

Possibilities for addressing child undernutrition in Armenia through nutrition specific and nutrition sensitive interventions

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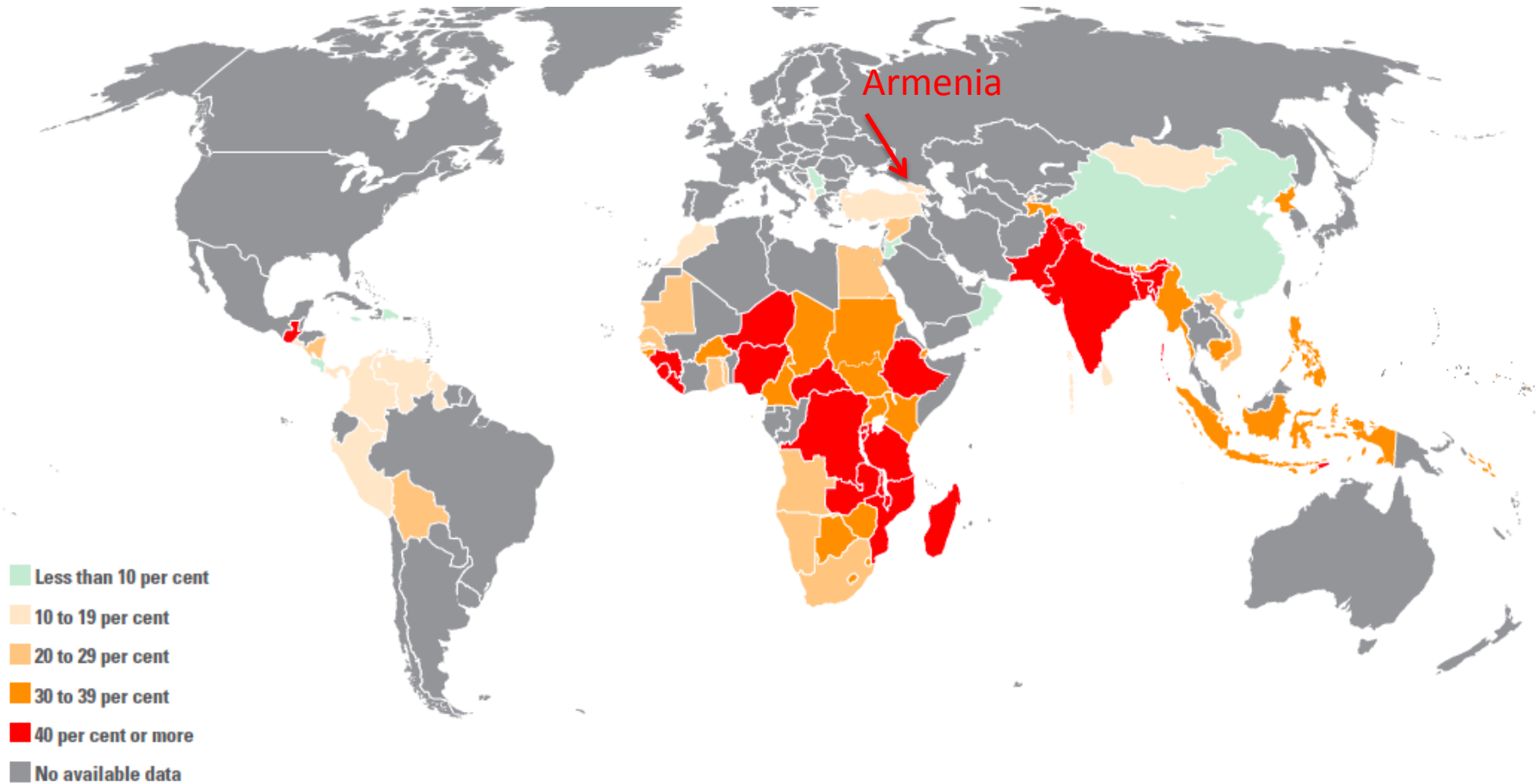
Outline of presentation

- Review likely causes of stunting in this context (and information gaps)
- Overview of interventions to address stunting
- **Goal:** Get people thinking about options for addressing this problem

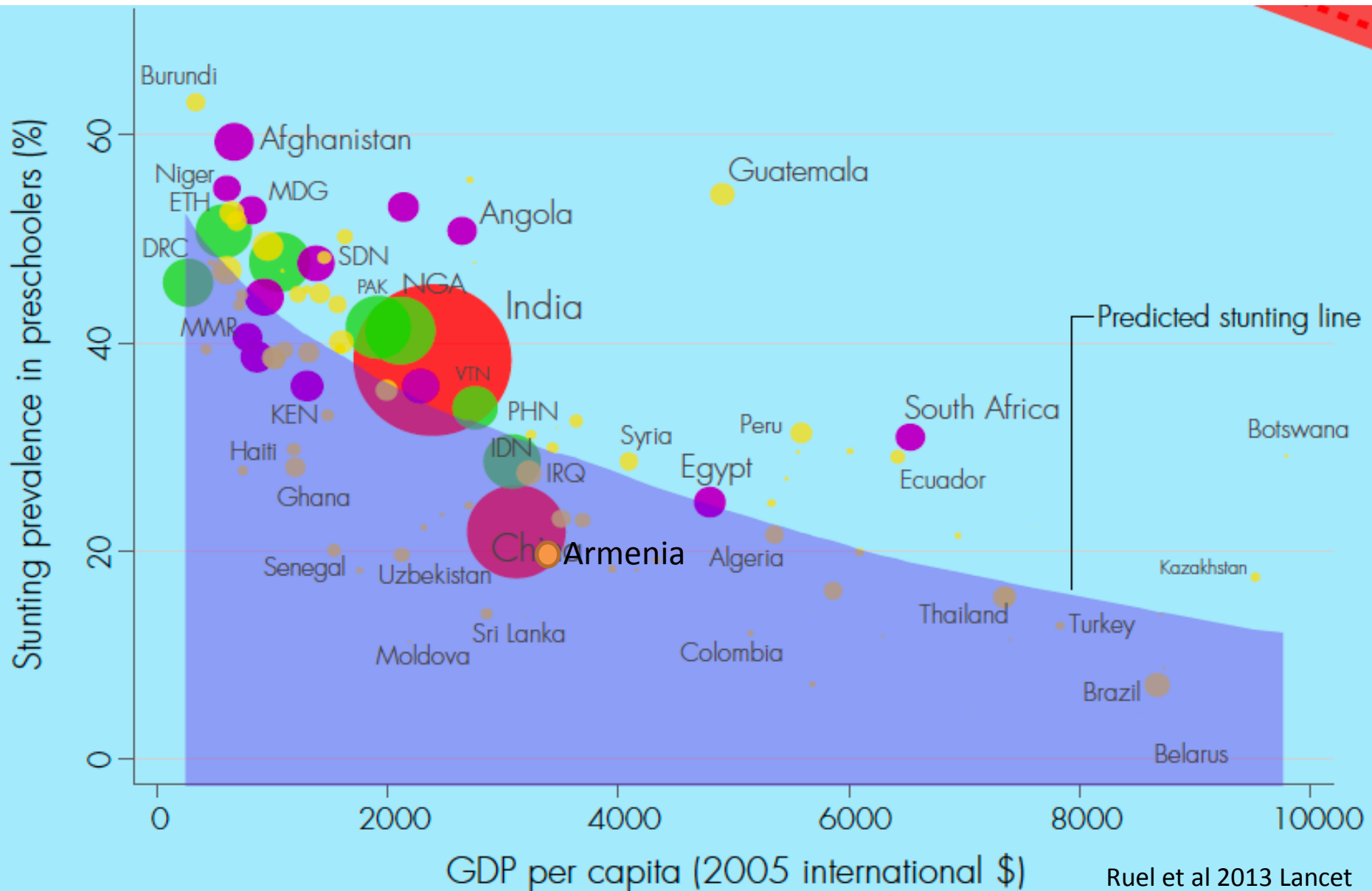
Stunting

- Stunting is an indicator of chronic undernutrition, measured as low height-for-age
 - Longer term process
 - Often associated with poor dietary quality
 - Infectious disease/exposure to pathogens
- Can be caused by individual (or most often) multiple deficiencies of micronutrients
- Difficult in most settings to tease out specific causes at a population level

Prevalence of Stunting Globally



Economic Growth is Necessary but not Sufficient



The First 1000 Days

- Pregnancy to 24 months of age for a child is the “critical window of opportunity” that sets out the health of that child into adulthood
- Babies who are malnourished in the womb have a higher risk of dying in infancy and are more likely to face lifelong cognitive and physical deficits and chronic health problems
- Often thought that intervening here is the opportunity to reverse course of stunting

Context of Armenia

- Working in a context of limited information:
 - No detailed information on dietary intake
 - No detailed information on micronutrient status
 - We do have
 - Prevalence of anthropometric indicators
 - Knowledge of some likely factors associated with undernutrition
- ➔ Plan strategies based on what we know and document what we still need to know

Stunting prevalence in Armenia

- Stunting (HAZ<-2z): 19.3%

Residence

Urban	17.3
Rural	22.0

Region

Yerevan	11.3
Aragatsotn	32.3
Ararat	29.2
Armavir	21.5
Gegharkunik	25.3
Lori	23.4
Kotayk	17.3
Shirak	21.4
Syunik	36.5
Vayots Dzor	16.0
Tavush	16.1

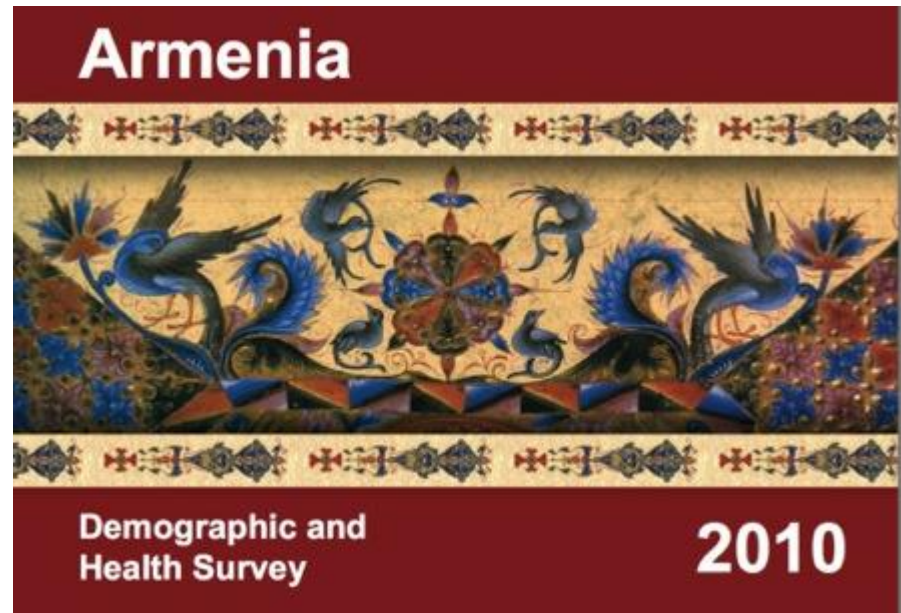
Mother's education⁵

Basic	22.0
Secondary	22.0
Secondary special	18.2
Higher	15.2

Wealth quintile

Lowest	26.2
Second	16.0
Middle	19.3
Fourth	16.3
Highest	18.6

Total	19.3
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Multivariate regression of factors associated with “undernutrition” in Yerevan

Table 2 Predictors of undernutrition* among 5–17-month-old children in Yerevan, Armenia, April–August 2011

Characteristic	OR	95 % CI	<i>P</i> value†
Birth length (cm)	0.50	0.27, 0.92	0.027
Family’s SES score	0.55	0.32, 0.94	0.030
Score of food diversity	0.37	0.15, 0.95	0.039
Duration of predominant breast-feeding (months)	0.60	0.36, 0.99	0.046
Father’s height (cm)	0.89	0.77, 1.02	0.099
Model’s fit statistics:		McFadden’s adjusted $R^2 = 0.635$ Maximum likelihood $R^2 = 0.643$ Cragg and Uhler’s $R^2 = 0.857$ Count $R^2 = 0.896$ $AIC \times n = 33.926$	

SES, socio-economic status; R^2 , ratio of regression variance to total variance; $AIC \times n$, Akaike information criterion adjusted for the number of observations in the model.

*Undernutrition: stunted, underweight or wasted defined as having an anthropometric measurement more than 2 SD below the median height-for-age, weight-for-age or weight-for-height of the reference population⁽²⁹⁾, respectively.

†Conditional logistic regression analysis.

Infant and Young Child Feeding Indicators

Indicator

Exclusive breastfeeding (0-5 months old)

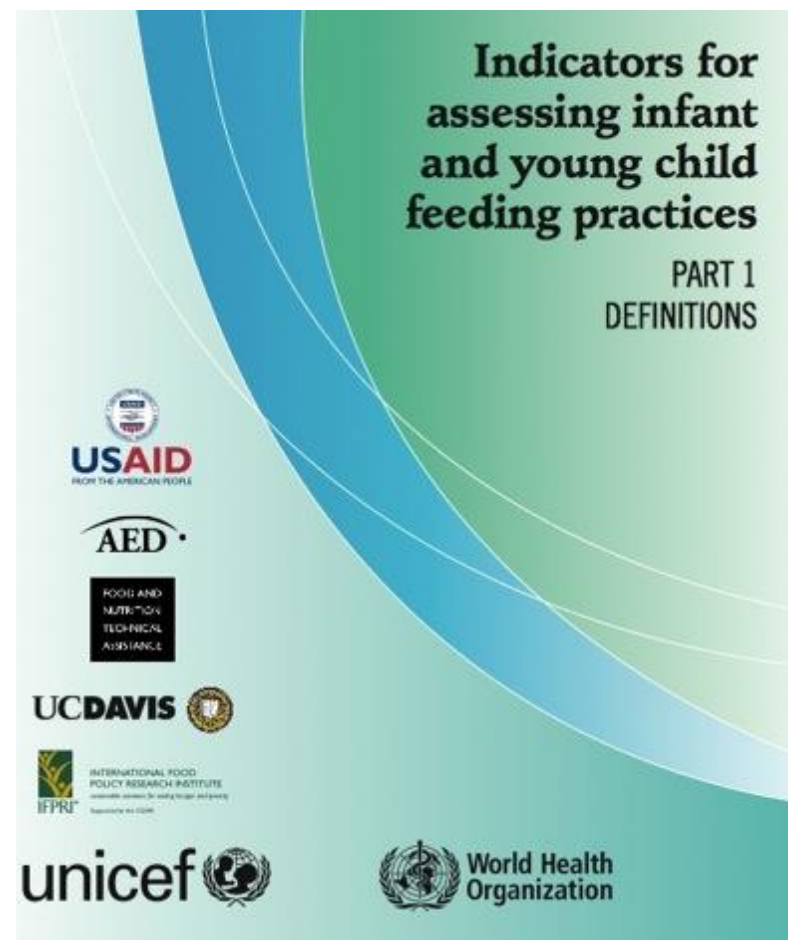
Continued breastfeeding at 1 year (12-15 months breastfeeding)

Introduction of solid, semi-solid or soft foods (6-8 month olds with solid, semisolid foods)

Minimum dietary diversity (6-23 month olds with foods from 4+ food groups)

Minimum meal frequency (6-23 month olds receive food minimum frequency)

Minimum acceptable diet (6-23 month olds with adequate diversity, adequate meal frequency)



Key indicators

Minimum dietary diversity:

Proportion of children 6–23 months of age who receive foods from 4 or more food groups in past 24 hours

Minimum meal frequency

Proportion of breastfed and non-breastfed children 6–23 months of age who receive solid, semi-solid, or soft foods (but also including milk feeds for non-breastfed children) the minimum number of times or more in past 24 hours.

7 Food Groups

- Grains, roots and tubers
- Legumes (beans and lentils) and nuts
- Dairy products (milk, yogurt, cheese)
- Flesh foods (meat, fish, poultry and liver/organ meats)
- Eggs
- Vitamin-A rich fruits and vegetables
- Other fruits and vegetables

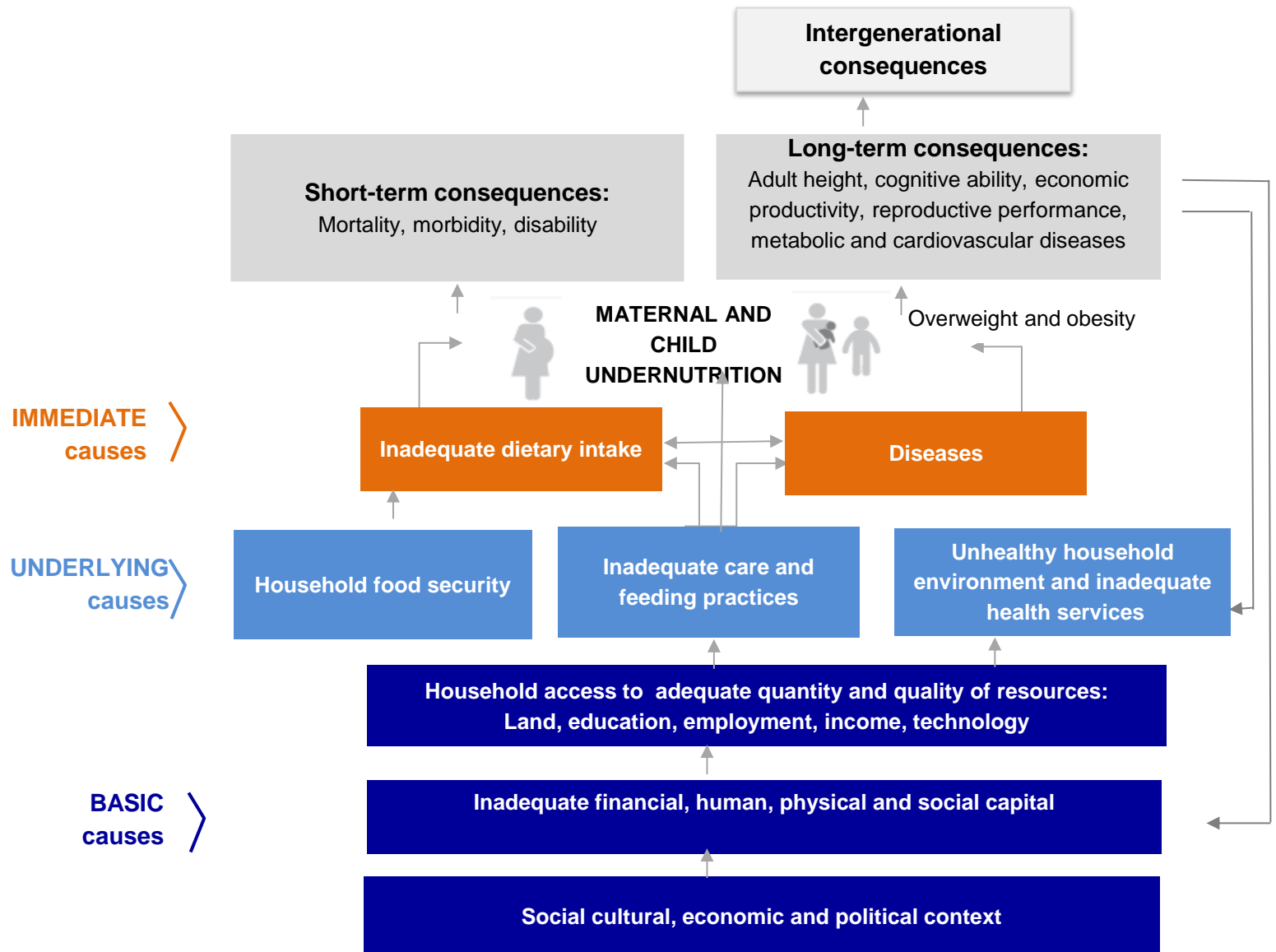
Key IYCF Indicators in Armenia

Indicator	Proportion
Exclusive breastfeeding (0-5 months old)	35
Continued breastfeeding at 1 year (12-15 months breastfeeding)	44
Introduction of solid, semi-solid or soft foods (6-8 month olds with solid, semisolid foods)	75
Minimum dietary diversity (6-23 month olds with foods from 4+ food groups)	63
Minimum meal frequency (6-23 month olds receive food minimum frequency)	67
Minimum acceptable diet (6-23 month olds with adequate diversity AND adequate meal frequency)	32

Source: DHS, 2010

**NUTRITION SENSITIVE AND SPECIFIC
INTERVENTIONS TO ADDRESS
STUNTING**

Causal Pathway for Maternal and Child Undernutrition



Benefits during the life course

↓ Morbidity and mortality in childhood

↑ Cognitive, motor, socioemotional development

↑ Social performance and learning capacity

↑ Adult stature

↓ Obesity and NCDs

↑ Work capacity and productivity

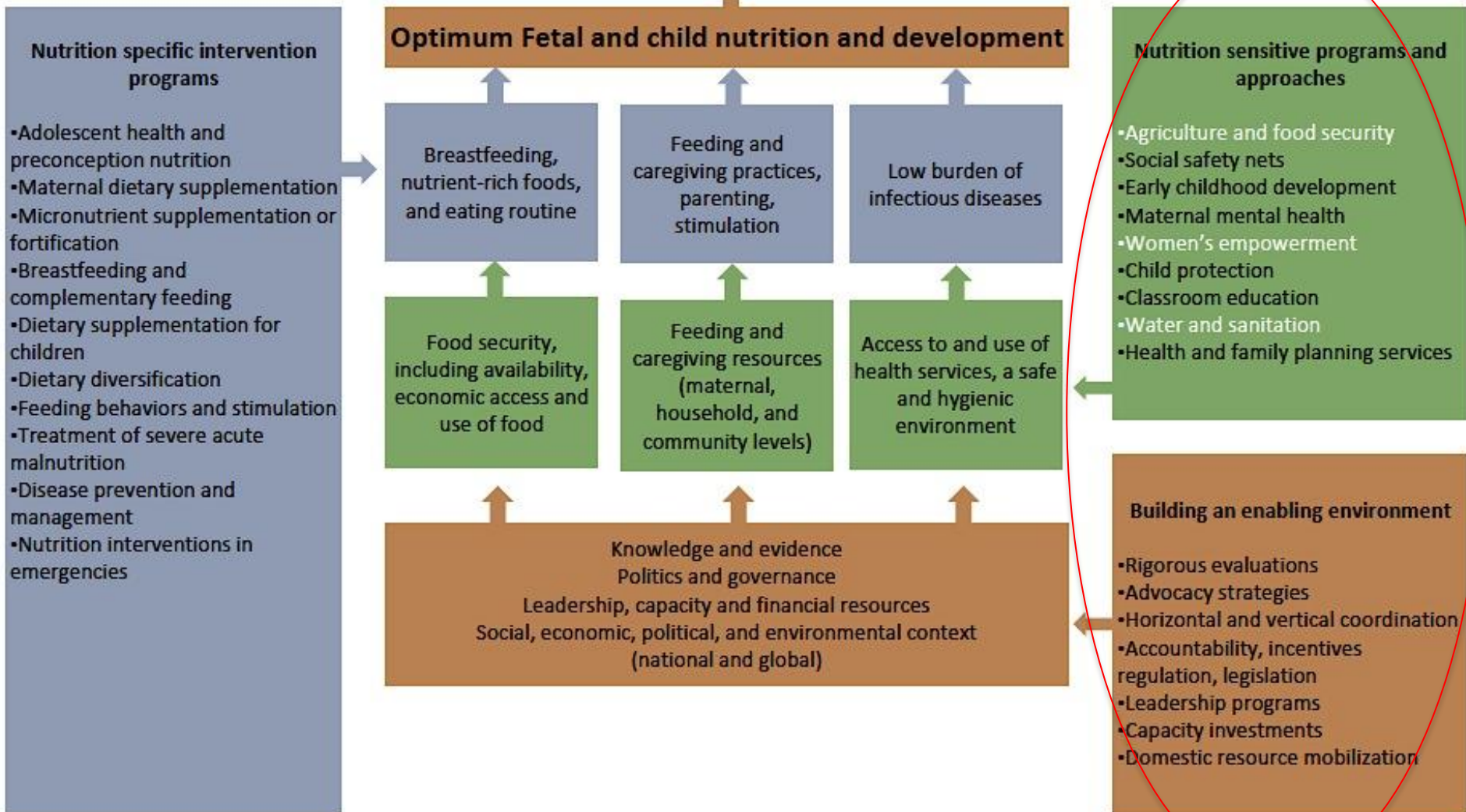


Figure: Framework for actions to achieve optimum fetal and child nutrition and development

Nutrition Sensitive Approaches

- **Agriculture:** Making nutritious food more accessible to everyone, and supporting small farms as a source of income for women and families;
- **Clean Water and Sanitation:** Improving access to reduce infection and disease;
- **Education and Employment:** Making sure children have the energy/nutrients that they need to learn and earn sufficient income as adults;
- **Health Care:** Improving access to services to ensure that women and children stay healthy;
- **Support for Resilience:** Establishing a stronger, healthier population and sustained prosperity to better endure emergencies and conflicts; and
- **Women's Empowerment:** At the core of all efforts, women are empowered to be leaders in their families and communities, leading the way to a healthier and stronger world.

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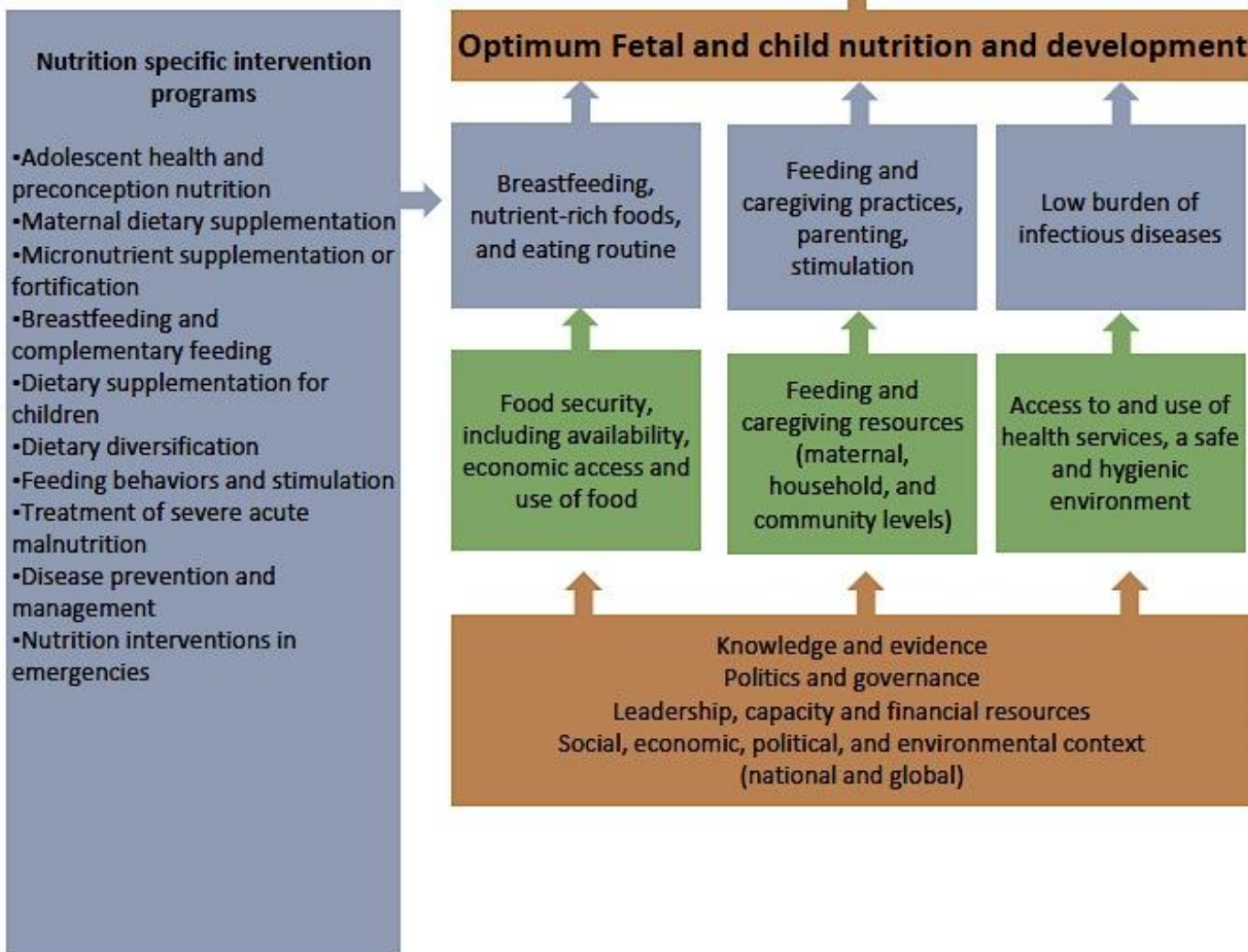


Figure: Framework for actions to achieve optimum fetal and child nutrition and development

Evidence base for nutrition specific programs

THE LANCET

The Lancet's Series on Maternal and Child Undernutrition
Executive Summary



THE LANCET

www.thelancet.com

Maternal and Child Nutrition

Executive Summary of *The Lancet* Maternal and Child Nutrition Series



"Nutrition is crucial to both individual and national development. The evidence in this Series furthers the evidence base that good nutrition is a fundamental driver of a wide range of developmental goals. The post-2015 sustainable development agenda must put addressing all forms of malnutrition at the top of its goals"

Interventions ready to be scaled up (From the Lancet series)

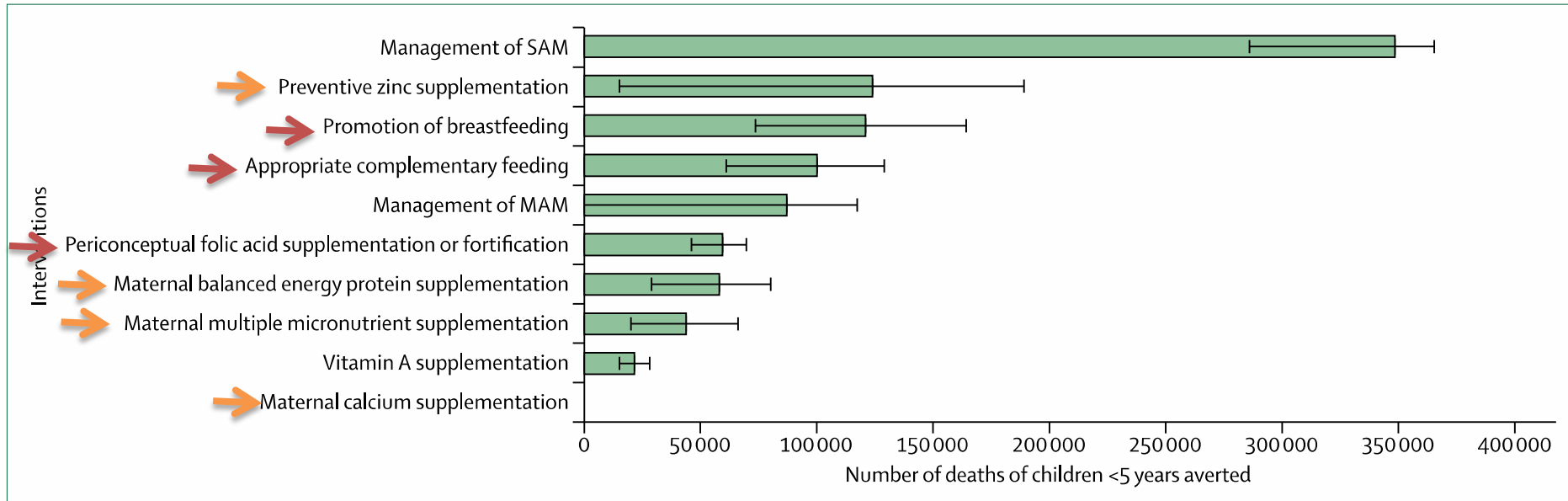


Figure 5: Effect of scale up of interventions on deaths in children younger than 5 years

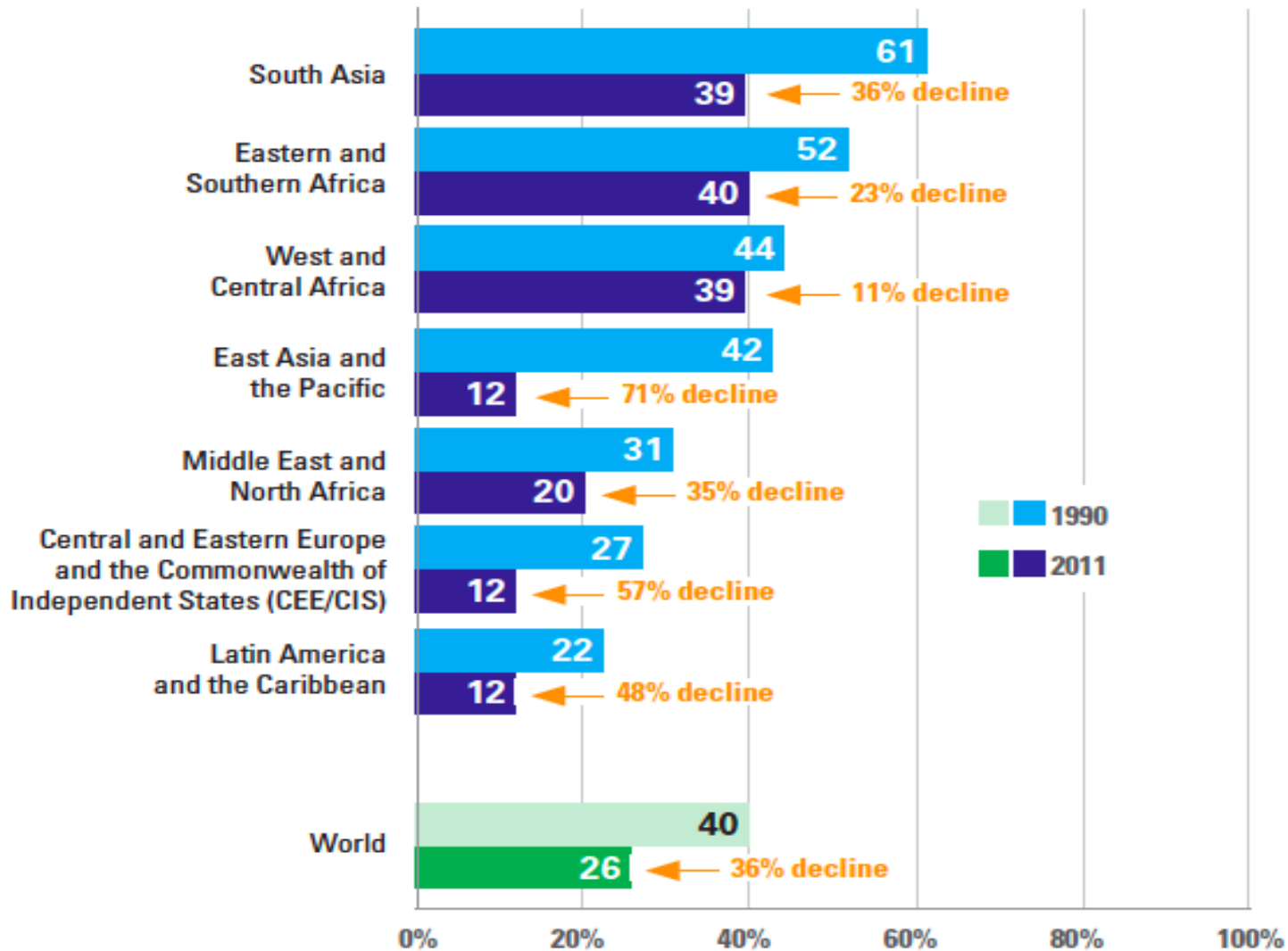
Error bars are ranges. SAM=severe acute malnutrition. MAM=moderate AM.

Scaling up these 10 interventions to 90% coverage would reduce

- U5 Mortality by 15%
- Stunting by 20%
- Severe wasting by 61%

- But more work needs to go into the “how”
- Research funding towards delivery research receives <3%

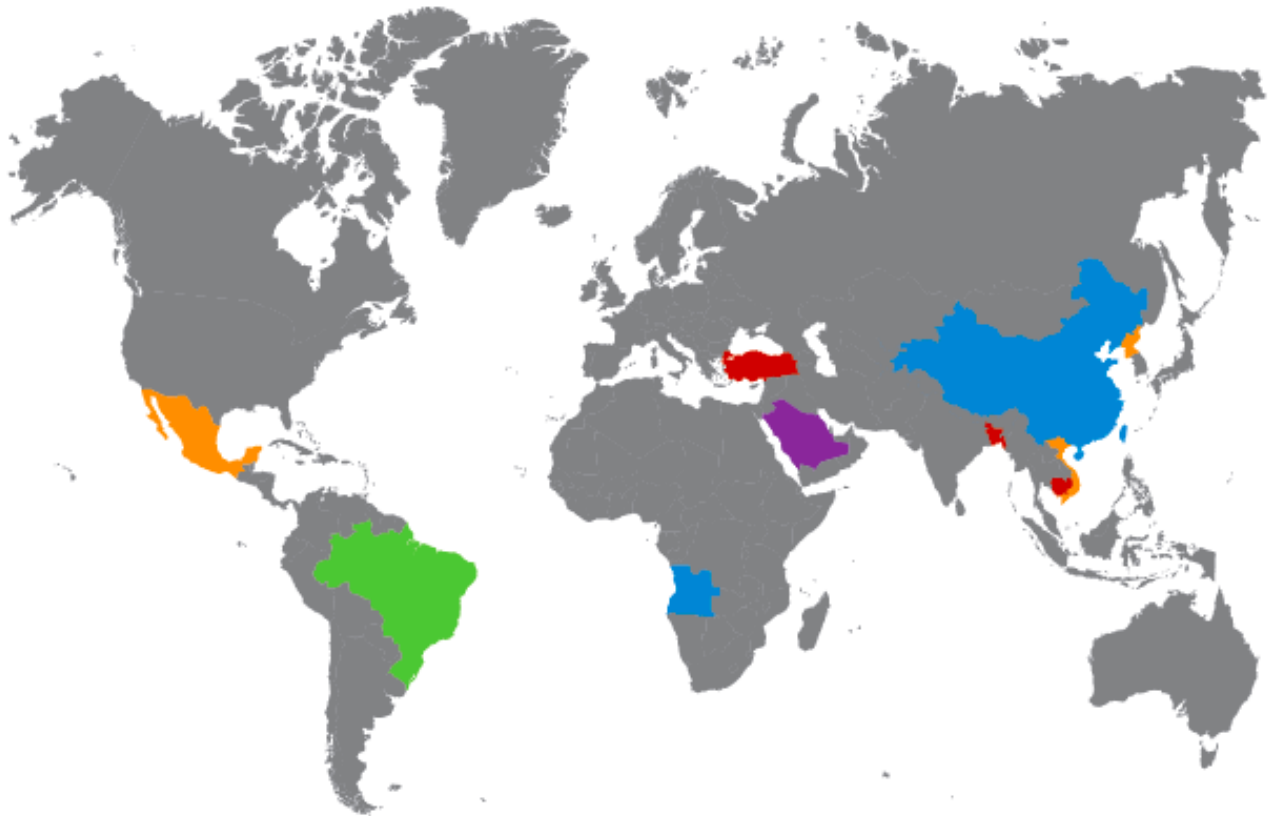
Stunting Rates Can Be Reduced



Source: UNICEF, WHO, World Bank, *Joint Child Malnutrition Estimates*, 2012.

The ten countries with the fastest annual reduction of stunting between 1990 and 2010

Average annual reduction rate



Country	% Children Stunted	Average annual reduction rate
 Saudi Arabia	9.3	7.3
 Angola	29.2	6.6
 China	13.7	6.0
 Brazil	7.1	5.7
 Mexico	15.5	4.7
 Vietnam	30.5	4.1
 Korea DPR	43.1	4.1
 Turkey	15.6	3.9
 Cambodia	39.5	3.0
 Bangladesh	43.2	3.0

<http://scalingupnutrition.org>, June 2013

Fortification

Examples

Wheat fortification

Vitamin A fortification of sugar

Salt iodization

“Ultra Rice®”



Advantages

Relatively inexpensive

Can reach large population (vehicle)

No education required

Proven success as a strategy

Sustainable, consumers may even pay more for it

Disadvantages

Fortification levels may not be ideal for all population sub-groups

Shelf life in some cases an issue

Requires a “vehicle” consumed by target group

Home fortification



Advantages

Inexpensive

Adherence better than supplements

General or targeted options

Shelf life

Mixed into food...more appealing than supplements?

Disadvantages

Requires communication

Requires education on how to use

Targeted food/nutrient supplements

Examples

Fortified blended foods

Plumpy nut, Plumpy Doz, RUF5

LNS

Advantages

Can tailor supplement to specific nutritional needs of a population subgroup

Provides energy, micronutrients, essential fatty acids

Can be locally produced

Disadvantages

Perceived as an expensive intervention

Sharing

Sustainability?

<http://www.wfp.org/nutrition/special-nutritional-products>



Food-based nutrition interventions

Examples

Homestead food production

Micro-lending

Cash transfers (can be conditional)

Food for work

Advantages

Some are sustainable

Benefits often go beyond “nutrition”

Affect multiple aspects of nutritional status and population groups

Disadvantages

Perceived as expensive

Nutritional impact for many is poorly documented



SPECIFIC OPTIONS FOR ARMENIA

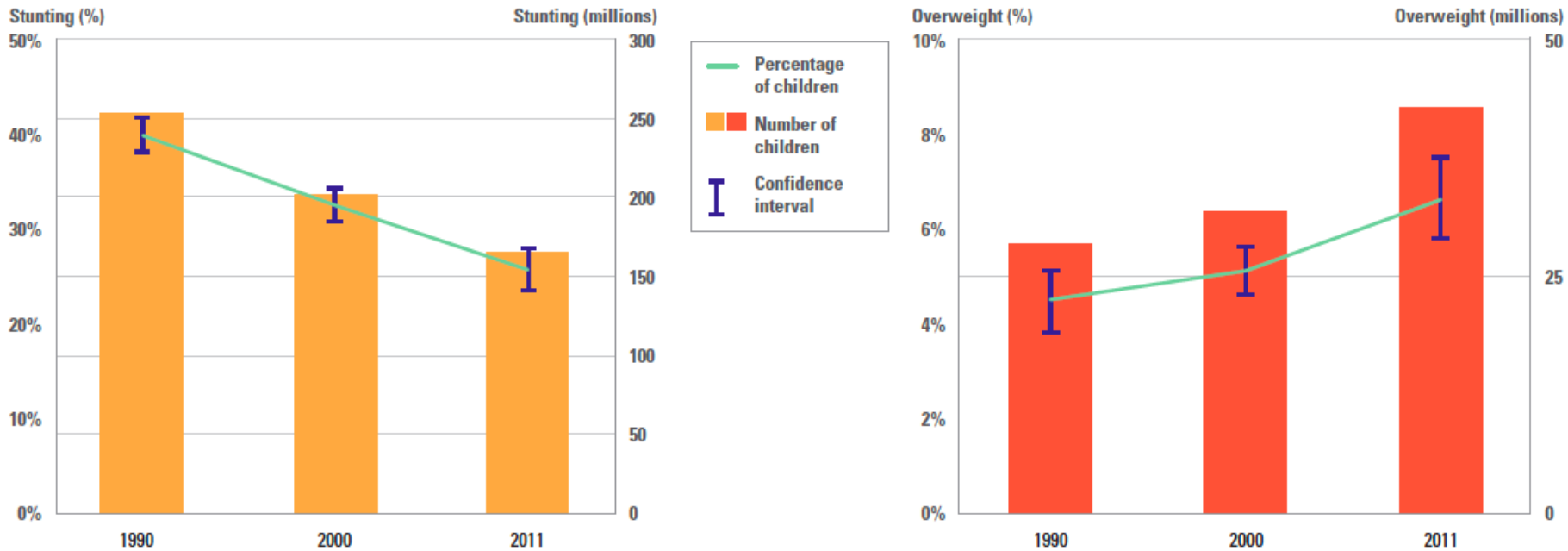
More information would be useful to plan
action:

- Need more information on dietary intake
 - Assess dietary intake of population groups
 - Identify optimal fortification levels for key nutrients
- Biochemical survey of nutrient status
 - Could identify extent of nutritional deficiencies among potential target groups
 - Could serve as baseline to measure change

Stunting is important but thinking about nutrition needs to beyond stunting

- Many micronutrient deficiencies have important consequences that go beyond growth
 - Iron
 - Folic acid
 - Iodine
 - Vitamin B12, n-3 fatty acids
 - Vitamins A and D
 - Zinc

Important to also consider promoting the “middle path” of good nutrition



Note: The lines (with 95 per cent confidence intervals) reflect the percentages of children and the bars reflect the numbers of children.

Source: UNICEF, WHO, World Bank, *Joint Child Malnutrition Estimates*, 2012.

Thank you

- Dr. Jess Fanzo (for many slides)
- Dr. Kim Hekimian
- Sponsors