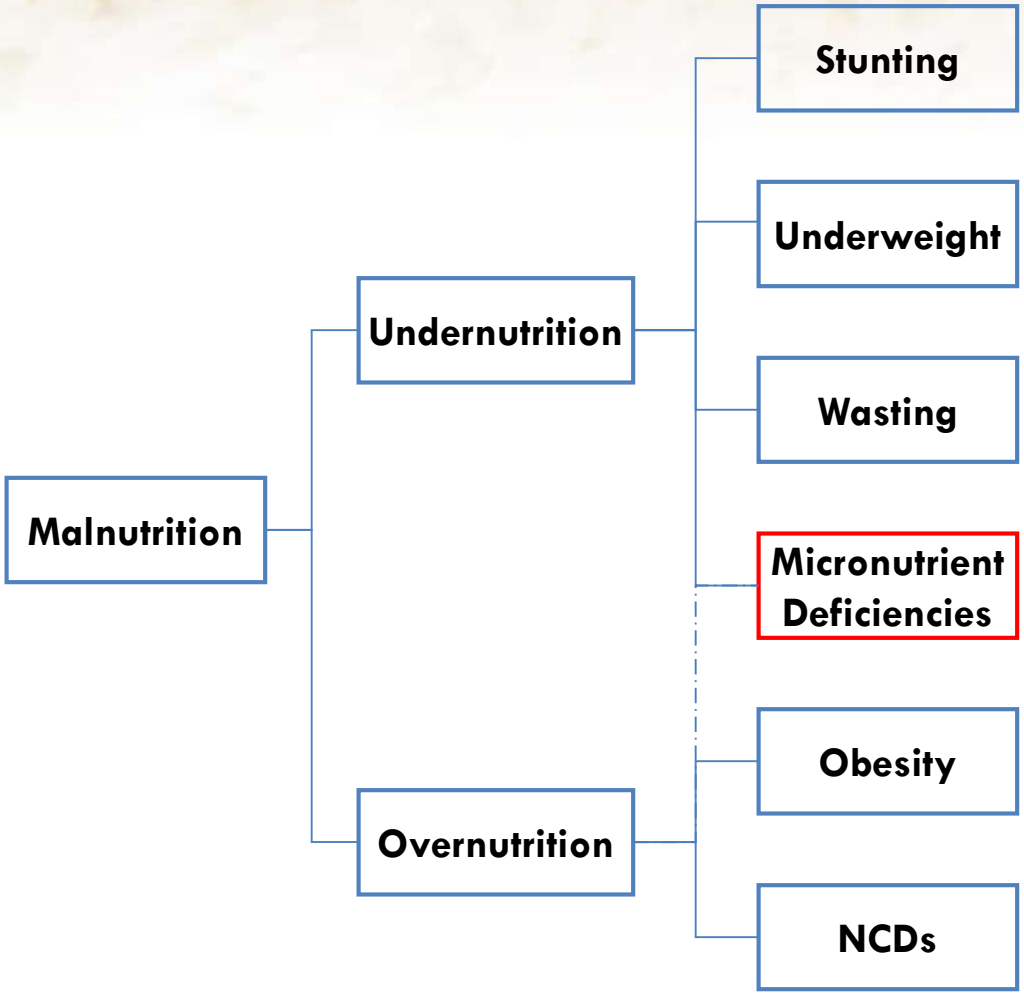
SCALING UP RICE FORTIFICATION IN ASIA
Bangkok, September 16-19, 2014

The Big Picture of Malnutrition



NCDs: Non-communicable diseases

Micronutrient deficiencies place a heavy burden on the health and economy of nations

2 billion
People worldwide suffering from micronutrient deficiencies[1]

190 million
Preschoolers affected by vitamin A deficiency[2]

1.1 million
Yearly deaths due to vitamin A and zinc deficiencies[3]

-11%
Gross Domestic Product (GDP) lost in Asia and Africa as a result of undernutrition[6]

136,000
Yearly deaths of women and children due to iron-deficiency anemia[4]

300,000
Global birth defects due to maternal folate deficiency[5]

45%
Child deaths caused by undernutrition[3]

[1] Mason JB, Lotfi M, Dalmiya N, et al. Current Progress in the Control of Vitamin A, Iodine, and Iron Deficiencies. *The Micronutrient Report*.Ottawa, Canada, 2001.
[2] Allen L, de Benoist B, Dary O, Hurrell R, eds. *Guidelines on food fortification with micronutrients.* Geneva: World Health Organization (WHO) and Food and Agriculture Organization (FAO) of the United Nations; 2006.
[3] Prof Robert E Black MD, Prof Cesar G Victora MD, Prof Susan P Walker PhD, Prof Zulfiqar A Bhutta PhD, Prof Parul Christian DrPH, Mercedes de Onis MD, Prof Majid Ezzati PhD, Prof Sally Grantham-McGregor FRCP, Prof Joanne Katz ScD, Prof Reynaldo Martorell PhD, Prof Ricardo Uauy PhD, the Maternal and Child Nutrition Study Group. Maternal and child undernutrition and overweight in low-income and middle-income countries. *The Lancet* . 3 August 2013; Vol. 382, Issue 9890: Pages 427-451.
[4] Investing in the future: A united call to action on vitamin and mineral deficiencies. Global Report 2009, Micronutrient Initiative.
[5] Guidelines for Food Fortification with Micronutrients, WHO/FAO, 2006.
[6] Ending Undernutrition: Our Legacy to the Post 2015 Generation. Lawrence Haddad, IDS in partnership with the Children's Investment Fund Foundation.

Addressing undernutrition and micronutrient deficiencies improves health, increases productivity, and promotes economic progress

Ending Undernutrition: Our Legacy to the Post 2015 Generation
Lawrence Haddad, IDS in partnership with the Children's Investment Fund Foundation

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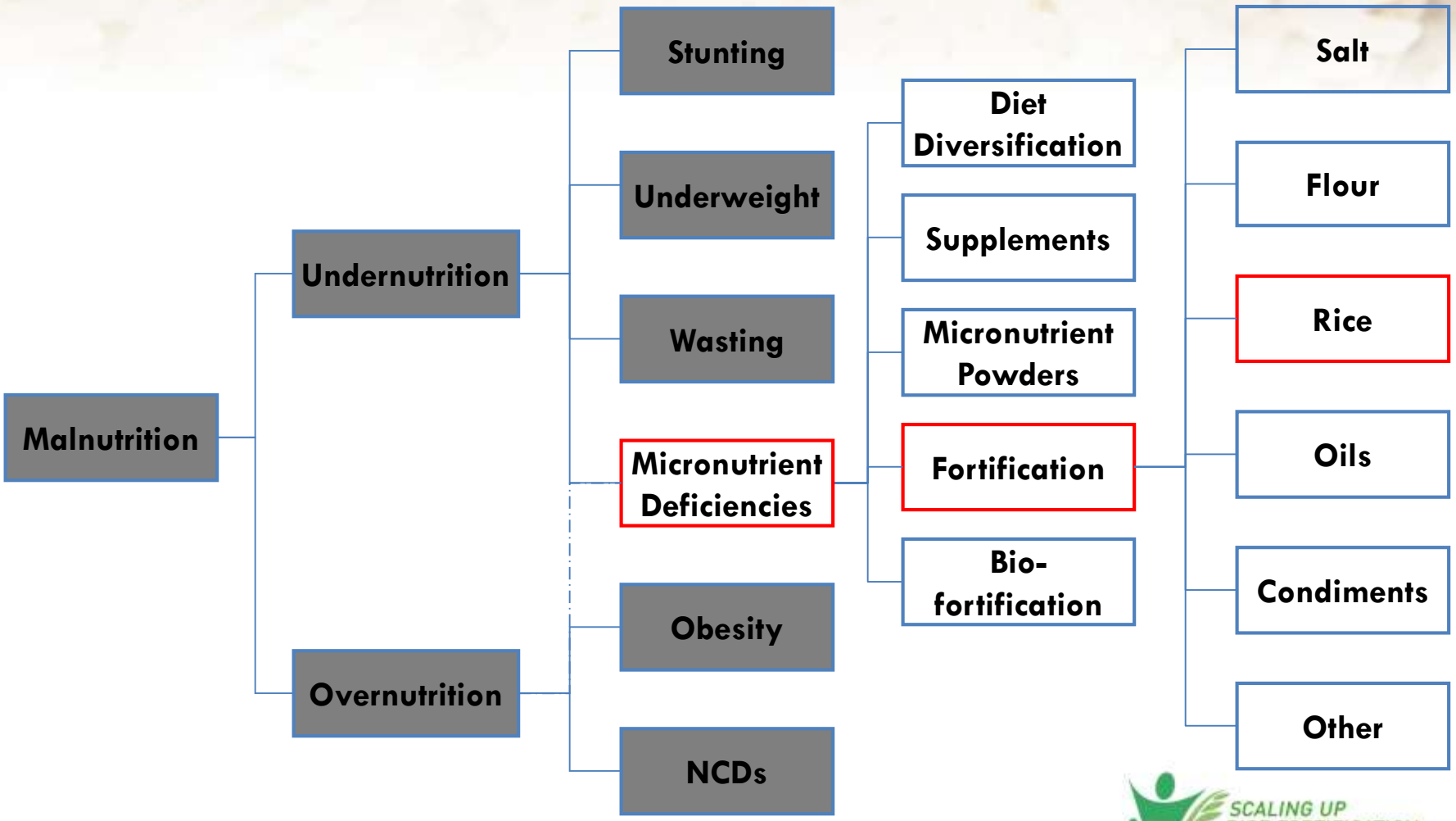
There are various approaches to address micronutrient deficiencies



NCDs: Non-communicable diseases

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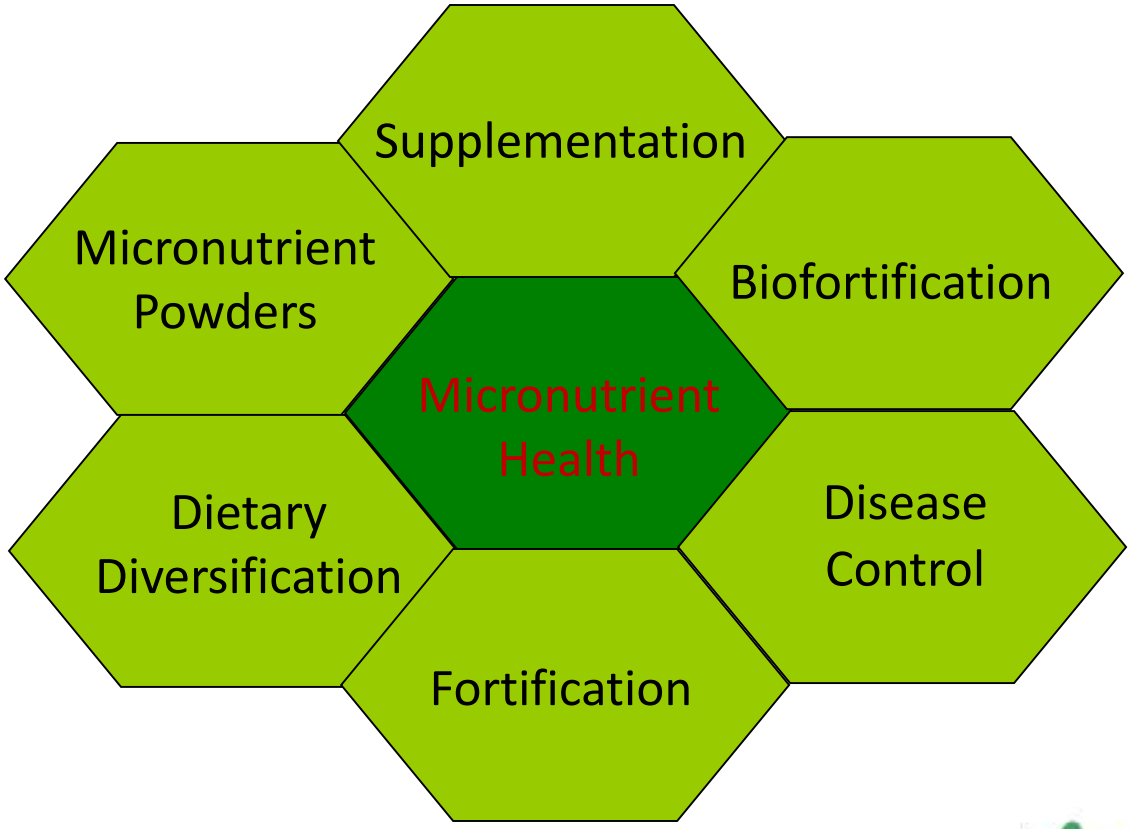
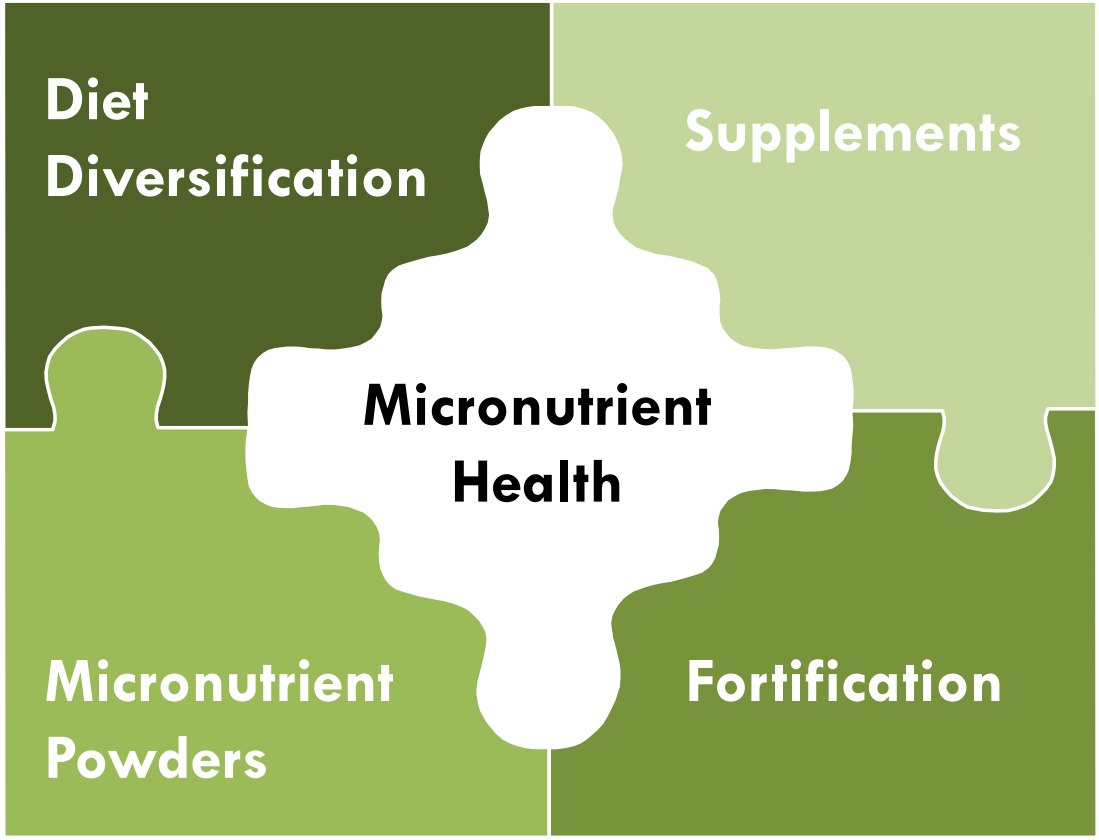
The best strategy is an integrated approach that includes fortification



The best strategy is an integrated approach that includes fortification



Staple fortification is a proven, cost-effective strategy to improve micronutrient health

- Adopted in developed countries since the early 20th century
- Endorsed by WHO, WFP, UNICEF, FAO, and the World Bank
- Ranked by the Copenhagen Consensus 2012 as one of the highest-return interventions in global development
- Salt and wheat flour fortification are illustrative success stories

Rice is an ideal fortification vehicle in many developing economies

- Staple food for 3 billion people
- Largest source of calories and core component of agriculture and nutrition in most of Asia, Africa, and Latin America (though low in micronutrients)
- Cost-effective in countries combining high per capita consumption and a consolidating rice industry

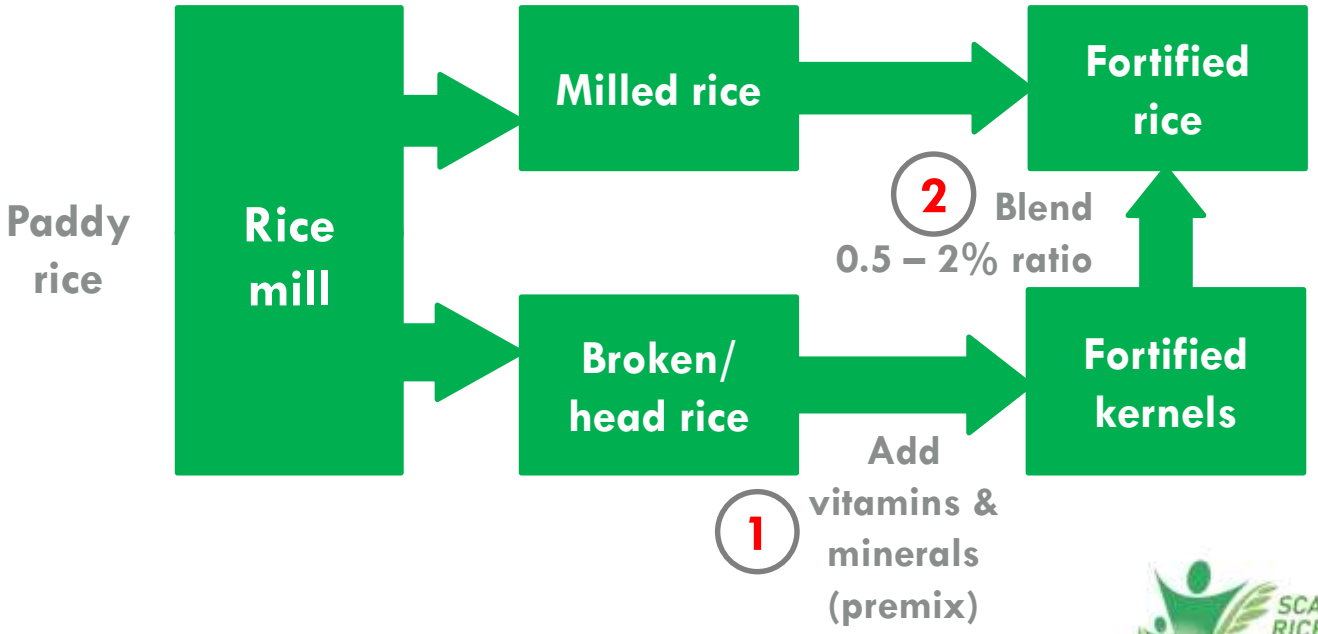



A Few Key Terms

Term	Definition
Fortificant	Selected micronutrient in a particular form to fortify selected food (e.g., rice, flour, salt)
Fortificant mix (premix)	Blend that contains several fortificants (vitamins and minerals)
Fortified kernels	Rice-shaped kernels fortified with the fortificant mix
Fortified rice	Non-fortified rice blended with the fortified kernels (at 0.5 – 2% ratio; typically 1%)

The process to fortify rice comprises two main steps

- **Fortifying rice**: making rice more nutritious by adding essential vitamins and minerals
- Fortifying rice is a **two-step process**:



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Rice fortification offers opportunity for social and economic impact from field to fork

Fortificant mix producers

Fortified kernel producers

Input suppliers → Producers → Processors (Millers) → Distributors → Consumers

Blending equipment fabricators

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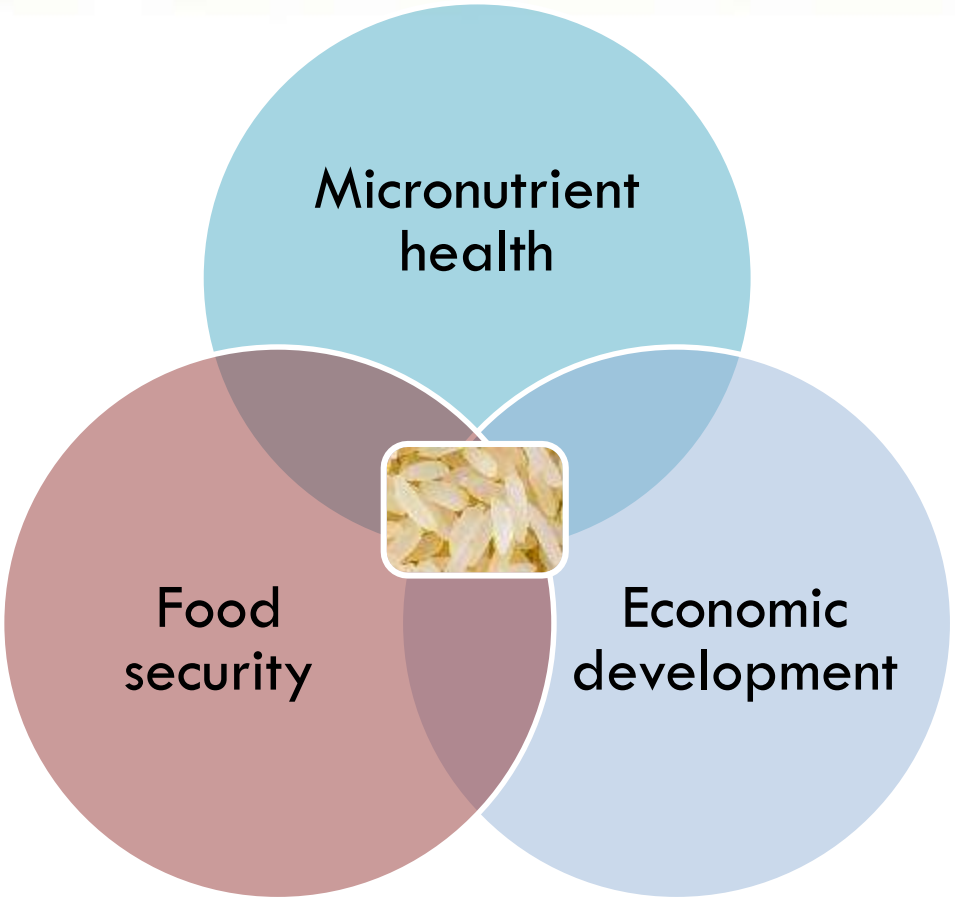
Rice fortification both addresses nutritional needs and creates economic opportunity



Rice has the potential to fill an obvious gap in current fortification programs

Vitamin and mineral deficiencies are widespread in high rice-consuming countries

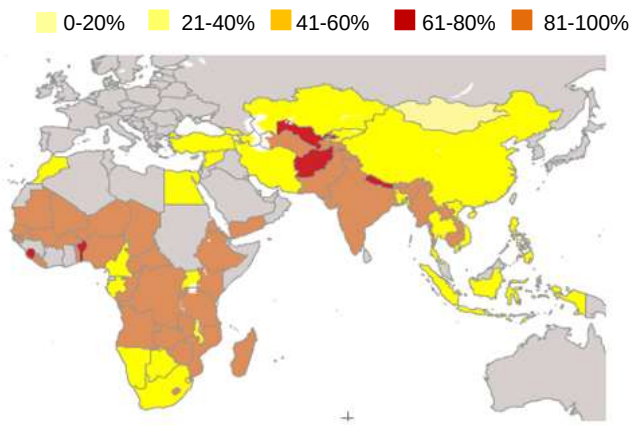
Top Rice Consuming Countries

Very high rice consumption (>400g/person/day)

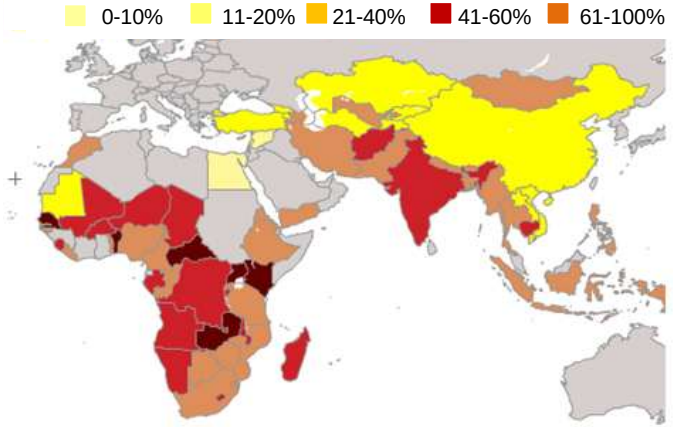
High rice consumption (>200g/person/day)

Source: FAO2002

Iron Deficiency, Women age 15-49

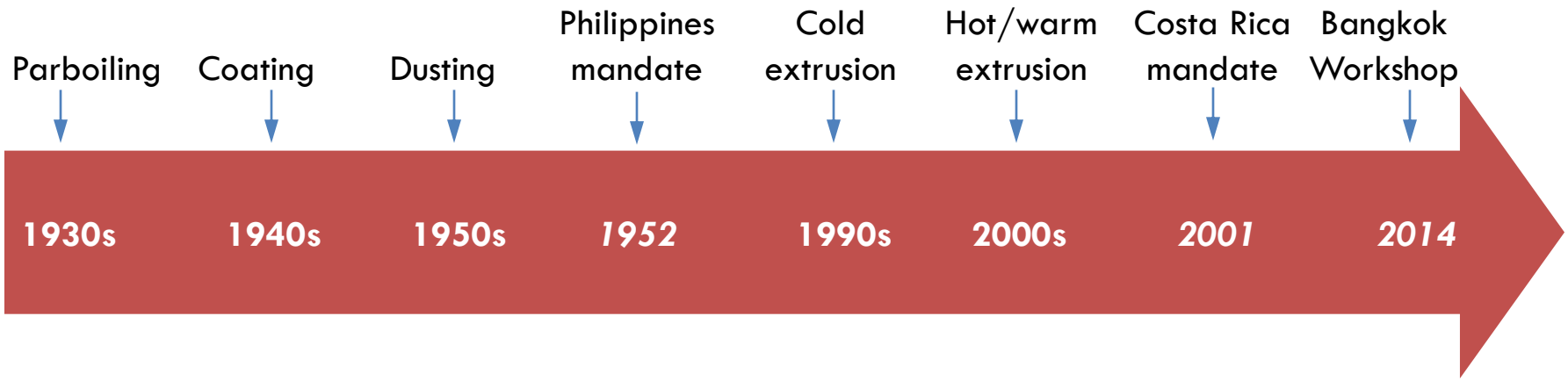


Vitamin A Deficiency, Children under 6



Source: Vitamin & Mineral Deficiency – a global progress report, UNICEF, MI, 2004

Rice fortification has come a long way since the 1930s



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The time to scale up rice fortification in Asia has come

- Rice fortification is a proven and cost-effective strategy to improve health and productivity of large portions of the population
- Fortifying rice – a staple food for more than three billion people – fills a significant gap in the staple food fortification landscape
- The Bangkok Workshop is a golden opportunity for us to accelerate rice fortification scale-up in Asia

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Thank you

Terima kasih

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