



Wheat Flour Fortification

Global update, strategies, best practices



Flour Fortification Initiative
A Public-Private-Civic Investment in Each Nation

International Grain Congress
Antalya, Turkey

Presented by Scott Montgomery
FFI Director



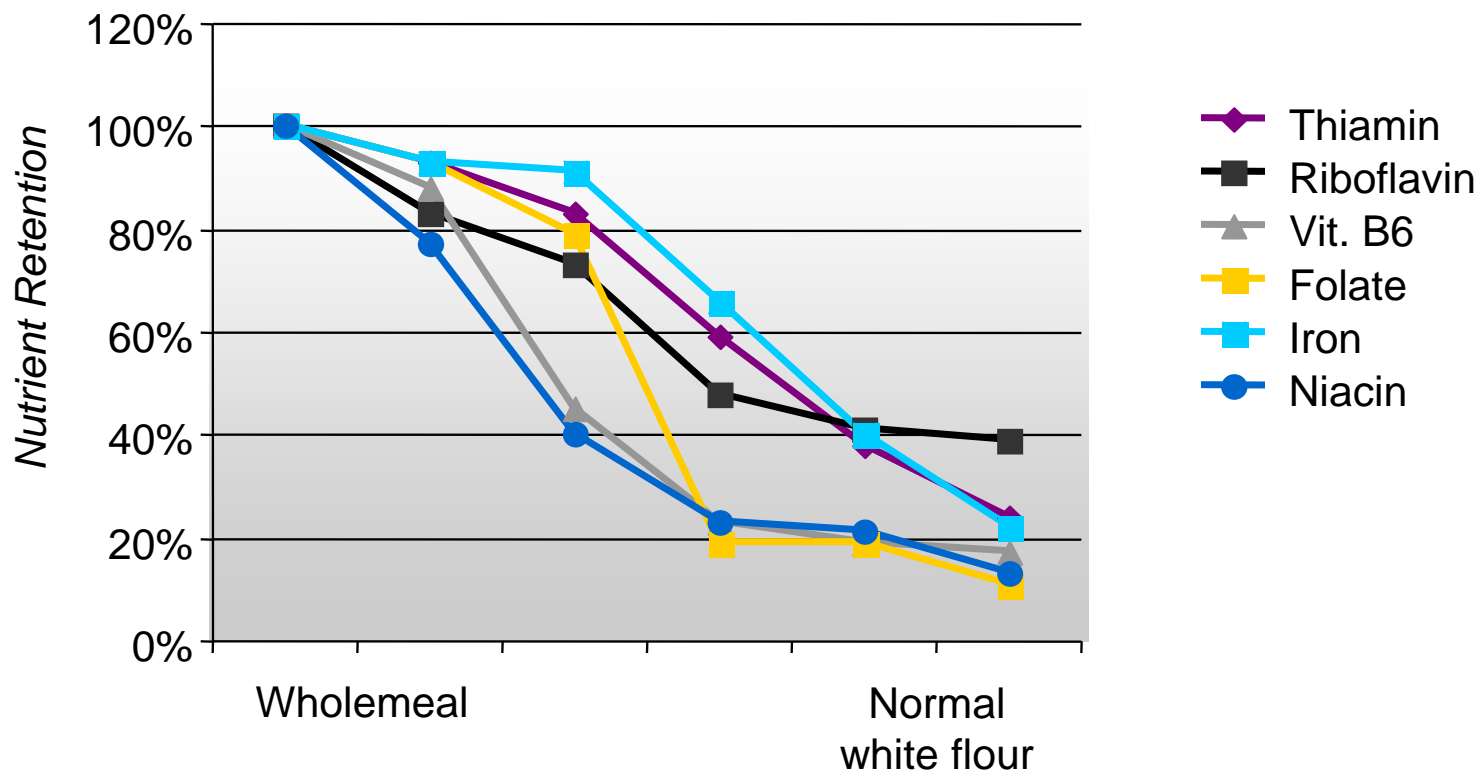
FFI Network

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



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.



Burden of Deficiencies

Vitamin and Mineral Deficiencies:

- Impair millions of growing minds and lowers national IQ
- Cause damage to immune systems and deaths of more than a million children a year
- Cause 300,000 serious birth defects annually
- Contribute to the death of approximately 60,000 young women a year during pregnancy and childbirth



Burden of Iron Deficiency



- Reduces work capacity
- Impairs a child's physical and intellectual development
- Contributes to 20% of all maternal deaths



Burden of Anemia

- 17% lower productivity in heavy manual labor
- 5% lower productivity in other manual labor
- Estimated 4% loss of earnings due to lower cognitive skills



Burden of Folic Acid Deficiency

- Leads to neural tube defects (NTDs) such as spina bifida and anencephaly
- 50% to 70% of these birth defects are preventable



Spina bifida is malformation of the baby's spine. It causes permanent disability.

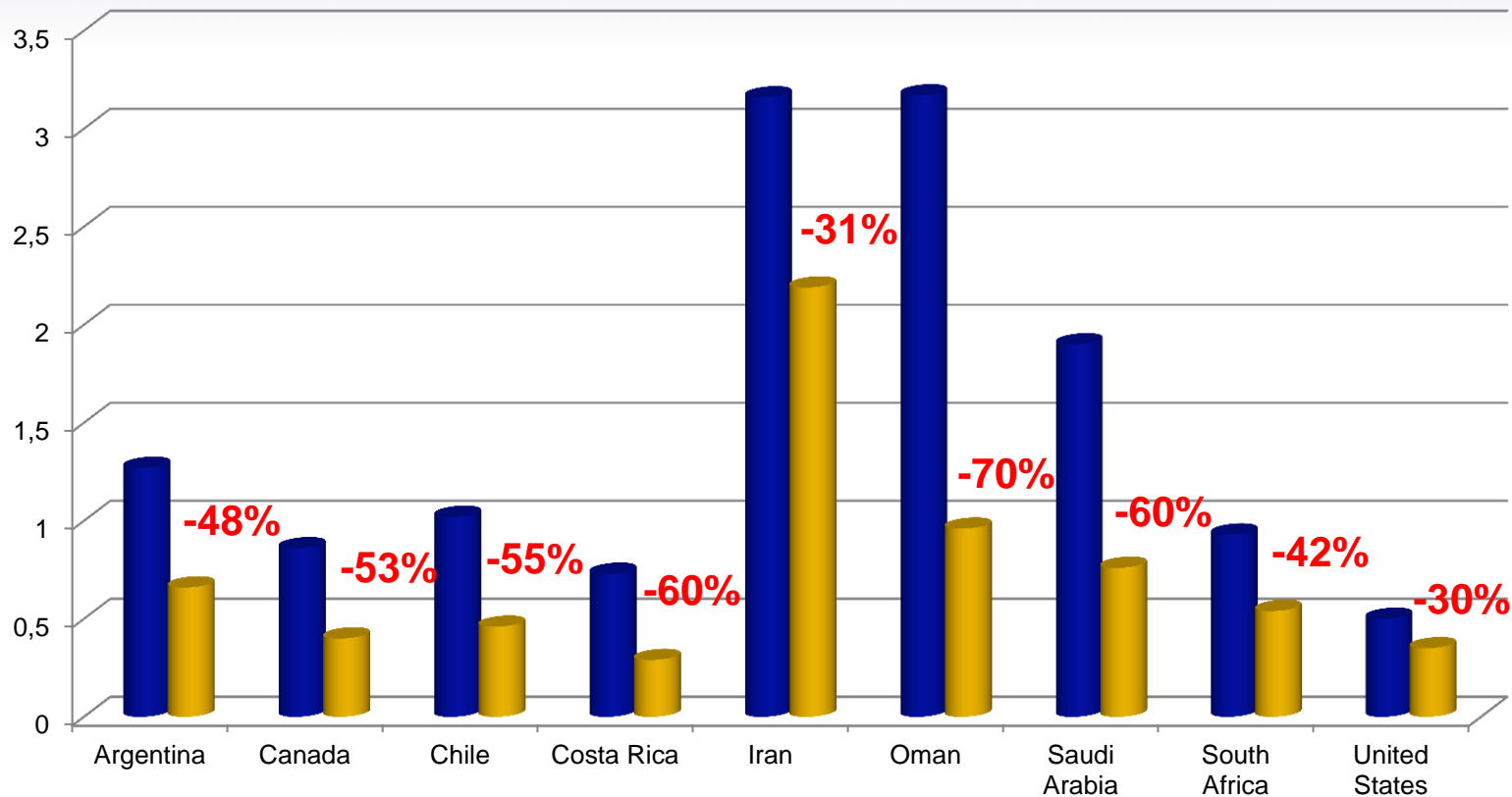


Anencephaly is malformation of the baby's brain. It is always fatal.



Fortification Success

Neural tube defects per 1,000 births

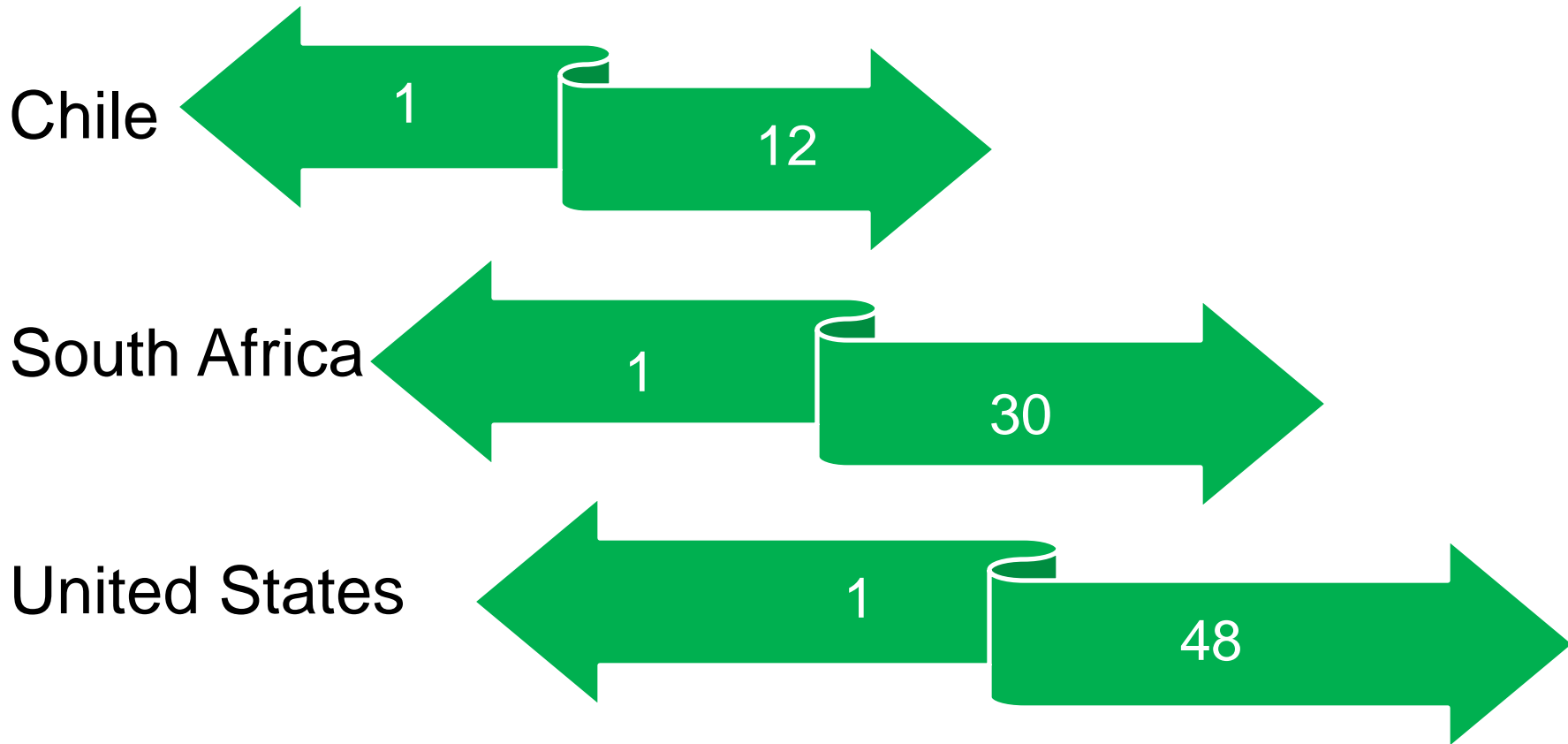


■ Before fortification ■ After fortification



All rates are for spina bifida except Iran and Saudi Arabia which are for all neural tube defects.
All data from published sources.

Cost:Benefit Ratio for Preventing Spina Bifida



Neural Tube Birth Defects in Turkey

- University hospital records from 1993-1994:
 - 3 per 1000 live and stillbirths
- Another study in Afyonkarahisar:
 - 3.5 per 1000 births using 2003-2004 data for abortions, still births and live births
- Four university hospitals in Turkey:
 - 4 per 1000 pregnancies

*Countries which fortify flour with folic acid:
less than 1 per 1000*



Multi-faceted Approach

Micronutrient
Powders



Wheat & Maize



Rice



Population
Without Market Access

Population
With Market Access

Supplements



Dietary
Diversity



Condiments



Oil



Impact on Nutrition Security



As food prices go up, consumers often stop buying as many meats, fruits and vegetables



Fortifying flour puts more vitamins and minerals in staple foods which people continue to purchase and consume during economic downturns.



Global Consensus

- Copenhagen Consensus (2004 and 2008)
- World Health Organization statement (2009)
- UNICEF (annual support)

The World Health Organization logo, featuring the Rod of Asclepius and the text 'World Health Organization' in white on a purple background.

**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 efforts being implemented in various countries by the public, private and civic

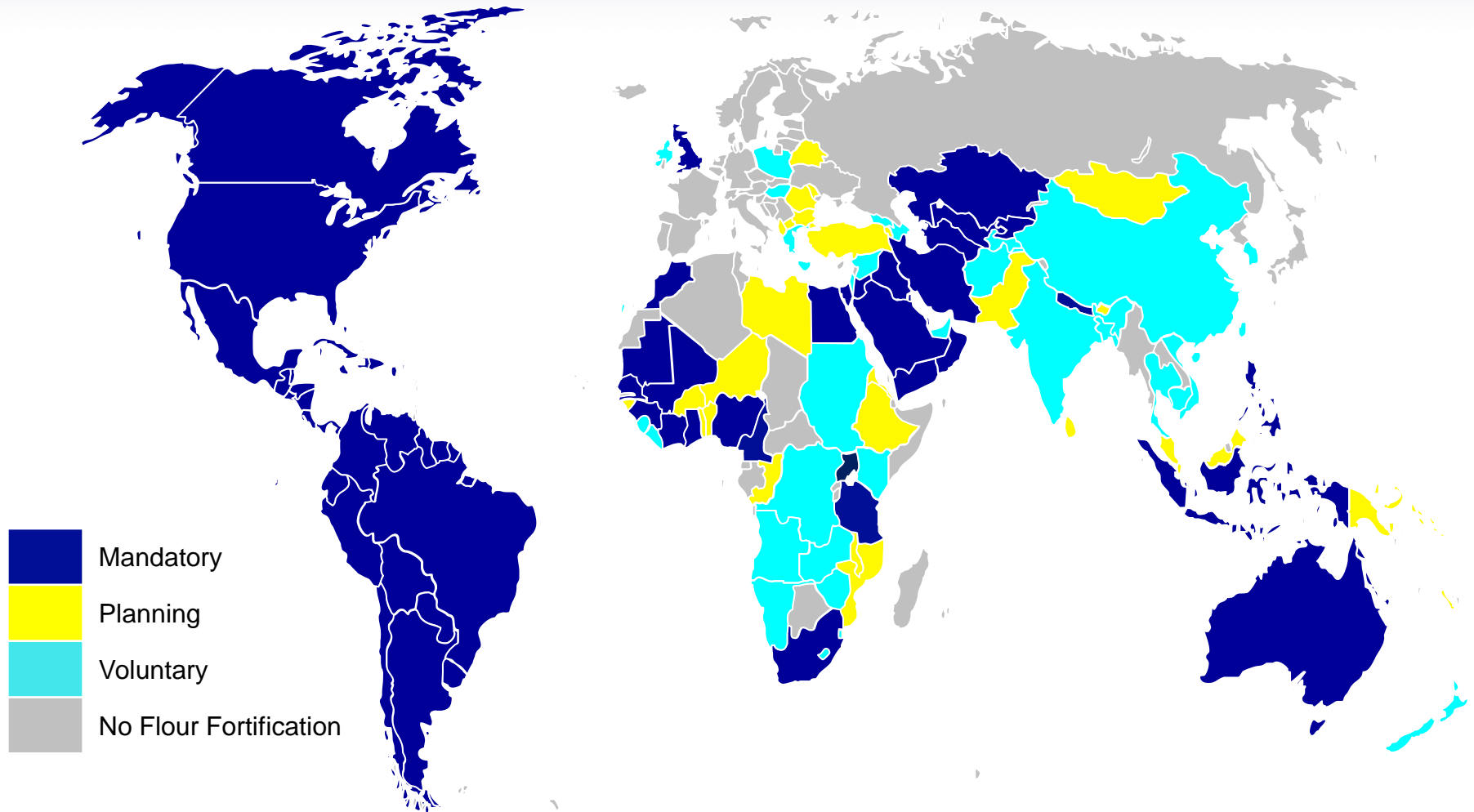
THE FFI SECOND TECHNICAL WORKSHOP ON WHEAT FLOUR FORTIFICATION

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 Recommendations for National Implementation was a follow-up to a FFI-UNICEF-USAID Center for Disease



Wheat Flour Fortification Status

March 2012: Fortifying with at least iron and/or folic acid



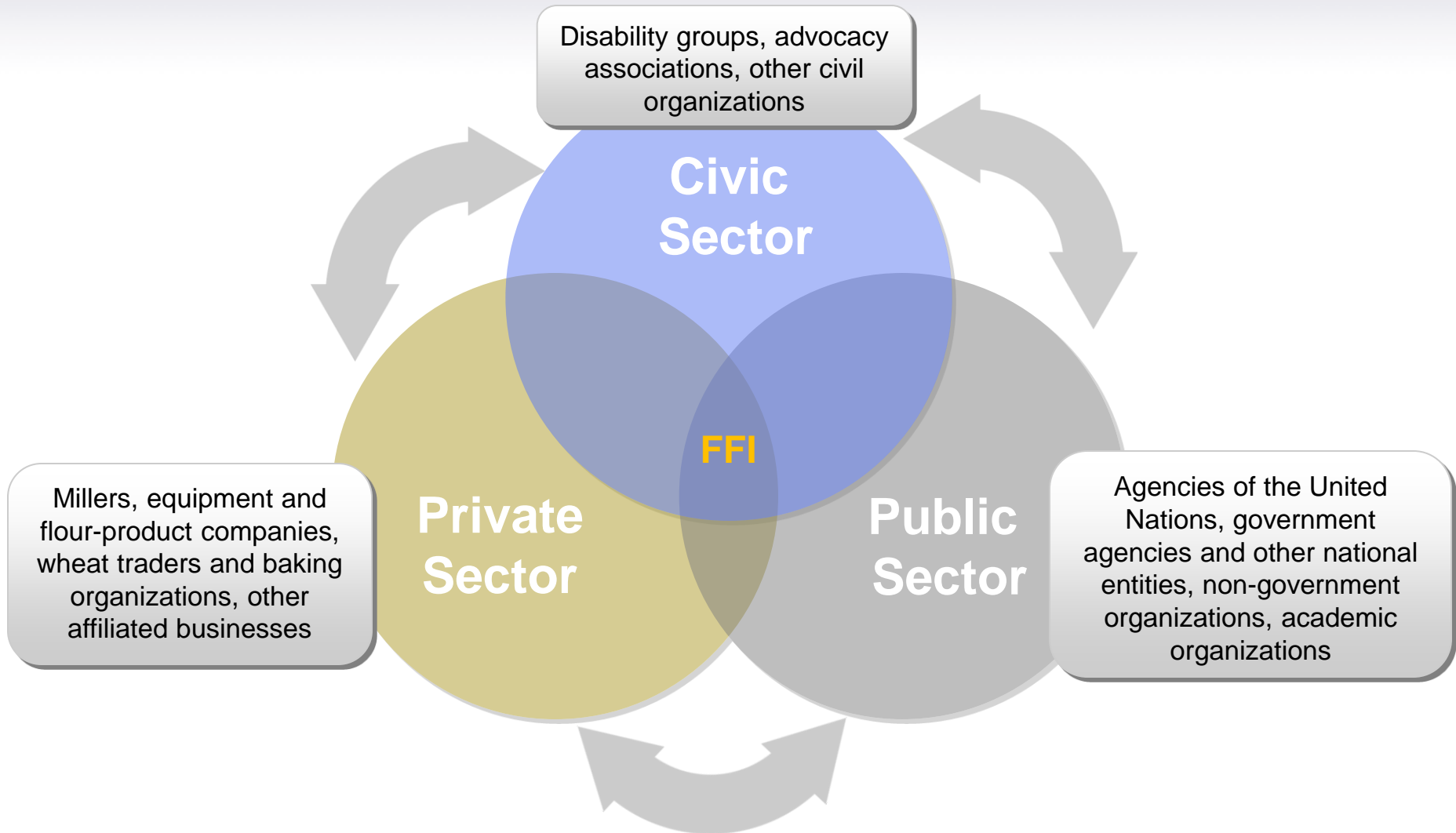
Flour Fortification Progress

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 65
- ✓ Combined population of these 65 countries is more than 2 billion



FFI Stimulates Network Interaction



Focus On National Partnerships



- Flour fortification is most successful when it is driven by national leaders.
- Multiple sectors must work together.
- Success of flour fortification in one country can have an accelerating influence in the region.
- A national standard approach is the most effective way forward.
- Reaching the top decision makers is essential.



FFI Strategies

STRATEGY 1. Catalyse, support and sustain the operation of national partnerships

STRATEGY 2. Create and disseminate communication & training and technical support materials in key areas

STRATEGY 3. Through the network partners ensure that organizations are enabled to work together

STRATEGY 4. Secure adequate human and financial resources at national and global levels both for national activities and for the network in total.

STRATEGY 5. Monitor all national fortification programmes.



Global Best Practices

To plan a flour fortification program, consider:

- Local culture and cereal consumption
 - Nutritional needs
 - Industry analysis
- Creation of a National Fortification Alliance to develop political will
 - Legislation



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

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Best Practices for Legislation

- Make fortification mandatory
 - Equalizes costs across millers
 - Industry can be a powerful lobbying force
- Include appropriate type of iron
 - Ferrous fumarate, ferrous sulfate, sodium iron EDTA, electrolytic iron
 - For high extraction flour, only sodium iron EDTA is recommended
 - Electrolytic iron is only recommended with high consumption
- Include fortification QA/QC processes
 - Lab analysis for vitamins and minerals
- Adopt an industry standard



FFI Team

Strategic direction provided by Executive Management Team of 14 members representing public, private, civic sectors

Canada:

Training and Technical Support Coordinator

Europe:

*Senior Advisor in the Netherlands
Europe Associate in Geneva*

US:

- Director
- Nutrition Scientist
- Monitoring and Evaluation
- Communications
- Senior Advisor
- Micronutrient Specialist

Kenya:

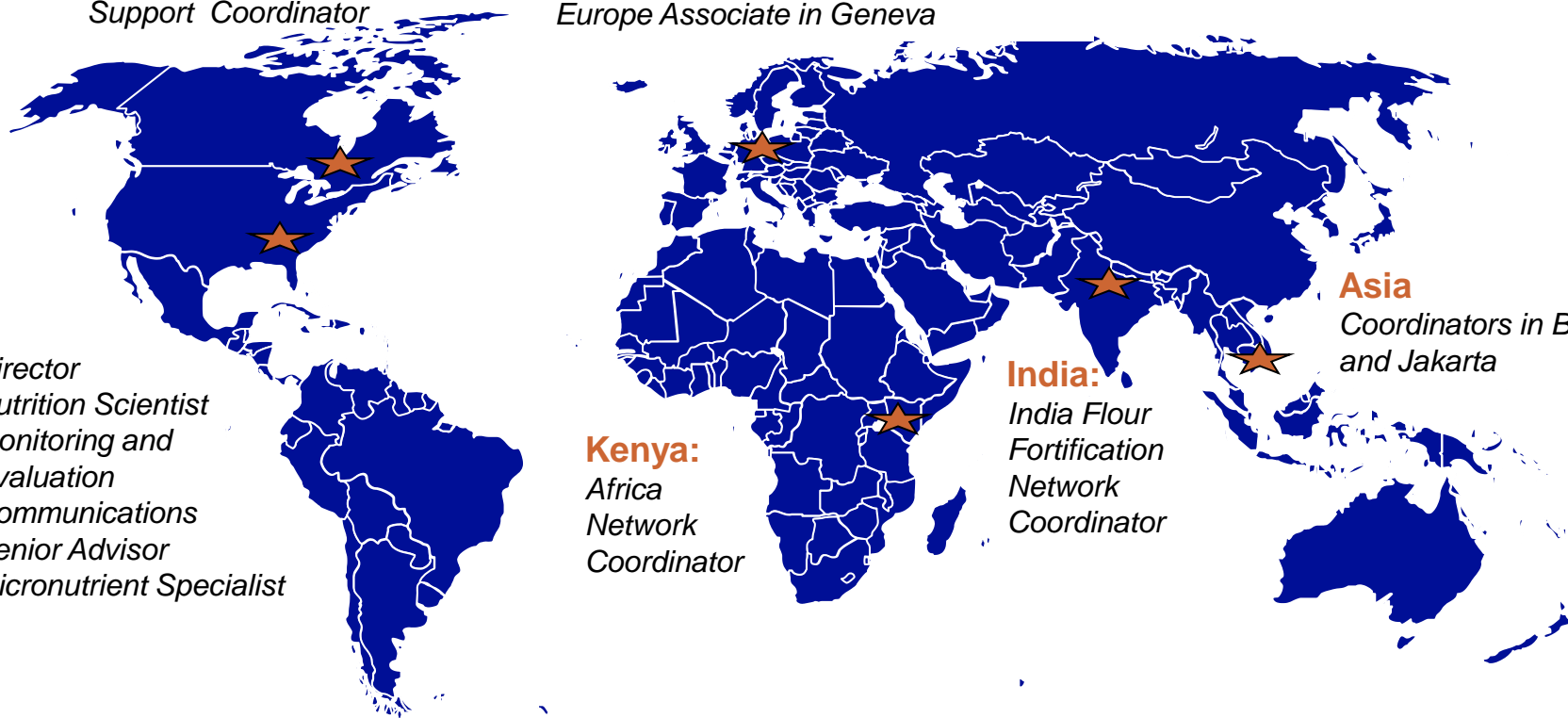
Africa Network Coordinator

India:

India Flour Fortification Network Coordinator

Asia

Coordinators in Bangkok and Jakarta



Regional Focus: Africa



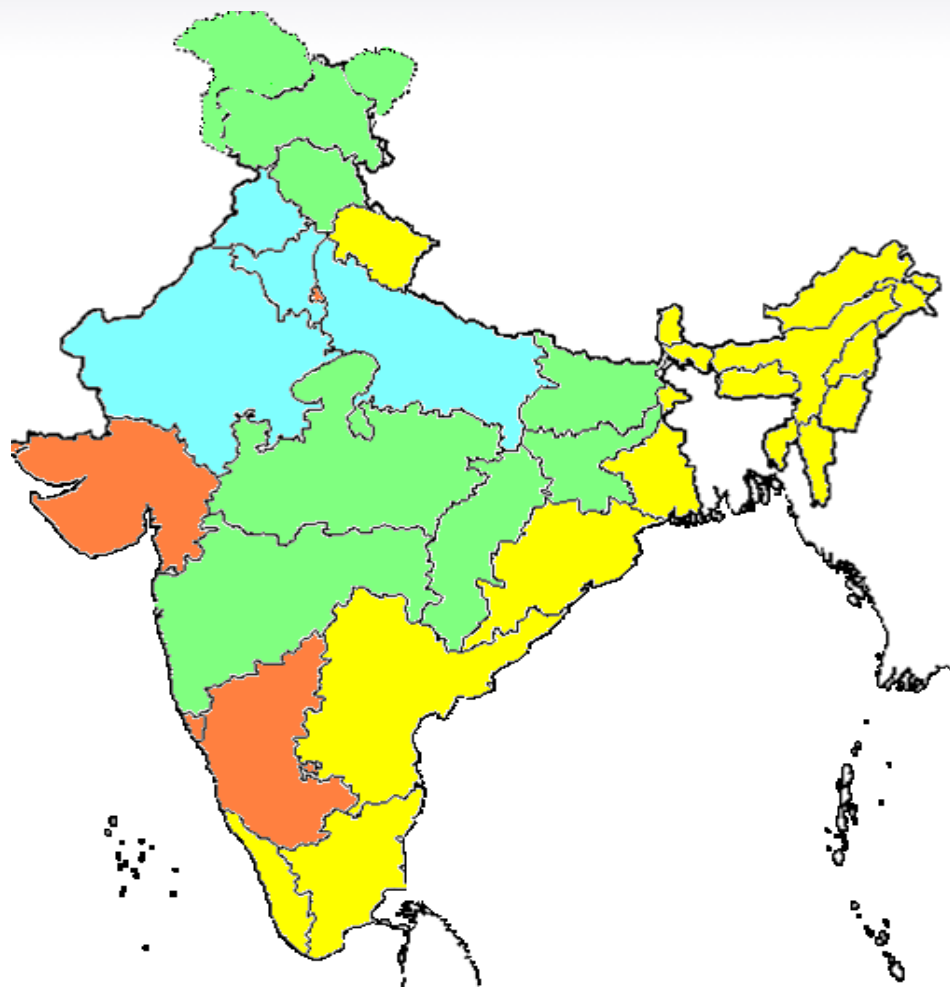
Regional Focus: Asia



Regional Focus: India



Consumption of Cereal Foods in India



High wheat consumption

wheat: 199—309 gm/day
rice: 26 g—140 g/day

High wheat + rice consumption

wheat: 112 –228 g/day
rice- 103 – 280 g/day

High rice and low wheat consumption

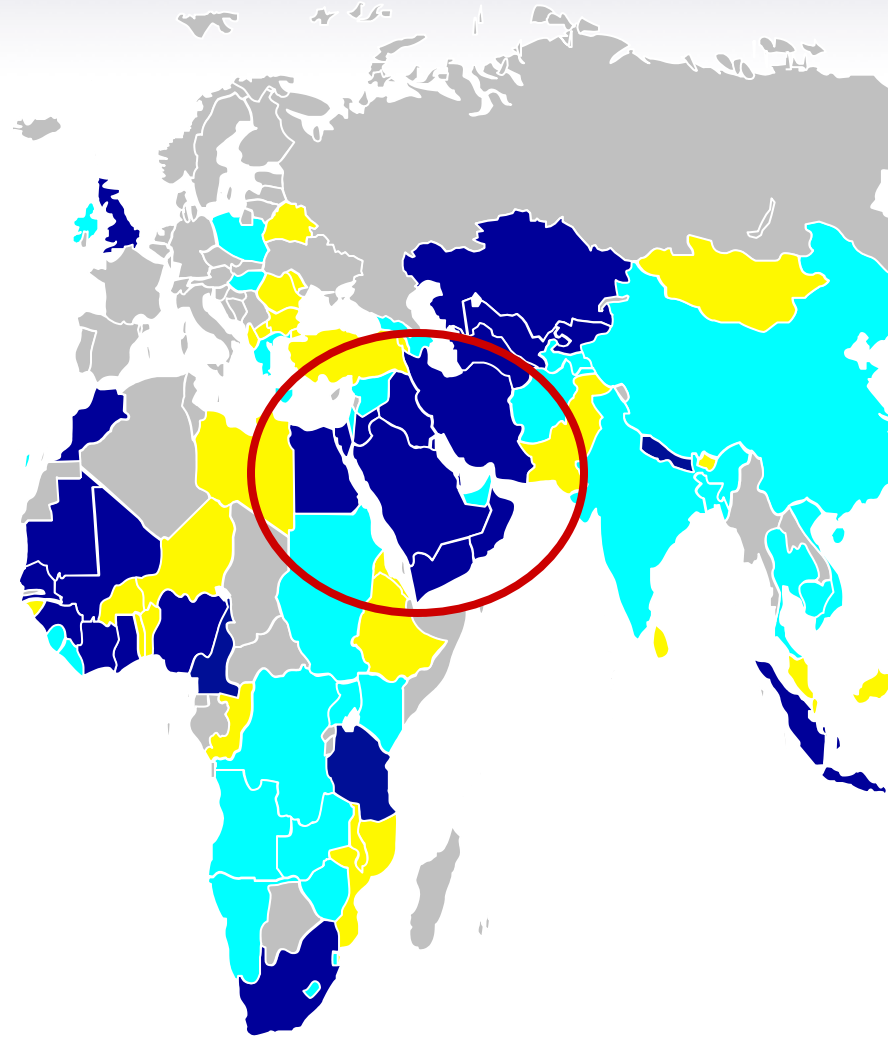
wheat : 1–75 gm/day
rice- 246–419gm/day

Relatively low wheat + rice consumption

wheat : 31-174 gm/day
rice: 70- 186g/day



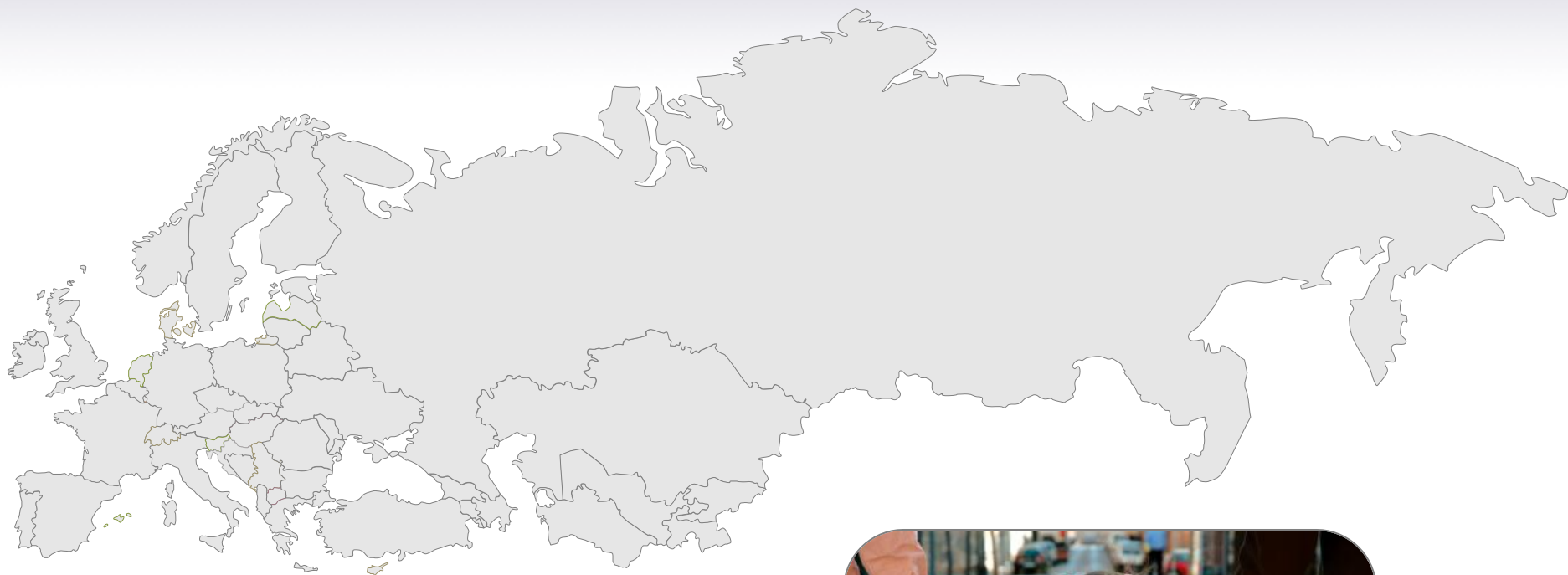
Regional Focus: Middle East



Regional Focus: The Americas



Regional Focus: Europe



European Union Implications

European Union Regulation No 1925/2006:

- Fortification may be used to address public health considerations.
- Member states may fortify as appropriate for their population.



Trade Implications

World Trade Organization:

- Technical specifications for fortification do not prevent trade between countries
- Specifications should use international guidelines as their basis.
- Country regulations should apply equally to nationally produced and imported products to avoid discrimination among trading partners.



Cost to Fortify



One metric tonne of flour is about 2,200 pounds, as pictured here.

Recurring costs of buying quality premix ranges from US\$2 to US\$3 for iron, folic acid, and other B vitamins.

The per person, per year cost to fortify wheat flour may be as little as eight to ten cents.



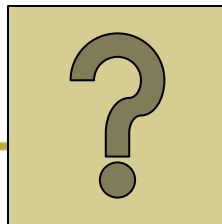
In Summary

The Problem:

One-third of the world's population suffers from vitamin and mineral deficiencies. In many countries, both lower and higher income populations are affected – World Bank 2006

Part of the Solution:

Within countries, FFI stimulates interaction among partners so that together we can achieve results that none of us could achieve independently.



Annual Financial Partners

CDC, Interflour, Buhler, Bunge, Cargill, GAIN, MI, UNICEF

Special Purpose Funding

AUSAid, Smarter Futures, CDC Birth Defects Prevention

Contributors to Special Events

Hexagon, Muhlenchemie, Fortitech, DSM, IMP

In-Kind and Country Specific Support

Emory, GAIN, MI, UNICEF, HKI, Project Healthy Children, World Bank, WHO, and others

