



# Overview of Flour Fortification

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**Flour Fortification Initiative**

A Public-Private-Civic Investment in Each Nation

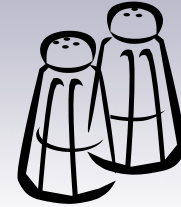
# What is Food Fortification?

- Food fortification is adding vitamins and minerals to food.
- Restoration (or enrichment) replaces vitamins and minerals lost in food production.
- Fortification adds higher levels of nutrients or adds nutrients that are not in the food originally.

*Fortification is recommended as part of a comprehensive program that may include dietary diversification, supplementation, and other interventions.*



# Fortification History



- Margarine fortified with vitamin A in Denmark in 1919.
- Iodization of salt began in early 1920s in Switzerland and US
- Milk products fortified with vitamin D since the 1930s
- Cereal products fortified with thiamine, riboflavin and niacin common practice since the 1940s
- Wheat flour fortified with iron since the 1940s
- Dehydrated potato products fortified with vitamin A and vitamin C in US commodity distribution since 1968.
- Flours fortified with folic acid since 1996
- Edible oils and sugar now commonly fortified with vitamin A



## Sources:

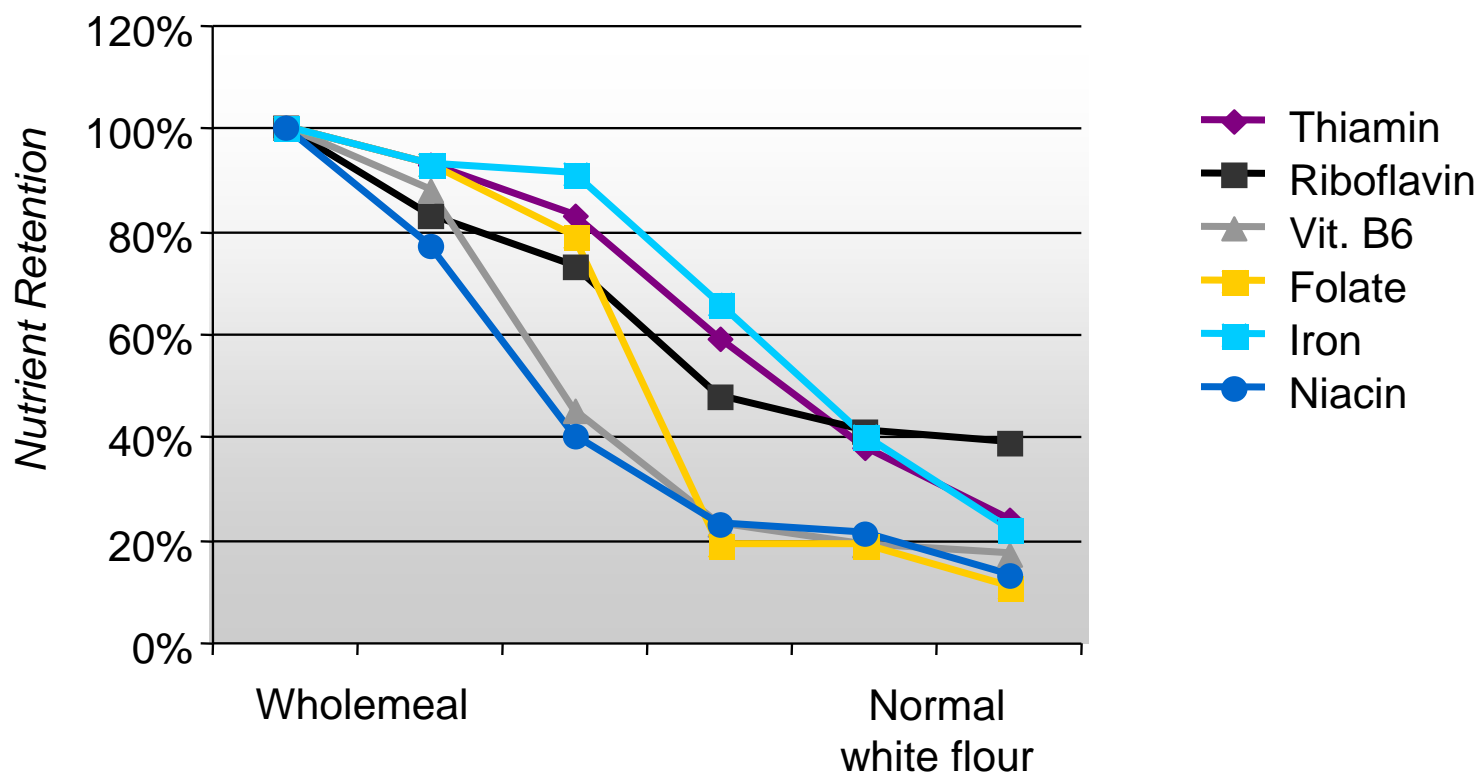
J. Christopher Bauernfiend and Paul A. Lachance, eds. *Nutrient Additions to Food: Nutritional, Technological and Regulatory Aspects*. Food and Nutrition Press, Trumbull, CT, 1991.

David Bishai and Ritu Nalubola, History of Food Fortification in the United States: Its Relevance for Current Fortification Efforts in Developing Countries. *Economic Development and Cultural Change*, 2003.

Lindsay Allen et al., eds. *Guidelines on Food Fortification with Micronutrients*. Geneva. World Health Organization and Food and Agricultural Organization of the United Nations, 2006.

# Essential Nutrients

*Wheat and maize lose much of their nutrients in the milling process. Fortification replaces those and can add other vitamins and minerals as needed.*



# How Does Flour Fortification Work?



Wheat is milled to remove the outer layers.



Feeders add vitamins and minerals as the flour is milled.



Staff conduct quality assurance tests.



Flour is packaged for distribution.



Staple foods made with fortified flour provide more nutrients to consumers.





# Food Vehicles

When staple foods are made with fortified flour, they become vehicles for vitamins and minerals. This improves a person's nutrient status does not require the consumer to change their behaviors.



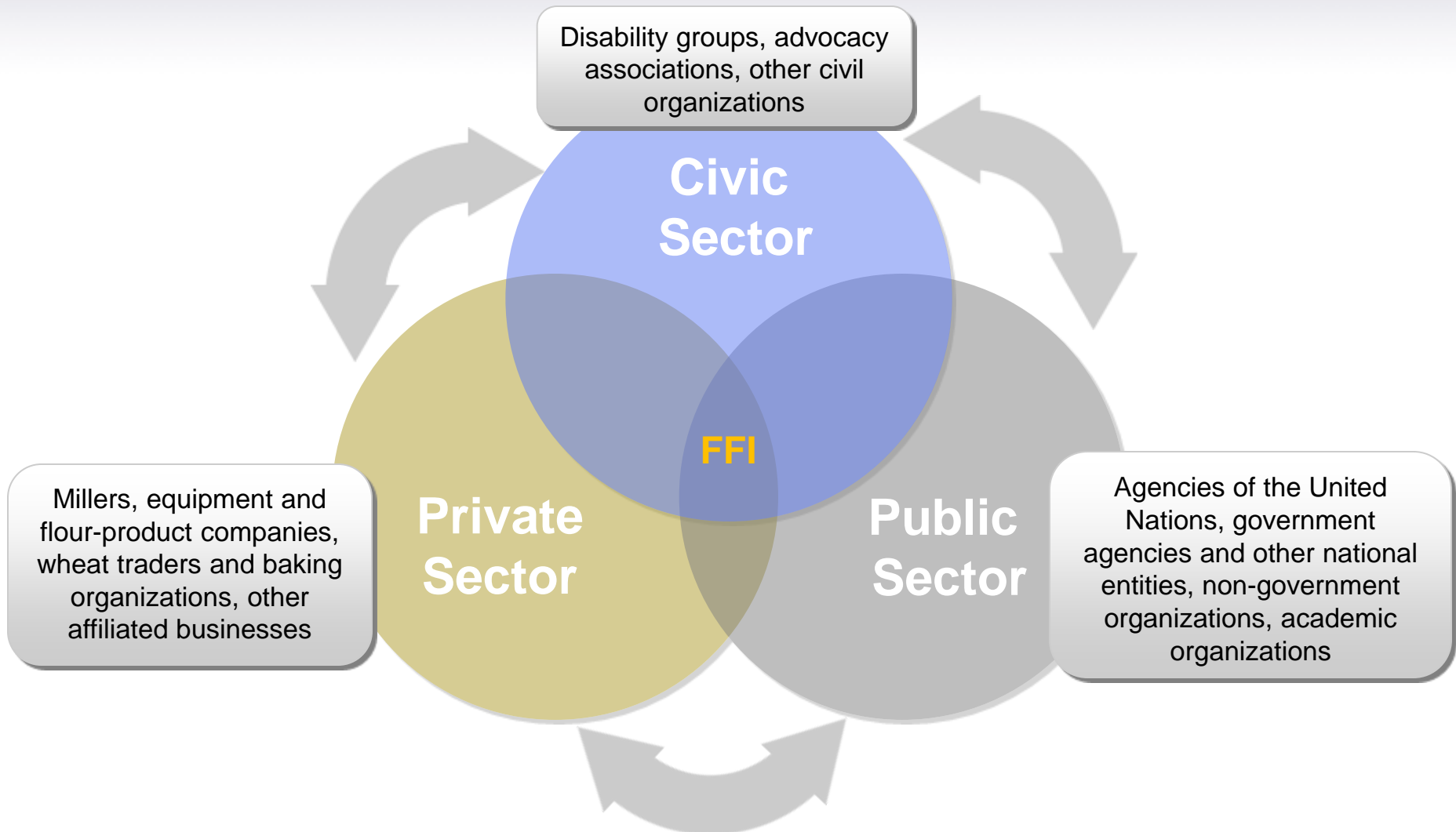


# FFI Network

FFI is network of partners working together to make flour fortification standard milling practice so that people worldwide are smarter, stronger and healthier.



# FFI Stimulates Partner Interaction





# Challenges



- Making sure flour fortification is driven by national leaders
- Getting multiple sectors to work together
- Establishing national standards in each country
- Reaching the top decision makers



# Benefits of Mandatory Fortification

- Essential nutrients provided to largest number of people
- Equitable distribution of health benefits
- Facilitates quality assurance and quality control
- Equitable costs for flour millers



*Voluntary  
fortification does  
not achieve these  
objectives.*



# Best Practices for Legislation

- Make fortification mandatory, including:
  - Type or grade of flour to be fortified
  - Regulations for imports
- Create supporting regulation for:
  - Type of iron
  - Range of nutrients allowed
  - QA/QC processes
  - Monitoring procedures and enforcement



# Global Recommendations



**World Health  
Organization**

## **Recommendations on Wheat and Maize Flour Fortification Meeting Report: Interim Consensus Statement**

### **PURPOSE**

This statement is based on scientific reviews prepared for a Flour Fortification Initiative (FFI) technical workshop held in Stone Mountain, GA, USA in 2008 where various organizations actively engaged in the prevention and control of vitamin and mineral deficiencies and various other relevant stakeholders met and discussed specific practical recommendations to guide flour fortification

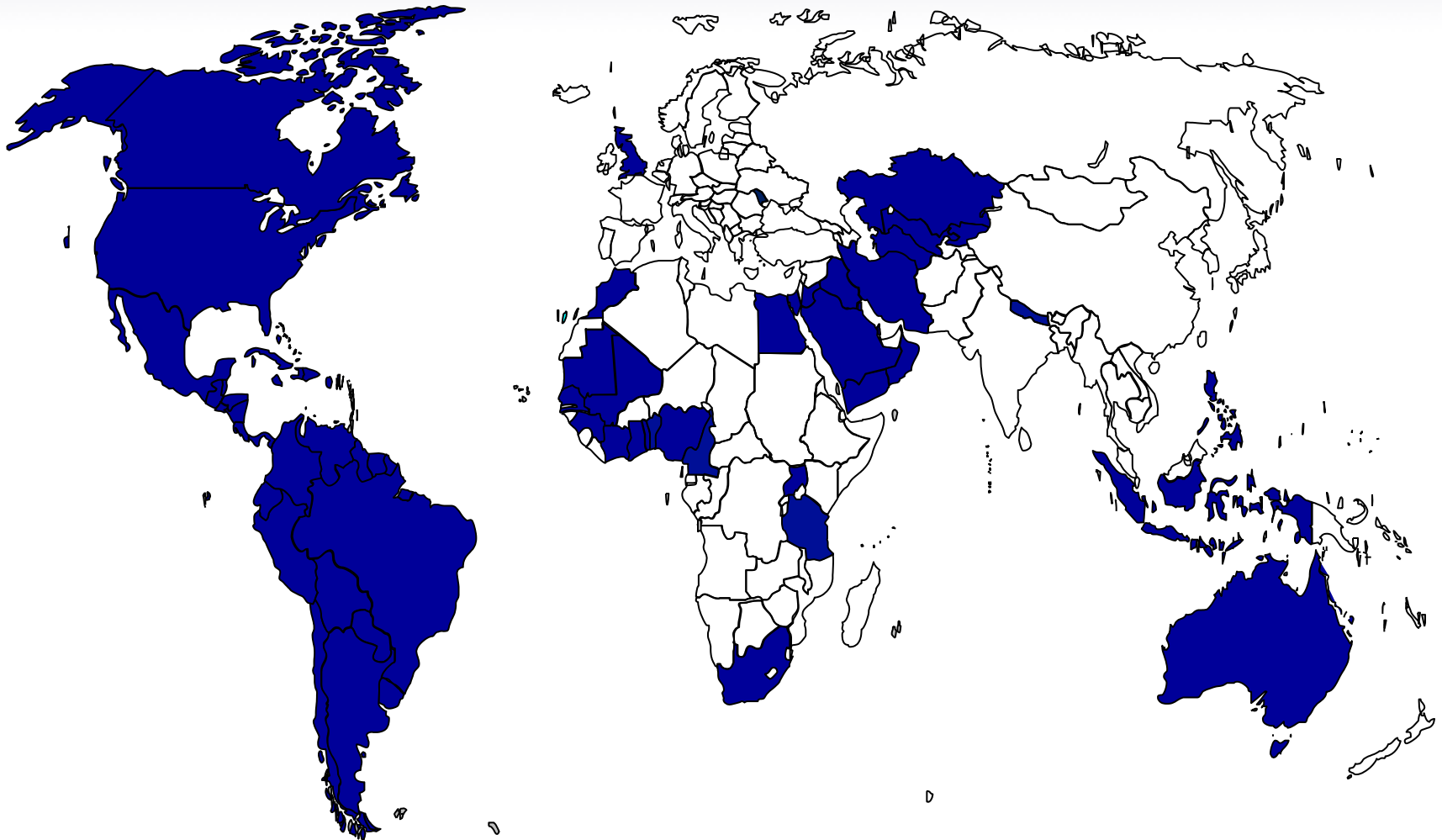
### **THE FFI SECOND TECHNICAL WORKSHOP ON WHEAT FLOUR FORTIFICATION**

Nearly 100 leading nutrition, pharmaceutical and cereal scientists and milling experts from the public and private sectors from around the world met on March 30 to April 3, 2008 in Stone Mountain, GA, USA to provide advice for countries considering national wheat and/or maize flour fortification. This *Second Technical Workshop on Wheat Flour Fortification: Practical Recommenda-*



# Wheat Flour Fortification Mandates

May 2012: Legislation to fortify with at least iron and/or folic acid





# Flour Fortification Progress

## Since 2004:

- ✓ Growth in fortified flour from industrial mills increased from 18% to 30%
- ✓ Number of countries with documented national regulations for mandatory wheat flour fortification increased from 33 to 68
- ✓ Combined population of these 68 countries is more than 2 billion



# Thank You

**Let's move forward to make  
our countries smarter,  
stronger, and healthier  
through flour fortification.**

[www.FFInetwork.org](http://www.FFInetwork.org)

