

# ***FOOD FORTIFICATION OVERVIEW GLOBAL AND REGIONAL***



**Presented by Afidra Ronald  
23 May 2016**



**Food Fortification Initiative**  
Enhancing Grains for Healthier Lives



# Food Fortification Initiative (FFI)

- Based on experience with salt iodization in 1990s
- Focused on public-private-civic partnerships
- In 2003 was named the Flour Fortification Initiative
- Renamed Food Fortification Initiative in 2014 to include rice

**Hilton Hotel, Mauritius**

**October 24, 2002**

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A Policy Planning Forum  
with the wheat and flour  
industry to explore a  
global public-private  
initiative supporting  
Universal Flour  
Fortification

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**Hosted by**

**The Micronutrient  
Initiative  
Ottawa, Canada**

**and**

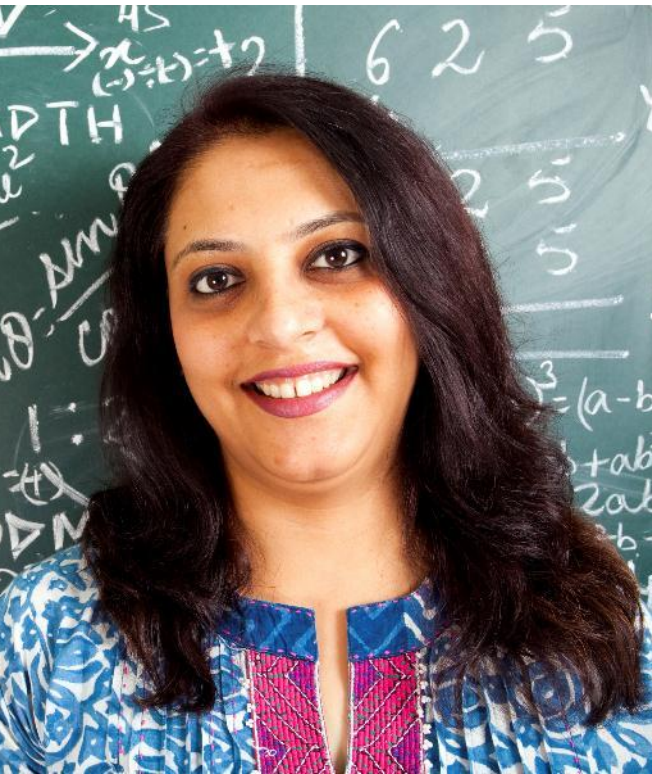
**The Centers for  
Disease Control and  
Prevention  
Atlanta, USA**

A policy planning forum in 2002 was the official launch of FFI.



# Our Vision:

Smarter, stronger, healthier people worldwide by improving vitamin and mineral nutrition.





# Food Fortification Initiative (FFI)

Advocate for and support fortification of industrially milled cereal grains by collaborating with multi-sector partners





# FFI's Role

## Support national partnerships with:

1. Advocacy Efforts

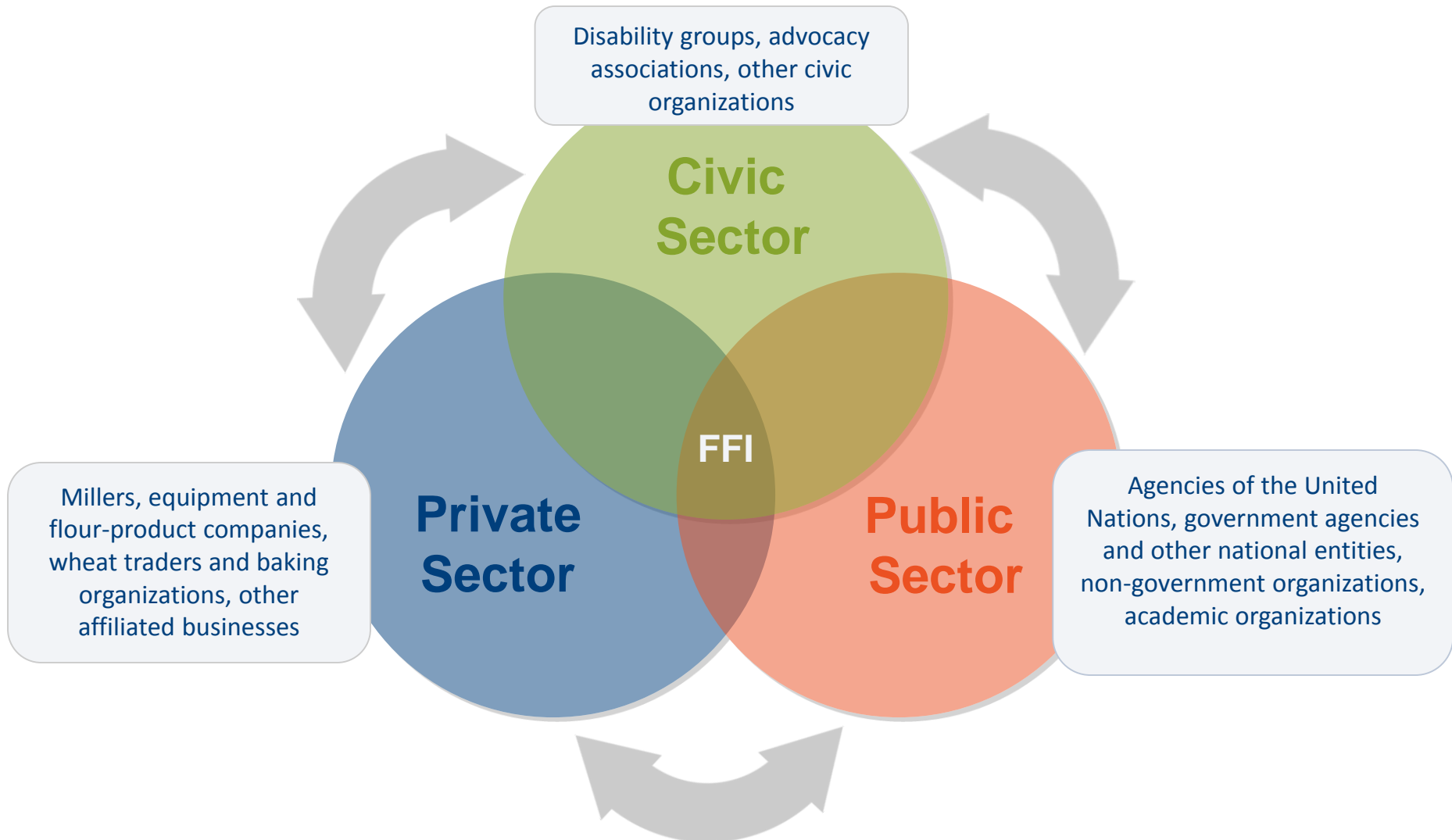
2. Technical assistance for:

- Planning
- Implementing
- Monitoring

3. Track and share global progress at  
[www.FFInetwork.org](http://www.FFInetwork.org)



# FFI Stimulates Network Interaction





# Multi-faceted Approach

Micronutrient  
Powders



Wheat & Maize



Rice



Supplements



Dietary  
Diversity



Condiments



Oil





# Global Consensus



INTERNATIONAL  
FEDERATION  
for  
SPINA BIFIDA  
and  
HYDROCEPHALUS



**gain**  
Global Alliance for  
Improved Nutrition



**Helen Keller**  
INTERNATIONAL



**Micronutrient  
Initiative**



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

### **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 Authorities is followed up by a FFI, the US Center for Disease





# What is Grain Fortification?

- Fortification adds vitamins and minerals during the milling process so that foods made with fortified grain products are more nutritious.

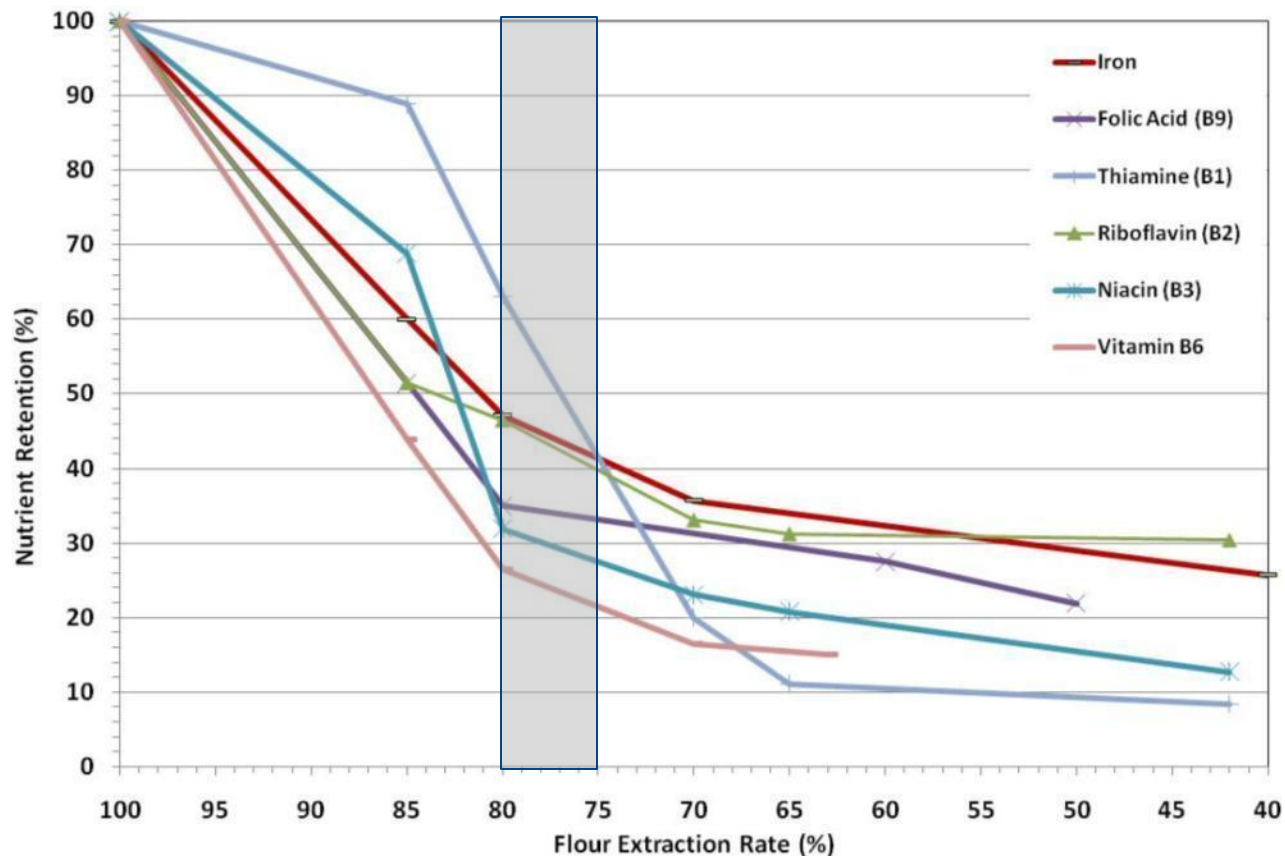


Vitamins and minerals are combined in a powdery premix to add to flour during fortification. Photo from Mühlenchemie.



# Nutrients Lost in Flour Milling

*Wheat and maize lose nutrients in the milling process, usually at levels indicated in the gray box.*





# Nutrient Composition of Rice

## Influencing Factors:

- Variety
- Agriculture practices
  - Milling
- Storage
  - Processing
- Washing
- Cooking

Nutrient content of <30 varieties of rice grains		
Nutrient	Content (Grams/100 grams of rice)	
	Highest	Lowest
Iron	6.350	0.700
Zinc	5.890	0.790
Calcium	65	1
Thiamine	1.740	0.117
Riboflavin	0.448	0.011
Niacin	0.220	1.970



# Success of Fortifying with Iron

Country	Population studied	Improvement?
China	Women	Yes
Iran	Women and men	Yes
Venezuela	School-age children	Yes
Fiji	Women of child-bearing age	Yes
Azerbaijan	Preschool and school-age children	Yes
Kazakhstan	Preschool and school-age children	Yes
Mongolia	Preschool and school-age children	Yes
Tajikistan	Preschool and school-age children	Yes
South Africa	Women of child-bearing age	No
Uzbekistan	Preschool and school-age children	No



# Wheat Flour Fortification Progress

	2004 <sup>1</sup>	2007 <sup>1</sup>	2015 <sup>2</sup>
Countries with mandates to fortify wheat flour with at least iron or folic acid	33	57	83
Percent of wheat flour fortified in industrialized mills worldwide	18	27	32

*The combined population of countries requiring wheat flour fortification is 2.2 billion.*



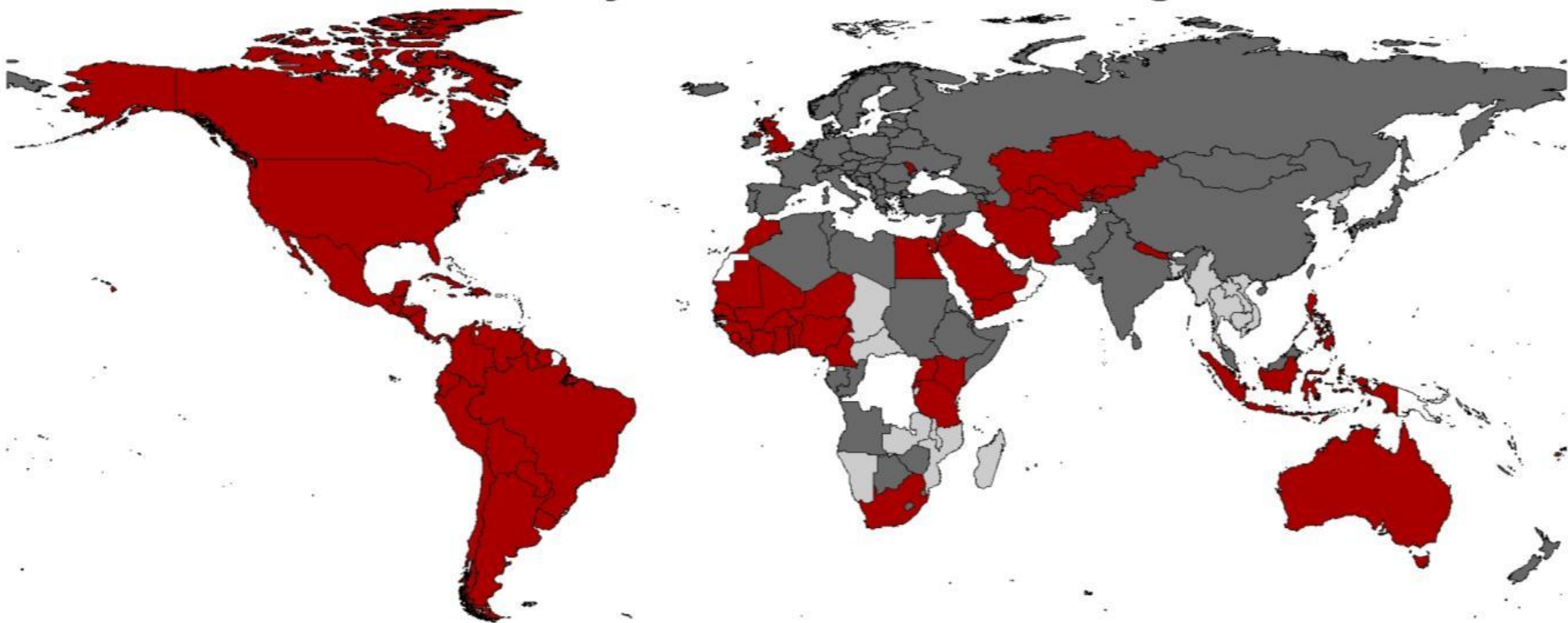
<sup>1</sup> Trends in Wheat Flour Fortification with Folic Acid and Iron – Worldwide, 2004 and 2007, Morbidity and Mortality Weekly Report, US Centers for Disease Control and Prevention, January 11, 2008.





<sup>2</sup> Flour Fortification Initiative database, April 2014





# Wheat Availability and Fortification Legislation



 75 or more grams available per person per day	 Mandatory fortification legislation * 78 countries
 Less than 75 grams available per person per day	 No availability or legislation data

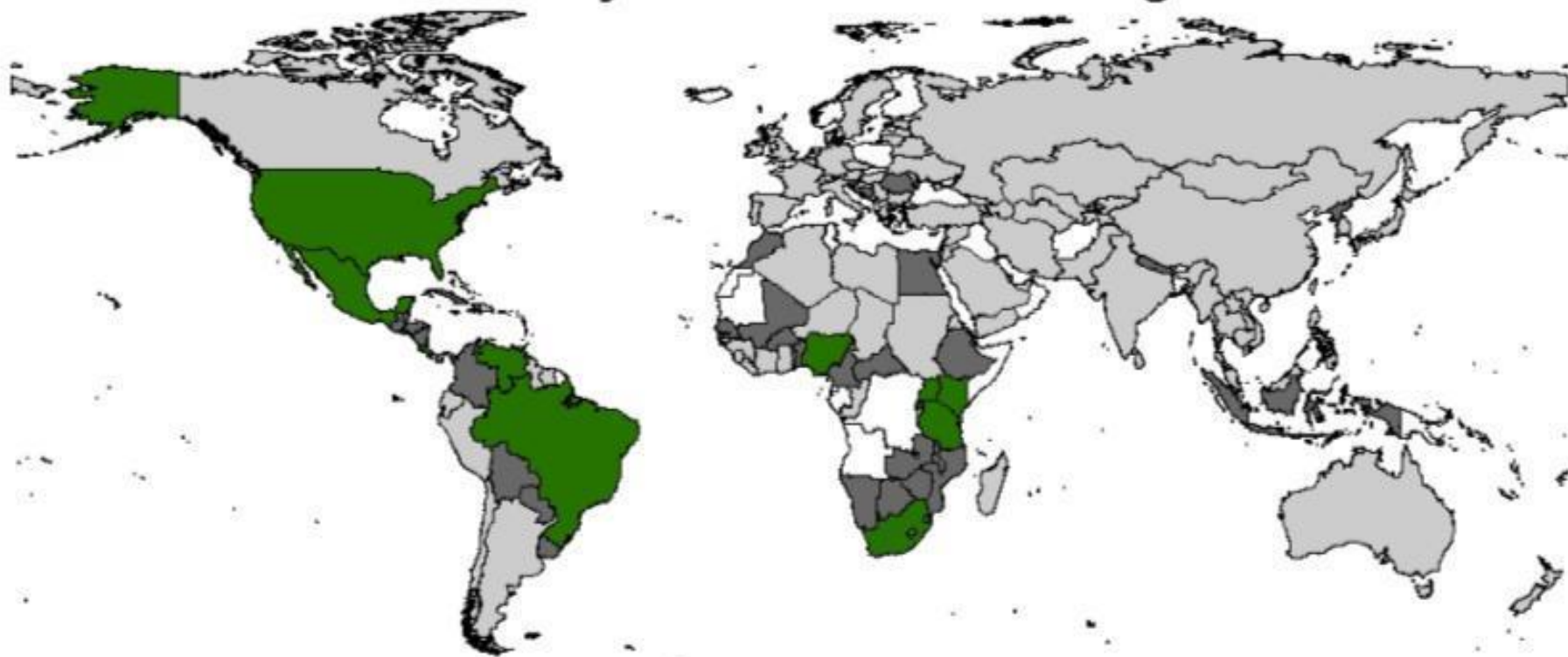
\* Legislation has effect of mandating grain fortification with at least iron or folic acid; does not reflect how much grain is available .





Grain availability data from the Food and Agriculture Organization (2009).

Legislation status from the Flour Fortification Initiative ([www.FFInetwork.org](http://www.FFInetwork.org)) April 2014



# Maize Availability and Fortification Legislation



	75 or more grams available per person per day		Mandatory fortification legislation * 12 countries
	Less than 75 grams available per person per day		No availability or legislation data

\* Legislation has effect of mandating grain fortification with at least iron or folic acid; does not reflect how much grain is available .

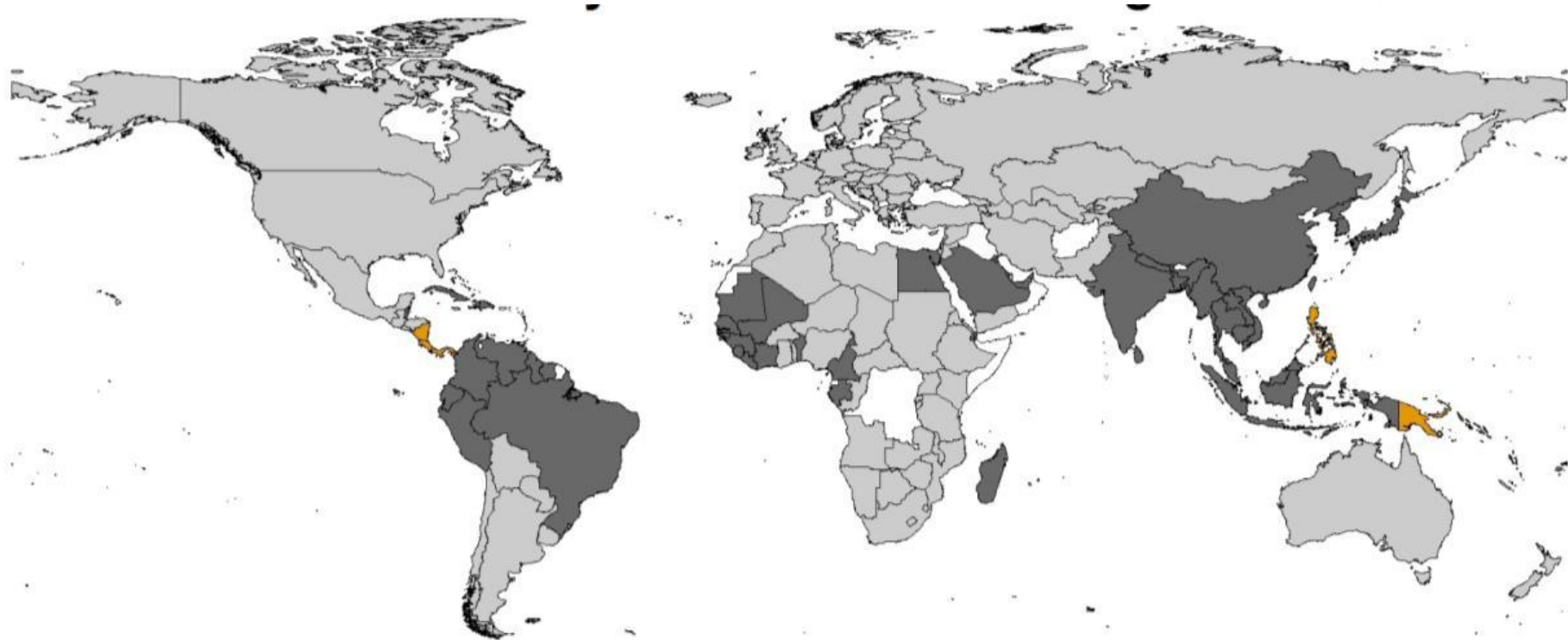
Grain availability data from the Food and Agriculture Organization (2009).





Legislation status from the Flour Fortification Initiative ([www.FFInetwork.org](http://www.FFInetwork.org)) April 2014





# Rice Availability and Fortification Legislation



 75 or more grams available per person per day	 Mandatory fortification legislation * 5 countries
 Less than 75 grams available per person per day	 No availability or legislation data

\* Legislation has effect of mandating grain fortification with at least iron or folic acid; does not reflect how much grain is available .  
Grain availability data from the Food and Agriculture Organization (2009).  
Legislation status from the Flour Fortification Initiative ([www.FFInetwork.org](http://www.FFInetwork.org)) April 2014



# Reasons for Mandatory Legislation



Osmonbek Artykbaev, left, former Parliamentarian in the Kyrgyz Republic, helped the country pass legislation to require flour fortification.

- Equalizes costs for millers
- Sets appropriate standards including:
  - Best iron compound
  - Levels of other vitamins and minerals
- Can be more easily monitored
- Provides more equitable access to foods made with fortified flour



# Grain Fortification Challenges

Grains produced globally for human consumption in 2009:<sup>1</sup>

**439**

**354**

**113**

Million tons of wheat

Million tons of rice

Million tons of maize

## Our Challenges:

- Fortifying more wheat flour
- Developing best practices for rice fortification
- Fortifying maize flour

<sup>1</sup> Food Balance Sheet World Total for 2009, the most recent year with data. Food and Agriculture Organization of the United Nations

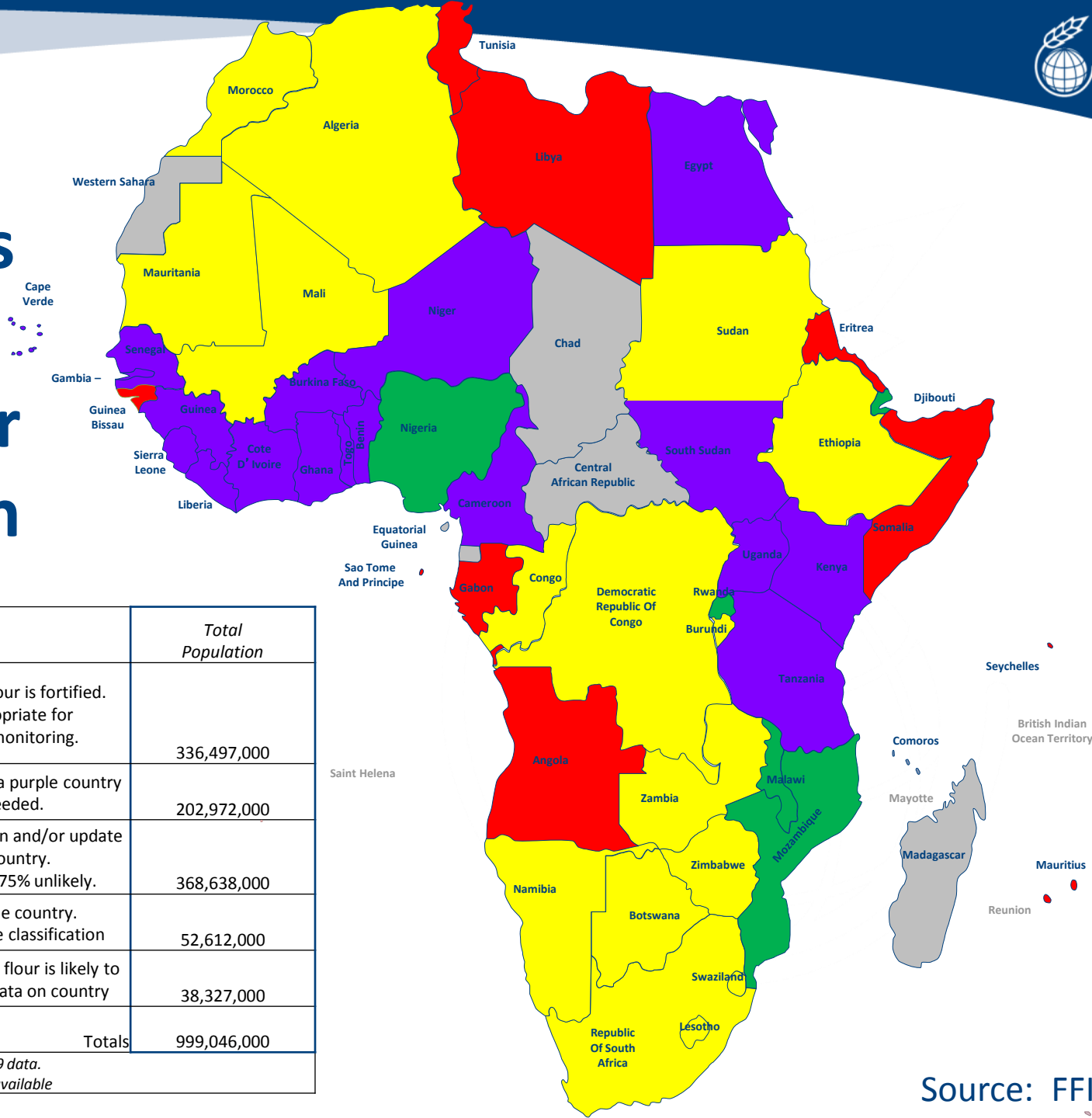
<http://faostat.fao.org/site/368/DesktopDefault.aspx?PageID=368#ancor>



# Africa Regional Updates



# 2016 status of wheat-flour fortification

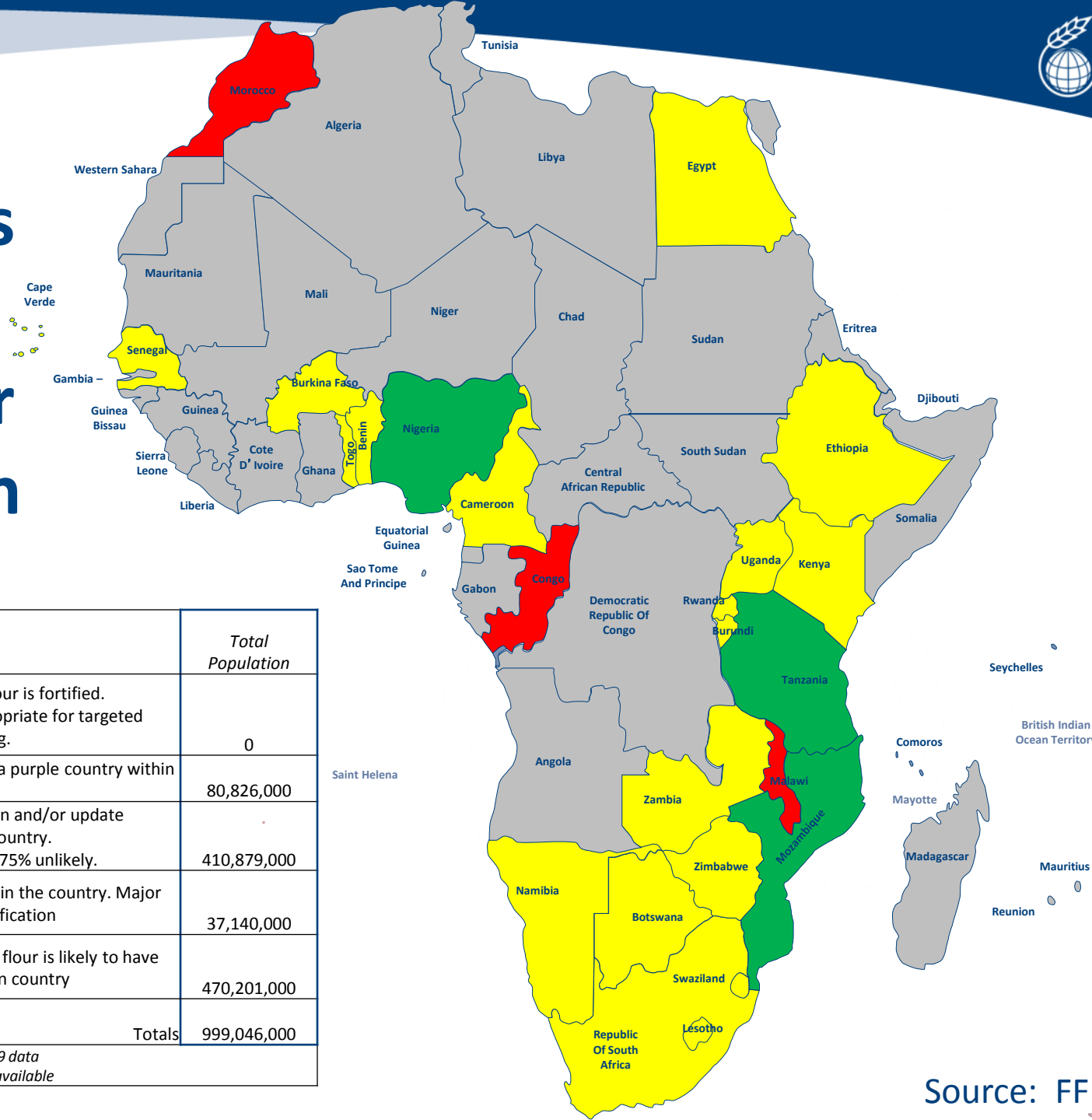


	Total Population	
<b>18</b>	Over 75% of industrially milled wheat flour is fortified. Iron and folic acid are included as appropriate for targeted population. FFI's main role is monitoring.	336,497,000
<b>5</b>	Confident country will meet criteria for a purple country within one year. Targeted support as needed.	202,972,000
<b>17</b>	Organized efforts to increase fortification and/or update standards to appropriate levels within country. Without support to fill gaps, moving to 75% unlikely.	368,638,000
<b>9</b>	No wheat flour fortification activity in the country. Major support necessary to reach purple classification	52,612,000
<b>10</b>	Fortification of industrially milled wheat flour is likely to have very limited health impact; or no data on country	38,327,000
	<b>Totals</b>	<b>999,046,000</b>

Population figures from UN Population Division, 2009 data.  
\*British Indian Ocean Territory population data not available



# 2016 status of maize-flour fortification

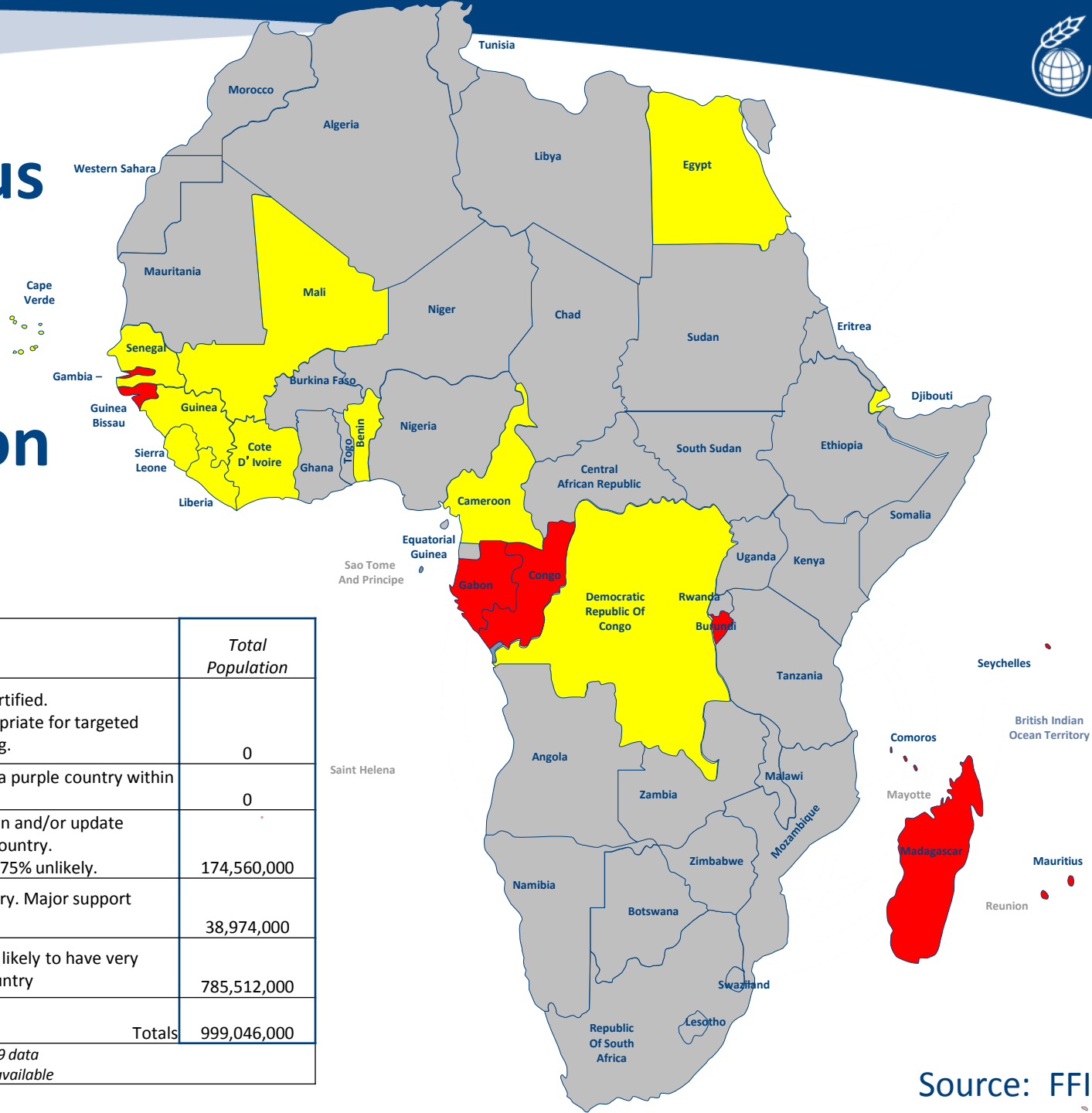


	Total Population
<b>0</b> Over 75% of industrially milled maize flour is fortified. Iron and folic acid are included as appropriate for targeted population. FFI's main role is monitoring.	0
<b>3</b> Confident country will meet criteria for a purple country within one year. Targeted support as needed.	80,826,000
<b>20</b> Organized efforts to increase fortification and/or update standards to appropriate levels within country. Without support to fill gaps, moving to 75% unlikely.	410,879,000
<b>4</b> No industrial maize fortification activity in the country. Major support necessary to reach purple classification	37,140,000
<b>32</b> Fortification of industrially milled maize flour is likely to have very limited health impact; or no data on country	470,201,000
<b>Totals</b>	<b>999,046,000</b>

Population figures from UN Population Division, 2009 data  
 \*British Indian Ocean Territory population data not available



# 2016 status of rice fortification



		Total Population
0	Over 75% of industrially milled rice is fortified. Iron and folic acid are included as appropriate for targeted population. FFI's main role is monitoring.	0
0	Confident country will meet criteria for a purple country within one year. Targeted support as needed.	0
11	Organized efforts to increase fortification and/or update standards to appropriate levels within country. Without support to fill gaps, moving to 75% unlikely.	174,560,000
9	No rice fortification activity in the country. Major support necessary to reach purple classification	38,974,000
39	Fortification of industrially milled rice is likely to have very limited health impact; or no data on country	785,512,000
Totals		999,046,000

Population figures from UN Population Division, 2009 data  
\*British Indian Ocean Territory population data not available



# Global Best Practices

To plan a flour fortification program, consider:

- Local culture and cereal consumption
- Nutritional needs
- Industry analysis
- Creation of a multi-sector national fortification alliance
- Legislation
- Monitoring



Brazil photo by David Snyder / CDC Foundation





# In Summary

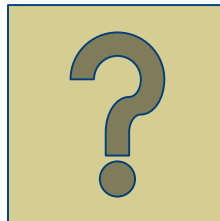
## The Problem:

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.





# For More Information

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

[www.Facebook.com/FFInetwork](http://www.Facebook.com/FFInetwork)

<https://twitter.com/FFINetwork>

Join the Food Fortification Initiative group on [Linked In](#)

E-mail [info@ffinetwork.org](mailto:info@ffinetwork.org)