Background

events and processes leading up to this meeting

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

IF SBH INTERNATIONAL FEDERATION for SPINA BIFIDA and HYDROCEPHALUS

AkzoNobel

Helen Keller INTERNATIONAL

Ontwikkelingssamenwerking
Ministerie van Buitenlandse Zaken

Where it began….

- In some countries, flour fortification started without any baseline information on vitamin and mineral deficiencies
- In some countries, fortificants used were not appropriate to the food vehicle, the levels too low, or the compounds not suitable
- In some countries impact evaluation showed no impact because compliance by the mills was still low or only few people consumed the fortified flour

Where it began….

- A flour fortification programme in the early stages of implementation is always in a state of continuous change
- This makes it necessary to keep a finger on the pulse and have feedback loops
- FFI/Smarter Futures therefore wanted to develop a “toolkit” that will enable countries to see trends in programme and micronutrient status indicators over time especially in the early years of the programme to enable feedback, review and amending

Work already done:

- From 4 – 8 April, 2011, FFI/Smarter Futures held a QA/QC and M&S workshop in Dar es Salaam, Tanzania
- Teams from 9 countries and 18 FFI partner organizations participated in the QAQC training
- Several participants stayed on to review a first draft of a***: Toolkit for Developing a National Flour Fortification Monitoring and Surveillance System: a Purposive and Convenience Sampling Approach***

- At the workshop, teams from Ethiopia, Kenya, Swaziland, Malawi, Mozambique, South Africa, Tanzania, Uganda and Zimbabwe reviewed the draft, reported on their findings and gave recommendations for improvements.
- In addition, many colleagues from FFI/Smarter Futures partner organizations and scientists reviewed the guide and provided comments
- Based on all these, we now present the draft **Guide for Developing a Flour Fortification Program Monitoring and Surveillance System**

Objectives of this Meeting

- to finalize the guide for a ***Population Based Flour Fortification Program Monitoring and Surveillance System*** (FFMSS),
- to develop a protocol to field test the guide and
- to select possible locations for the field-test.

Expected Outputs

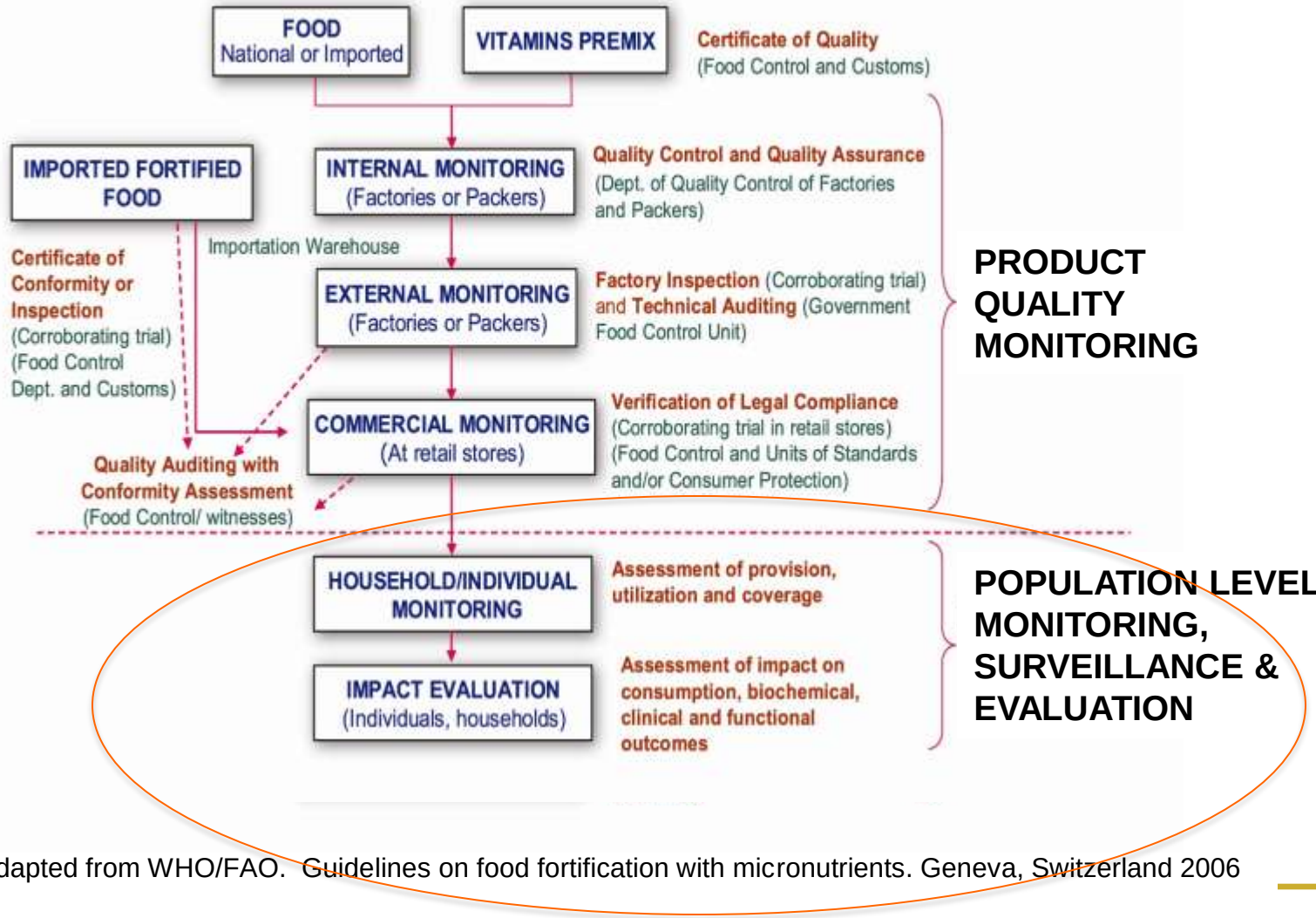
- A final or near-final draft of the guide for a ***Population Based Flour Fortification Program Monitoring and Surveillance System*** (FFMSS).
- A final or near to final field-testing protocol for the FFMSS.
- Agreement on 1 or possibly 2 countries where the FFMSS will be field tested beginning in 2013.

So let us briefly review what the Guide is intended for.

The Guiding Principles

- the purpose of the Guide is to track *trends* in the effectiveness of a flour fortification program *over time* in populations documented to regularly consume fortified flour – not necessarily to provide statistically representative estimates of the prevalence or incidence of micronutrient deficiencies in the population at *a point in time*.
- If such information is deemed necessary statistically representative surveys may be carried out as needed and resources allow.

The Guide is based on the FAO/WHO Monitoring Framework



Adapted from WHO/FAO. Guidelines on food fortification with micronutrients. Geneva, Switzerland 2006

10 YEARS of Progress through Partnerships

The Guide also follows the WHO Recommendations on wheat and maize flour fortification

http://www.who.int/nutrition/

Available in UN languages

- *English*
- *Russian*
- *Chinese*
- *Spanish*
- *French*
- *Arabic*

Suggested citation

WHO, FAO, UNICEF, GAIN, MI, & FFI. Recommendations on wheat and maize flour fortification. Meeting Report: Interim Consensus Statement. Geneva, World Health Organization, 2009 (http://www.who.int/nutrition/publications/micronutrients/wheat_maize_fort.pdf, accessed [date]).

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 civic sector. This joint statement reflects the position of the World Health Organization (WHO), Food and Agriculture Organization of the United Nations (FAO), The United Nations Children's Fund (UNICEF), Global Alliance for Improved Nutrition (GAIN), The Micronutrient Initiative (MI) and FFI. It is intended for a wide audience including food industry, scientists and governments involved in the design and implementation of flour fortification programs as public health interventions.

BACKGROUND

WHO and FAO published in 2006 the *Guidelines on Food Fortification with Micronutrients* (WHO/FAO, 2006). These general guidelines, written from a nutrition and public health perspective are a resource for governments and agencies implementing or considering food fortification and a source of information for scientists, technologists and the food industry. Some basic principles for effective fortification programs along with fortificants' physical characteristics, selection and use with specific food vehicles are described. Fortification of widely distributed and consumed foods has the potential to improve the nutritional status of a large proportion of the population, and neither requires changes in dietary patterns nor individual decision for compliance. Technological issues to food fortification need to be fully resolved especially with regards to appropriate levels of nutrients, stability of fortificant, nutrient interactions, physical properties and acceptability by consumers (WHO/FAO, 2006). Worldwide, more than 600 million metric tons of wheat and maize flours are milled annually by commercial roller mills and consumed as noodles, breads, pasta, and other flour products by people in many countries. Fortification of industrially processed wheat and maize flour, when appropriately implemented, is an effective, simple, and inexpensive strategy for supplying vitamins and minerals to the diets of large segments of the world's population. It is estimated that the proportion of industrial-scale wheat flour being fortified is 97% in the Americas, 31% in Africa, 44% in Eastern Mediterranean , 21% in South-East Asia , 6% in Europe, and 4% in the Western Pacific regions in 2007 (FFI, 2008).

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 Application* was a follow up to a FFI, the US Centers for Disease Control and Prevention (CDC) and the Mexican Institute of Public Health, first technical workshop entitled "Wheat Flour Fortification: Current Knowledge and Practical Applications," held in Cuernavaca, Mexico in December 2004 (FFI, 2004). The purpose of this second workshop was to provide guidance on national fortification of wheat and maize flours, milled in industrial roller mills (i.e. >20 metric tons/day milling capacity), with iron, zinc, folic acid, vitamin B_{12} and vitamin A and to develop guidelines on formulations of premix based on common ranges of flour consumption. A secondary aim was to agree on the best practices guidelines for premix manufactures and millers. Expert work groups prepared technical documents reviewing published efficacy and effectiveness studies as well as the form and levels of fortificants currently being added to flour in different countries. The full reviews will be published in a supplement of *Food and Nutrition Bulletin* in 2009 and the summary recommendations of this meeting can be found in http://www.sph.emory.edu/wheatflour/atlanta08/ (FFI, 2008).

RECOMMENDATIONS FOR WHEAT AND MAIZE FLOUR FORTIFICATION

Wheat and maize flour fortification is a preventive food-based approach to improve micronutrient status of populations over time that can be integrated with other interventions in the efforts to reduce vitamin and mineral deficiencies when identified as public health problems. However, fortification of other appropriate food vehicles with the same and/or other nutrients should also be considered when feasible. Wheat and maize flour fortification should be considered when industrially produced flour is regularly consumed by large population groups in a country. Wheat and maize flour fortification programmes could be expected to be most effective in achieving a public health impact if mandated at the national level and can help achieve international public health goals. Decisions about which nutrients to add and the appropriate amounts to add to fortify flour should be based on a series of factors including the nutritional needs and deficiencies of the population; the usual consumption profile of "fortifiable" flour (i.e. the total estimated amount of flour milled by

Average levels of some nutrients to consider adding to fortified wheat flour

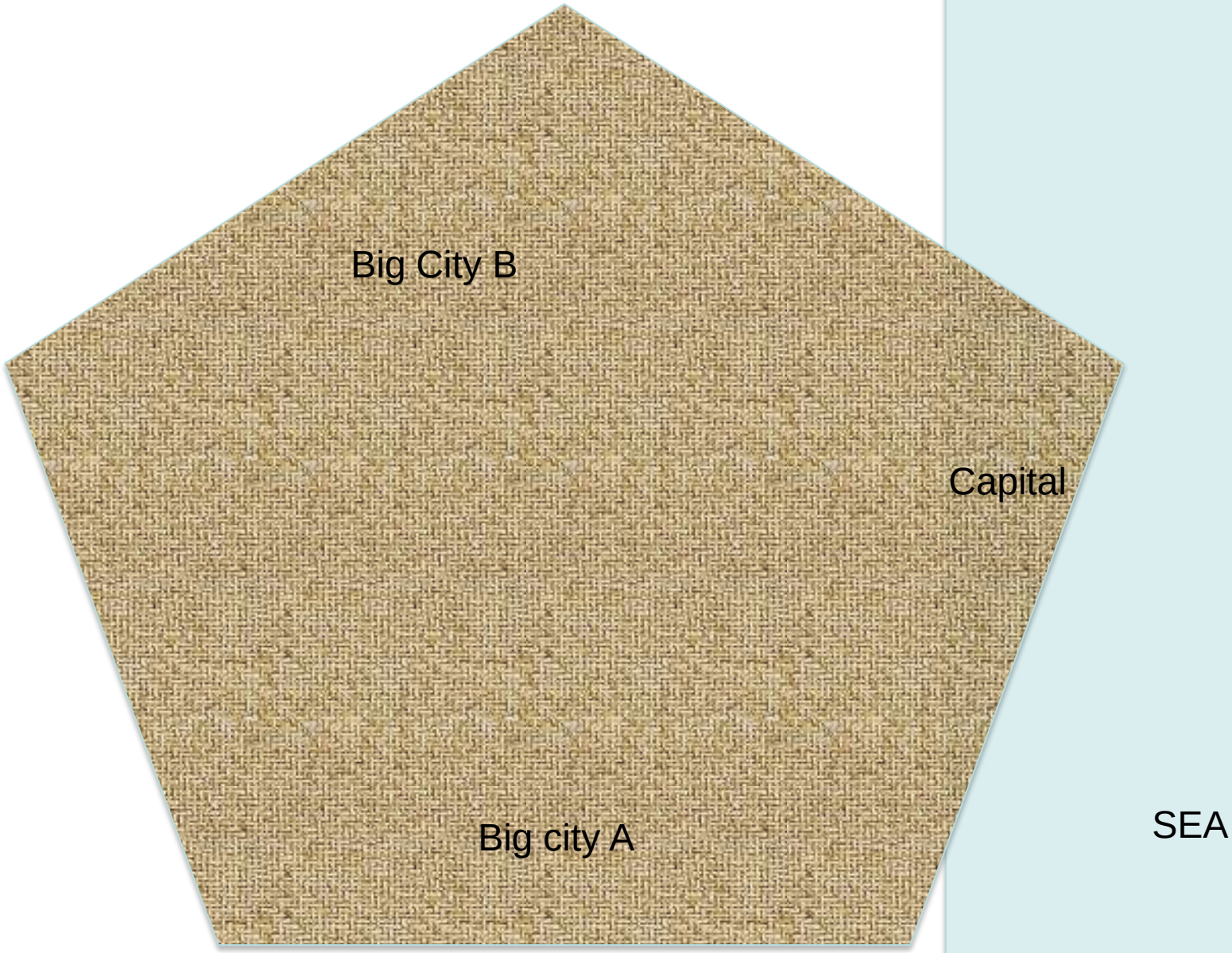
Nutrient	Flour Extraction Rate	Compound	Level of nutrient to be added in parts per million (ppm) by estimated average per capita wheat flour availability (g/day)[1]			
			<75[2] g/day	75-149 g/day	150-300 g/day	>300 g/day
Iron	Low	NaFeEDTA	40	40	20	15
		Ferrous Sulfate	60	60	30	20
		Ferrous Fumarate	60	60	30	20
		Electrolytic Iron	NR[3]	NR[3]	60	40
	High	NaFeEDTA	40	40	20	15
Folic Acid	Low or High	Folic Acid	5.0	2.6	1.3	1.0
Vitamin B_{12}	Low or High	Cyanocobalamin	0.04	0.02	0.01	0.008
Vitamin A	Low or High	Vitamin A Palmitate	5.9	3	1.5	1
Zinc[3]	Low	Zinc Oxide	95	55	40	30
	High	Zinc Oxide	100	100	80	70

*based on extraction, fortificant compound, and estimated per capita flour availability

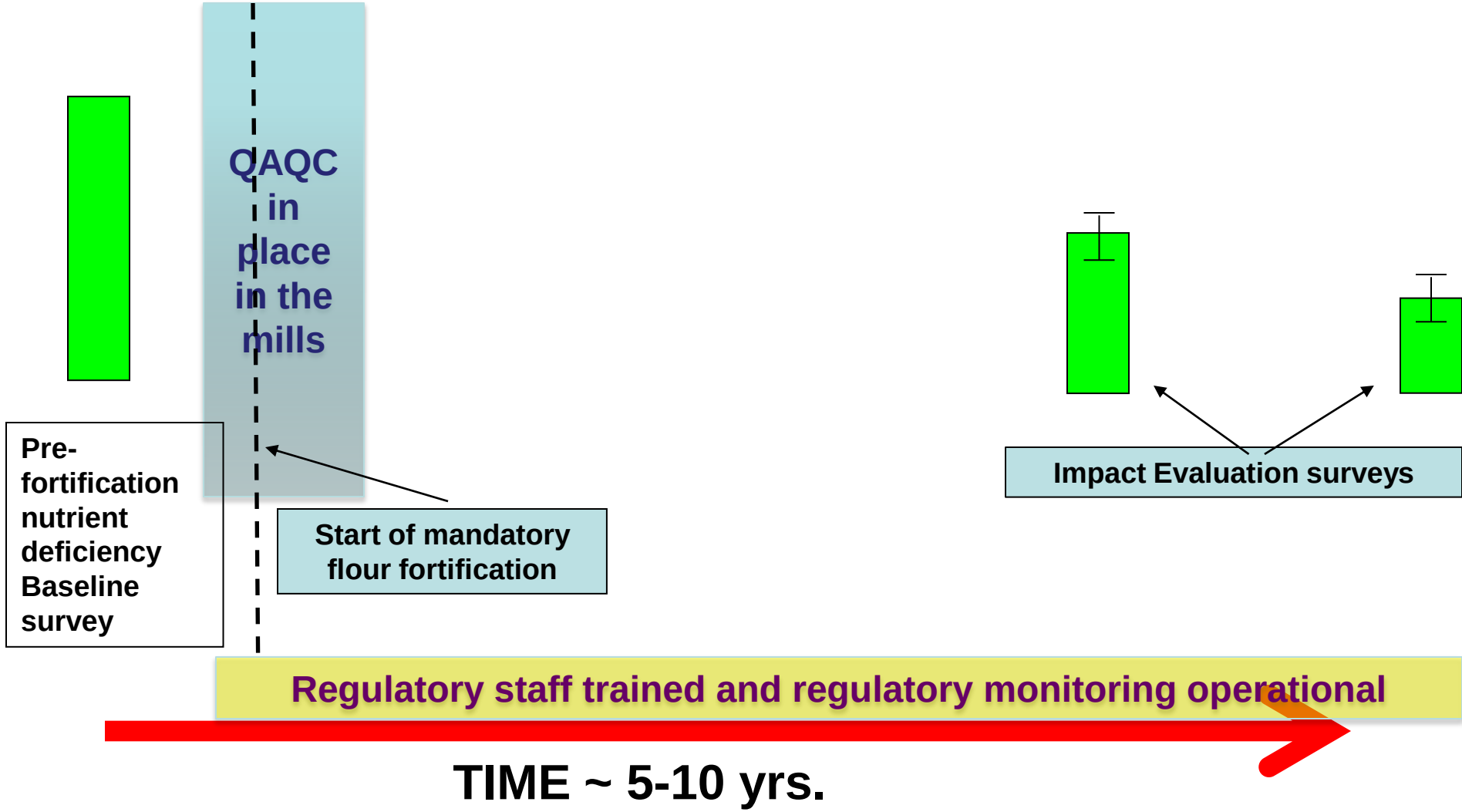
Introducing
our imaginary country:

“FORTIFITOPIA”

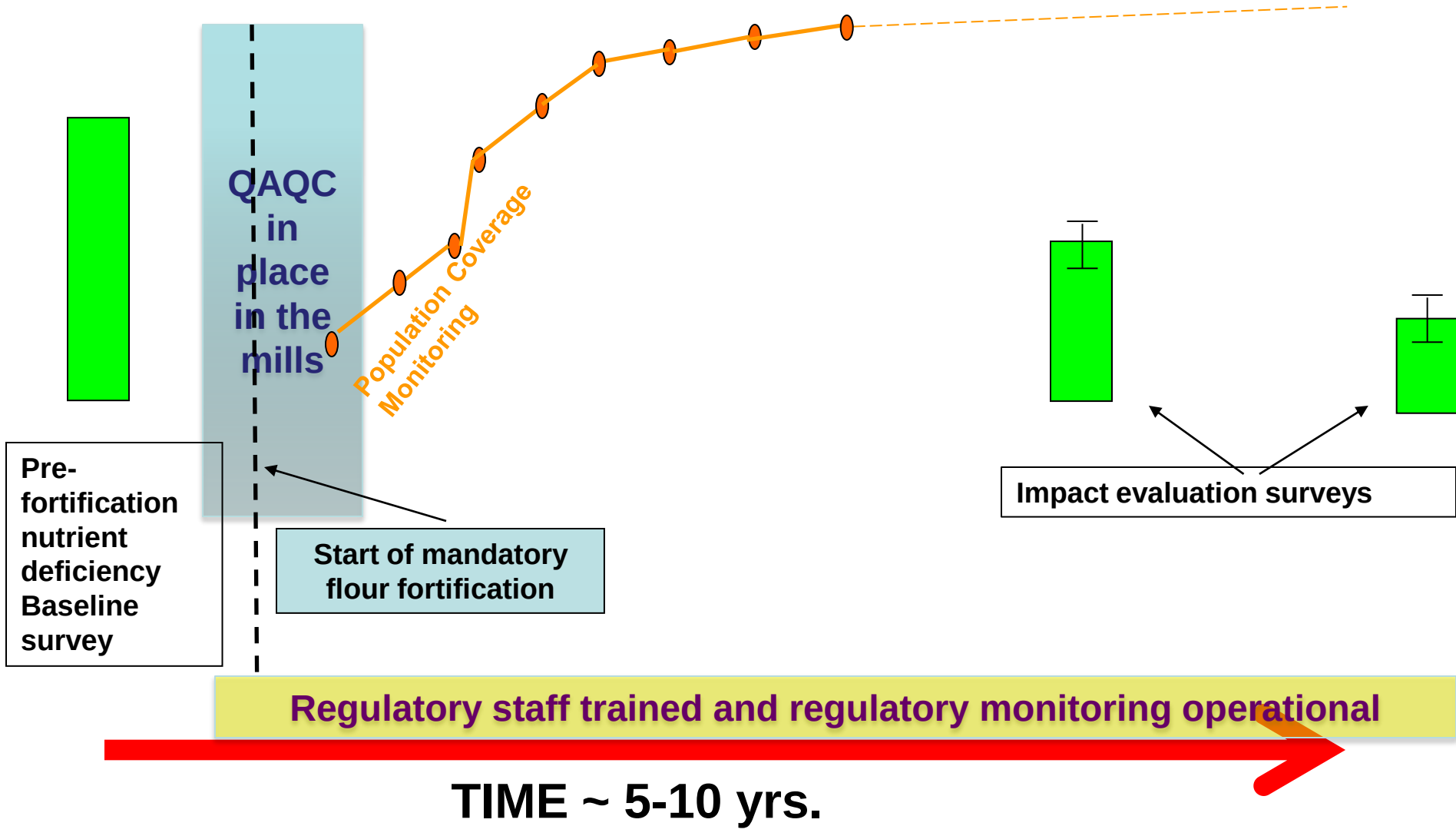
MAP of FORTIFITOPIA



The Flour Fortification Programme in “Fortifitopia”

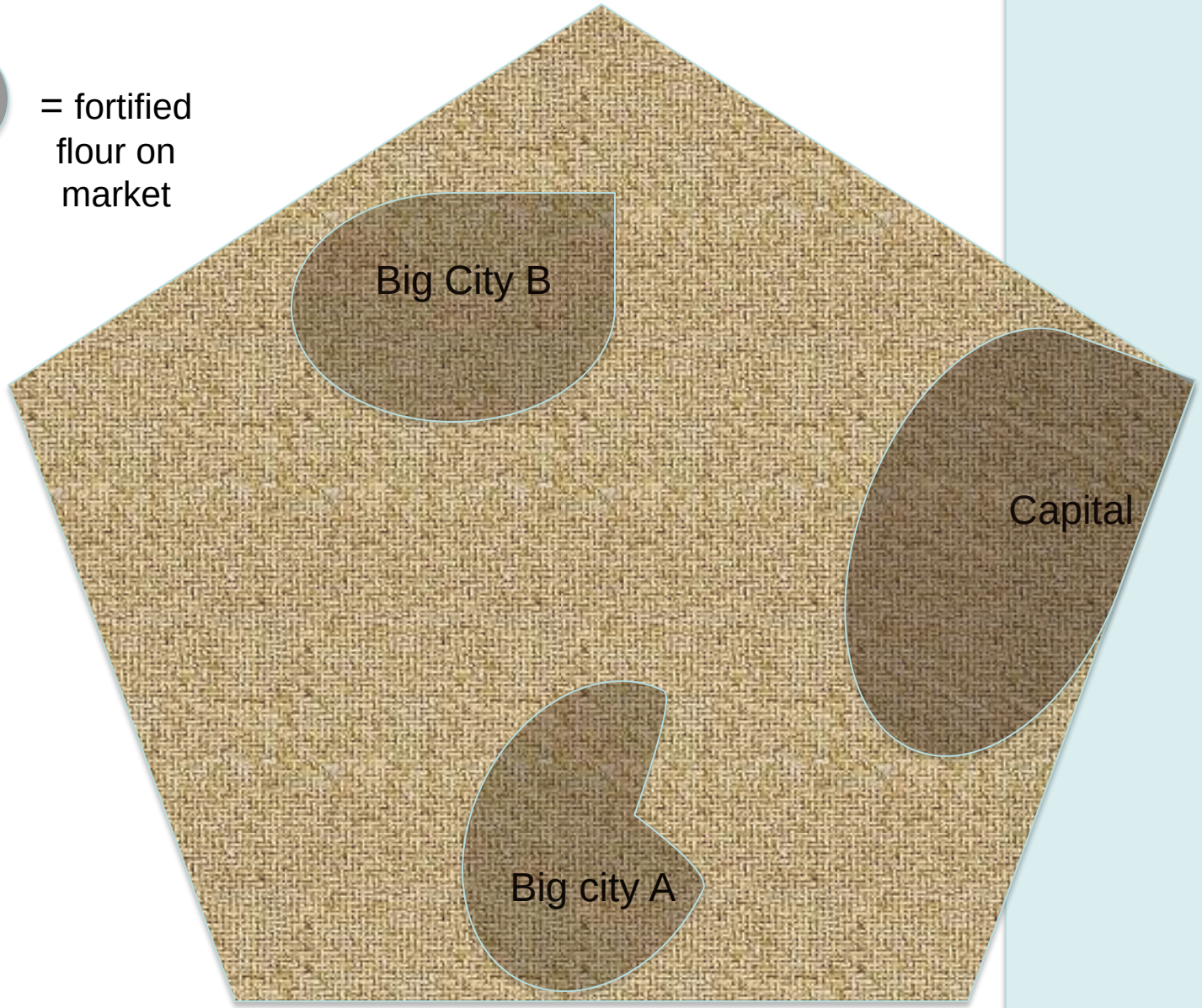


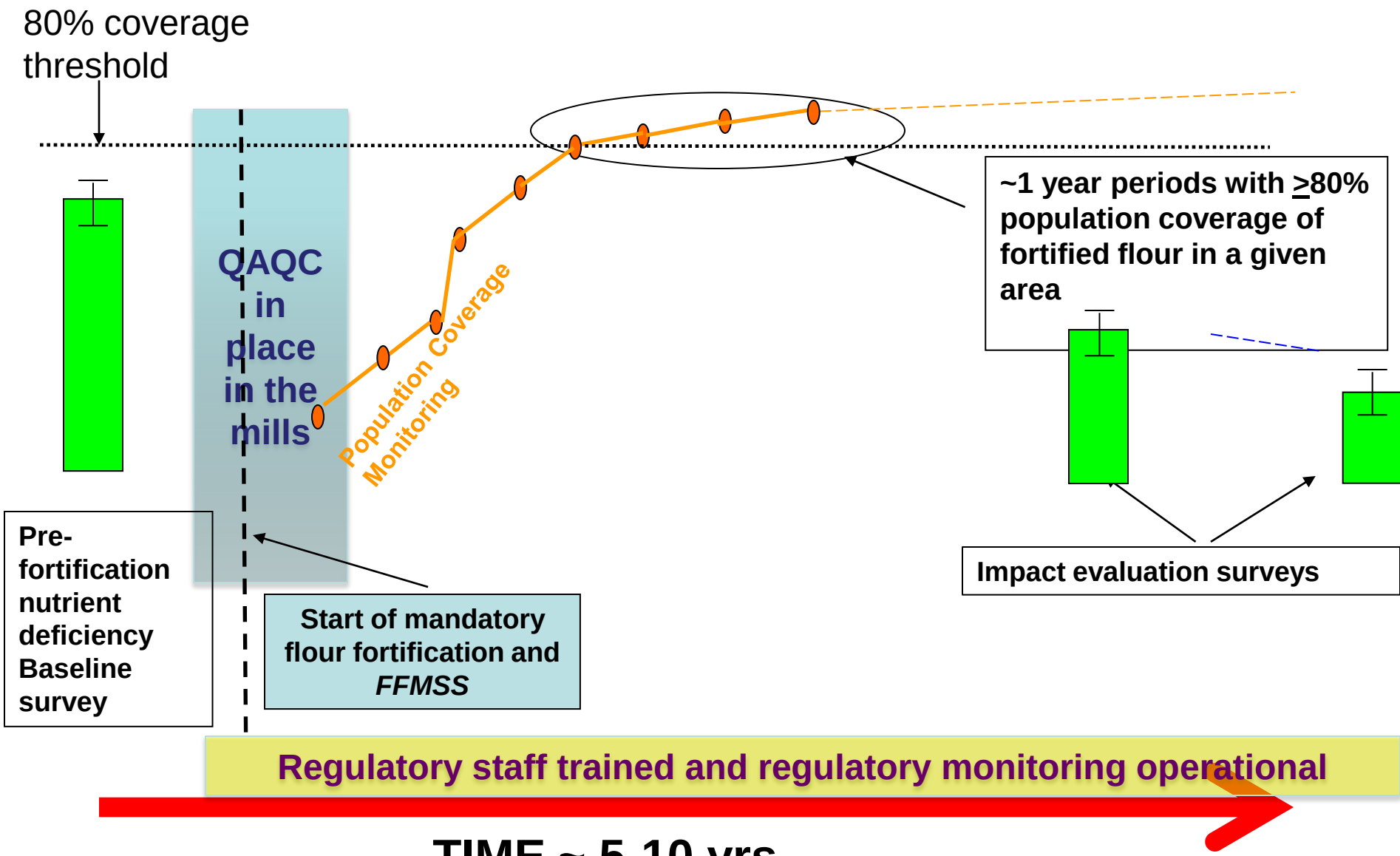
Question: Are people buying the fortified flour or bread?


QAQC in place in the mills
Population Coverage Monitoring
Pre-fortification nutrient deficiency Baseline survey
Start of mandatory flour fortification
Impact evaluation surveys
Regulatory staff trained and regulatory monitoring operational
TIME ~ 5-10 yrs.

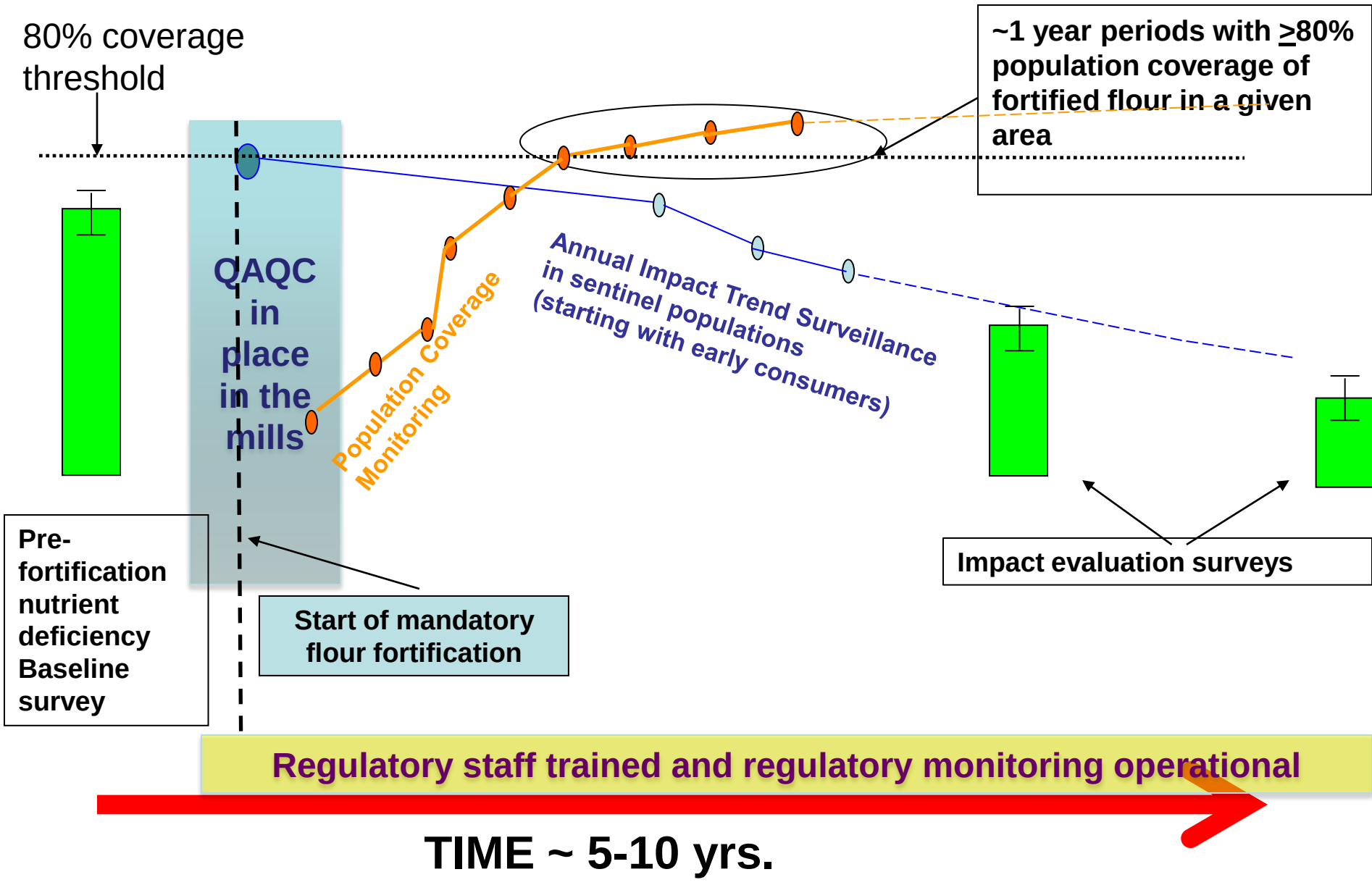
MAP of FORTIFITOPIA

= fortified flour on market



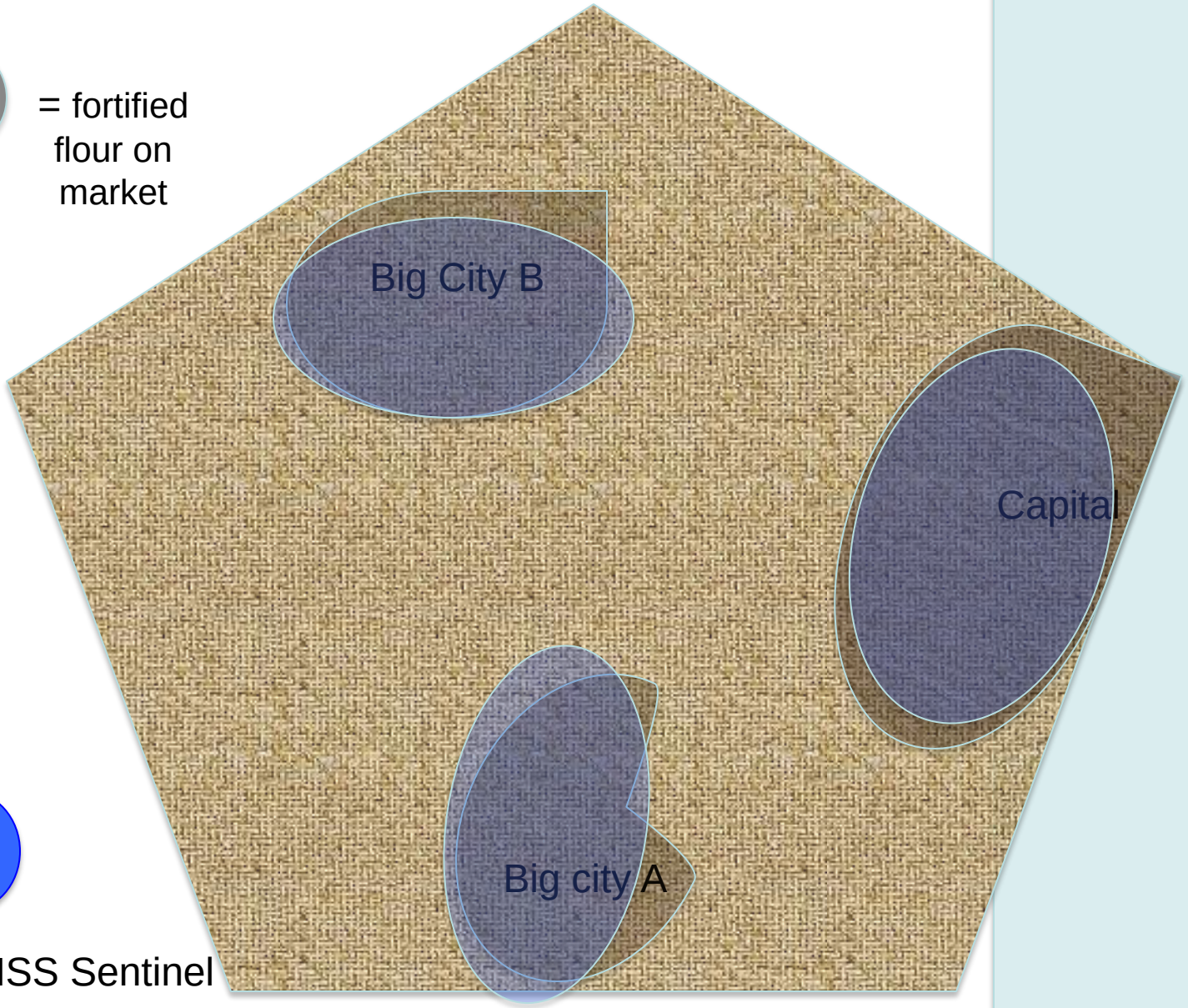

80% coverage threshold
QAQC in place in the mills
Population Coverage Monitoring
~1 year periods with ≥80% population coverage of fortified flour in a given area
Pre-fortification nutrient deficiency Baseline survey
Start of mandatory flour fortification and FFMSS
Impact evaluation surveys
Regulatory staff trained and regulatory monitoring operational
TIME ~ 5-10 yrs.

Question: People are consuming the flour, but does that have any effect on their health?


80% coverage threshold
~1 year periods with ≥80% population coverage of fortified flour in a given area
QAQC in place in the mills
Population Coverage Monitoring
Annual Impact Trend Surveillance in sentinel populations (starting with early consumers)
Pre-fortification nutrient deficiency Baseline survey
Start of mandatory flour fortification
Impact evaluation surveys
Regulatory staff trained and regulatory monitoring operational
TIME ~ 5-10 yrs.

MAP of FORTIFITOPIA

= fortified flour on market

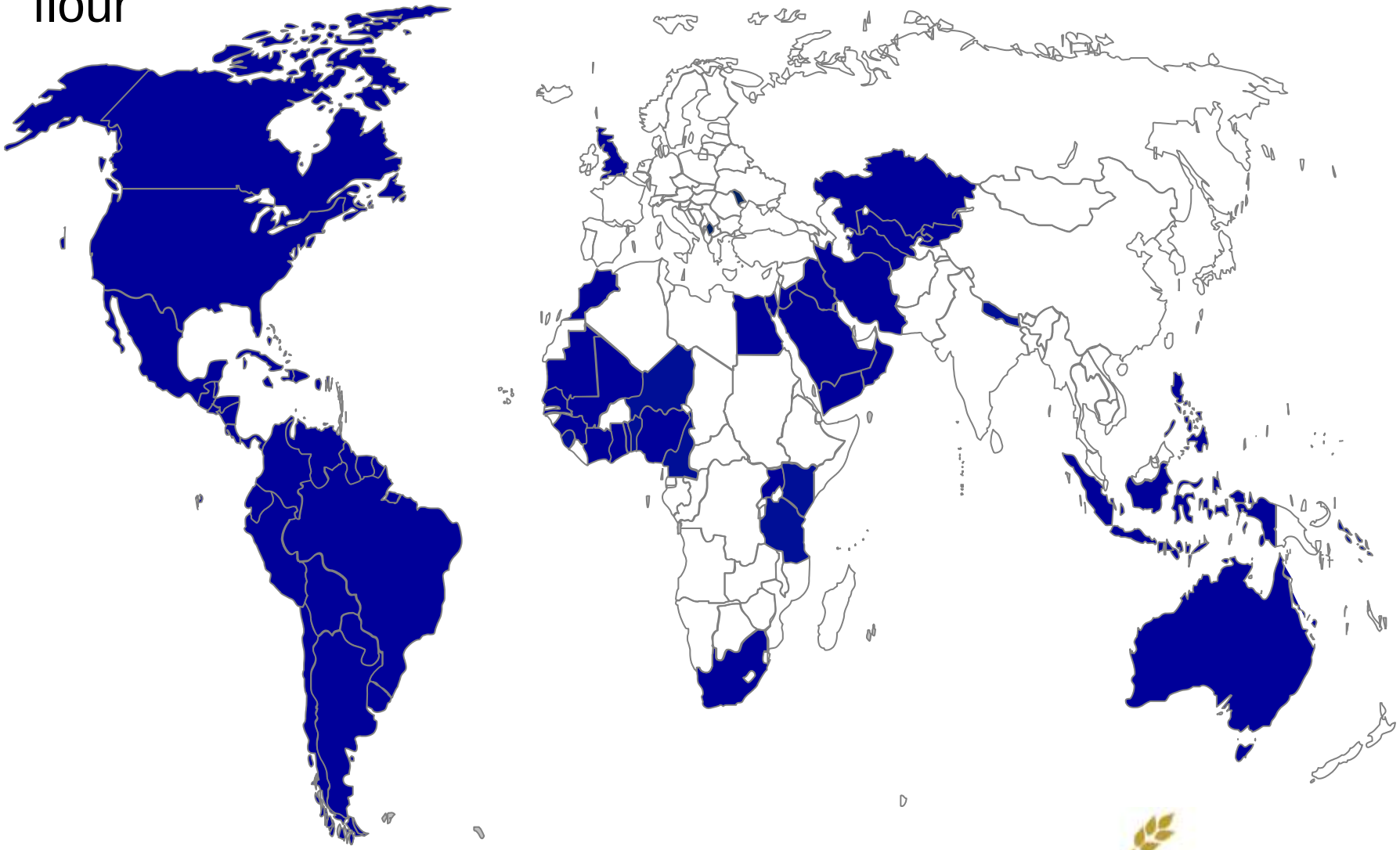


SEA

= FFMSS Sentinel site

- The FFMSS should enable you to set up a viable annual impact trend surveillance system in the areas where the flour is consumed, that can act as your early warning and feedback loop.
- You are the ones who can tell us how it would work in a specific country’s situation and how it would utilize and build on already available systems.
- In developing a plan to field-test this methodology you will also review if the document provides you with all the information you need to do so.

We really need good monitoring & surveillance for the 75 countries already require iron and/or folic acid in wheat flour



In 10 years, from 33 to 75 countries!

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