



The USAID  
Micronutrient and  
Child Blindness Project



# Elements of a Food Fortification Program: Functions and Players

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**USAID**  
FROM THE AMERICAN PEOPLE



Academy for Educational Development

# Favorable claims about food fortification

**“Food fortification resolves many issues of equity and access because it is population based and the fortification of staple foods reaches those most vulnerable to nutritional deficiencies.”**

**“Food fortification is also cost-effective.”**

In: Benefit of Food Fortification. Food Fortification Approaches.  
[www.sph.emory.edu/PAMM/IH552/Jan28fortification/](http://www.sph.emory.edu/PAMM/IH552/Jan28fortification/)

# One more optimistic statement

**“Among the several proven approaches available for addressing the problem of micronutrient malnutrition, fortification is currently the most cost-effective and sustainable.”**

Jere H. Haas and Dennis D. Miller

Symposium of food fortification in developing countries:

*J Nutr* 2006;**136**:1053-1054.

# A supportive but cautious note

**“We conclude that iron fortification is economically more attractive than iron supplementation.”**

**“The results should be interpreted with caution, because evidence of intervention effectiveness predominantly relates to small-scale efficacy trials, which may not reflect the actual effect under expected conditions.”**

Rob Baltussen, Cécile Knai and Mona Sharan  
Iron fortification and supplementation are cost-effective.  
*J Nutr* 2004;**134**:2678-2684.

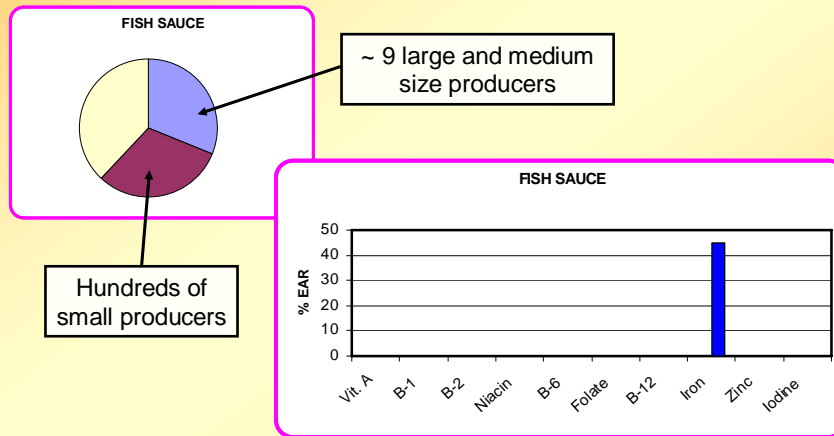
# But only “if” .....

<b>Country</b>	<b>Food (Nutrient)</b>	<b>Additional Intake EAR (P-50)</b>	<b>Coverage</b>
<b>Worldwide</b>	<b>Salt (Iodine)</b>	<b>~200 %</b>	<b>&gt; 80 %</b>
<b>Central America</b>	<b>Sugar (Vit. A)</b>	<b>&gt; 150 %</b>	<b>&gt; 75 %</b>
<b>Chile, USA/ Canada, RSA</b>	<b>Cereal Flours (Folic Acid)</b>	<b>90-200 %</b>	<b>&gt; 70 %</b>

# Estimating the potential benefit

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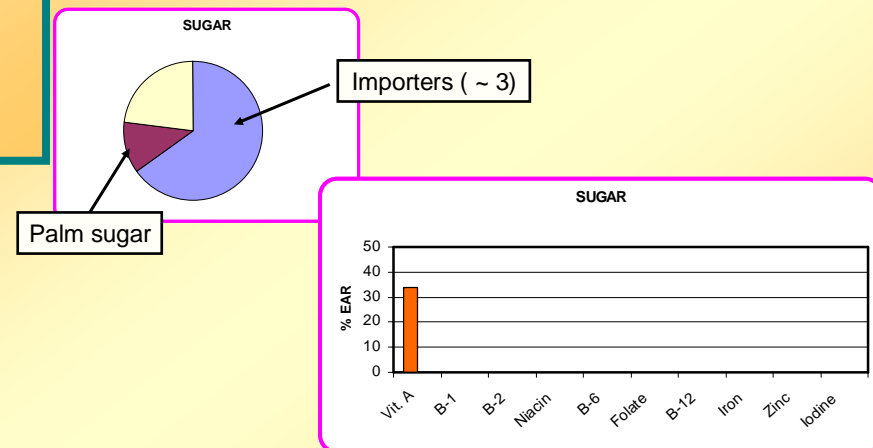
## Coverage and potential impact of fortified fish sauce



OD-2007-21-CambodiaFF

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## Coverage and potential impact of fortified sugar



OD-2007-21-CambodiaFF

Cambodia, 2007.

# Reason of change: Additional intake

$$\text{INTAKE} = \sum [\text{Nutrient content}] \times \text{amount consumed}$$

Technology

Behavior

BIOEFFICACY →

[BIOAVAILABILITY  
&  
BIOCONVERSION]

x INTAKE

EAR

Initial Intake

Additional Intake

Total Intake

TERTIARY  
(Functional or Clinical)

SECONDARY  
(Metabolic biomarker)

PRIMARY  
(Intake)

# Need, solutions and strategies

## Need:

- ◆ **Size of the intake gap**
- ◆ **Per cent of the people affected**

## Solutions:

- ◆ **Additional Micronutrient Intake:**  
Provision + Utilization
- ◆ **Coverage:** Per cent of people who benefit

## Strategies:

- ◆ **Improve diet diversity \***
- ◆ **Food fortification \***
- ◆ **Preventive supplementation \***
- ◆ **[Health measures]**

\* Increase micronutrient intakes

# A real program is more than a product

Safe, Efficacious and Sustainable



## MAIN PLAYERS

Researchers, Economists, Statisticians

Researchers, Statisticians, Laboratories

Food industry, Marketing, Government Guidance

Food Control from MoH, M.Economy, Food Labs

Food Industry – QC/QA Department

Food Industry/ Production Dept.

Premix manufacturers

Bureau of Standards

Central Government

Researchers

Cost-Effectiveness Analysis

Impact Assessment

Social Marketing and Education

Governmental Inspection and Auditing

Quality Control & Assurance - Factories

Implementation and Production

Implementation and Production of Micronutrient **Premixes**

Standards and Regulations

Policies and National Strategies

Science (Efficacy trials) and Epidemiological Assessment

Program Monitoring and Evaluation