



2018 SKILLS BUILDING PROGRAM

# BIG DATA, ARTIFICIAL INTELLIGENCE AND DECISION SCIENCE IN HEALTH AND NUTRITION

## Nutrition

### Day 1 – Session 1

*In partnership with*

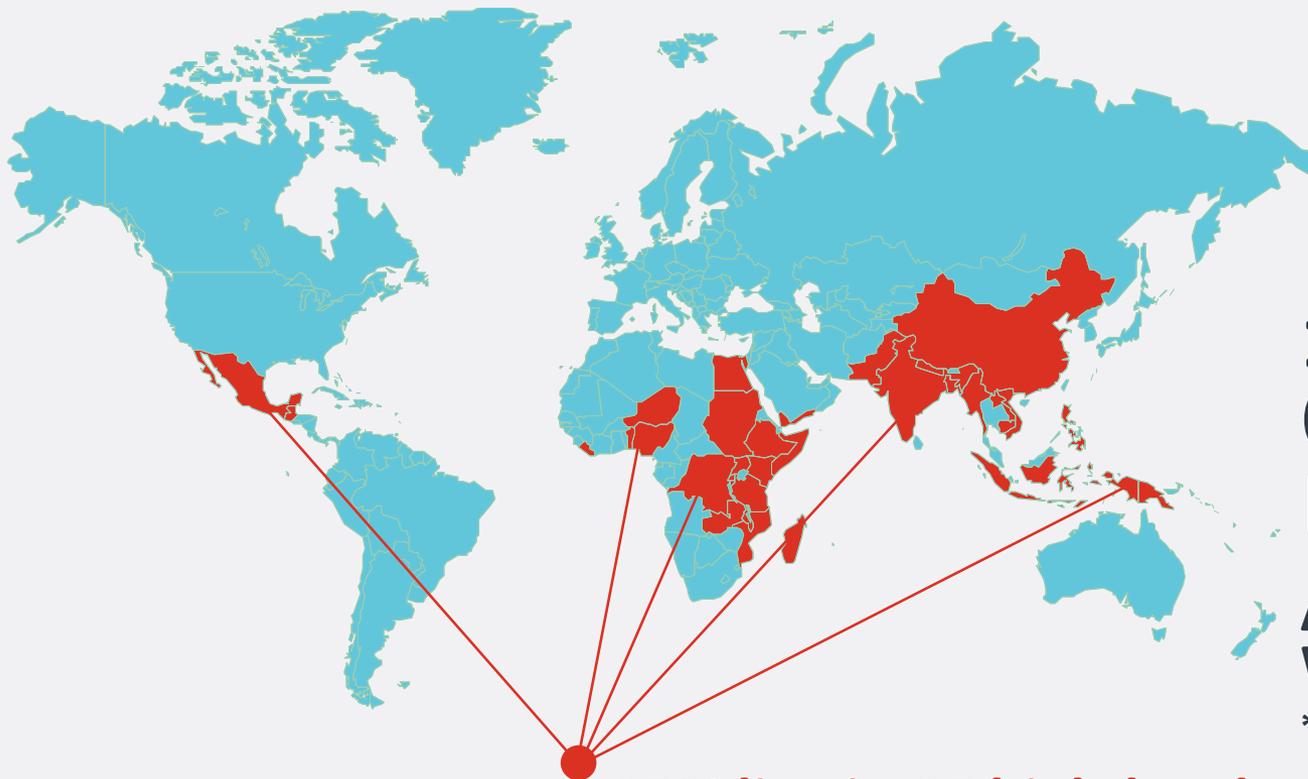


# More Money for Nutrition and More Nutrition for the Money: Using Data to support Nutrition the efficiency of nutrition investments

Meera Shekar,  
Global Lead, Nutrition



# The Problem



**151 MILLION\*  
CHILDREN  
UNDER 5  
ARE STUNTED  
WORLDWIDE**

\*As of 2017

**85% live in 37 high-burden countries**

# Investments in Nutrition Build Human Capital and Boost Shared Prosperity



## SCHOOLING

Early nutrition programs can increase school completion by one year



## EARNINGS

Early nutrition programs can raise adult wages by 5-50%



## POVERTY

Children who escape stunting are 33% more likely to escape poverty as adults



## ECONOMY

Reductions in stunting can increase GDP by 4-11% in Asia & Africa

Source: Investment Framework for Nutrition, Shekar et al, World Bank 2017

# Political Commitment for Nutrition is Rising...

## *Spotlight on Nutrition,*

### Spring Meetings April 2017

*"... we're focusing on nutrition; and there's really no excuses...we can make a difference for something around \$10.00 per child, per year, in all of those numbers. So, the failure to act is unconscionable."*

*- Dr. Jim Yong Kim, World Bank President*



*"Stunting would be one very important issue, but you're making an investment in the future of your country."* – Sir Ratan N. Tata, Tata Trusts



► **THE HUMAN CAPITAL PROJECT:**  
**WILL ACCELERATE**  
**MORE AND BETTER INVESTMENTS**  
**IN PEOPLE GLOBALLY**

1. **Human Capital Index:** Make the case for investment in the human capital of the next generation.
2. **Measurement:** Improve measurement and provide analysis to support investments in human capital formation.
3. **Country engagement:** Support Early Adopters, and ultimately all countries, to prepare national strategies that accelerate progress on human capital.



## ▶ THE HUMAN CAPITAL PROJECT

### TRANSFORMING HUMAN CAPITAL

MORE AND BETTER INVESTMENT IN  
PEOPLE GLOBALLY

- 1. Human Capital Index:** A entry point to raise the profile of the investment case for human capital
- 2. Measurement:** A focus on evidence-based investments in human capital formation
- 3. Country engagement:** A commitment to support Early Adopters, and ultimately all countries, to prepare national strategies to accelerate progress on human capital



# HUMAN CAPITAL INDEX & THE SUSTAINABLE DEVELOPMENT GOALS

The Human Capital Index indicators are linked closely to the SDGs



## SURVIVAL

- Under-5 mortality links to SDG target 3.2



## SCHOOL

- Quality adjusted school years links to SDG target 4.1



## HEALTH

- Improving adult survival rate by reducing causes of premature mortality links to SDG target 3.4
- Stunting links to SDG target 2.2

# Context: Global Nutrition Targets\*

STUNTING



**REDUCE THE NUMBER** of stunted children under five by 40% by 2025

ANEMIA



**REDUCE THE NUMBER** of women of reproductive age with anemia by 50%

EXCLUSIVE  
BREASTFEEDING



**INCREASE THE RATE** of exclusive breastfeeding in the first six months up to at least 50%

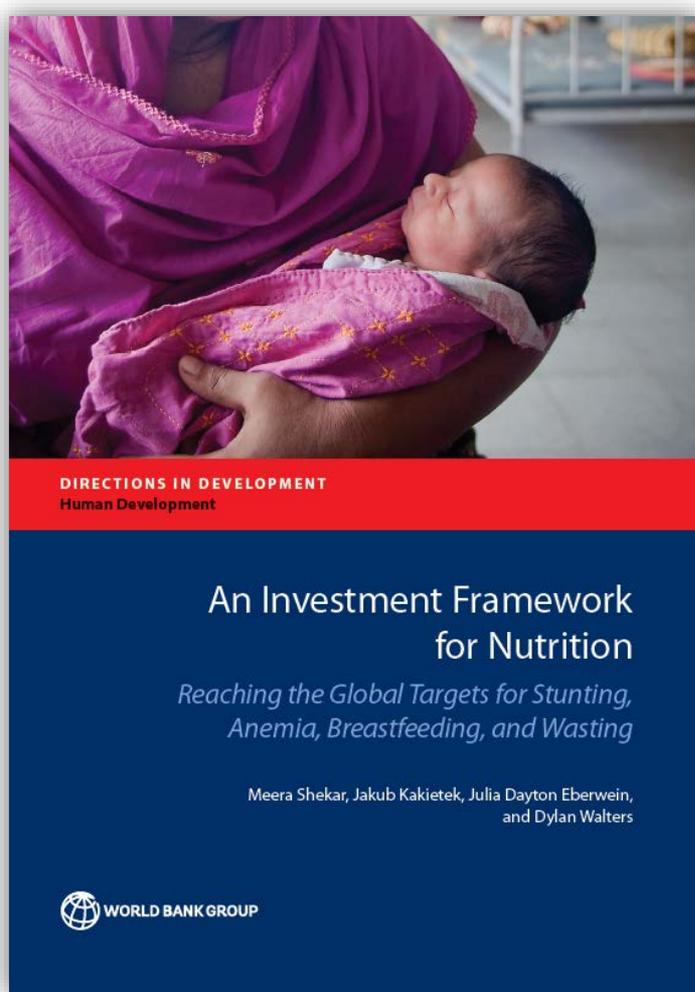
WASTING



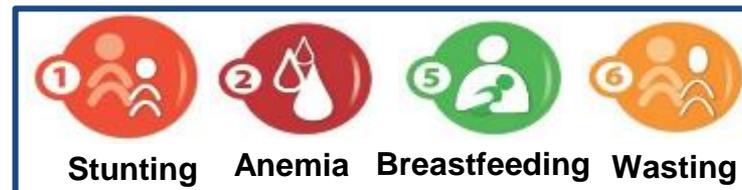
**REDUCE AND MAINTAIN** childhood wasting (acute malnutrition) to less than 5%

*\*Note: Assessment of the WHA nutrition targets on childhood obesity and low birth weight were not included in this analysis; additional research is needed to determine what interventions would support achievement of these targets.*

# Global Analytics: Global Investment Framework



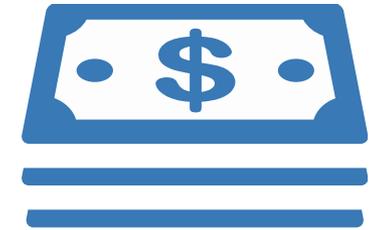
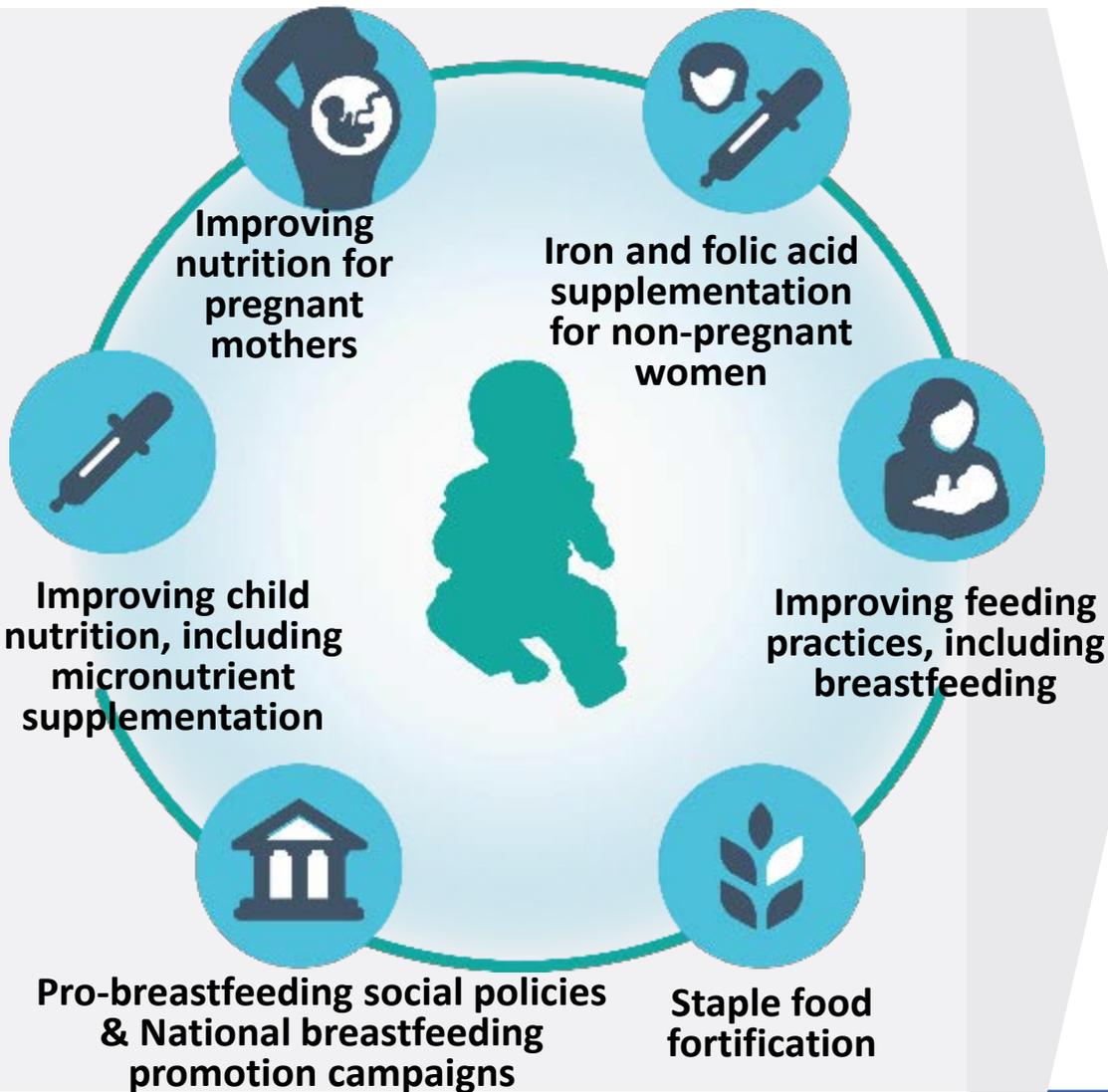
## Global Targets (WHA/SDGs)



- How much it will cost?
- What will we buy with this investment?
  - Nutrition
  - Health/lives saved
  - Economy
- How can it be financed?
- How can these analytics generate national political commitment? And how can we maximize the “bang for the buck”?

# Achieving All Targets

An Affordable Package of High-impact, Nutrition-Specific Interventions



**~\$10 per child annually**  
**\$70B over 10 years**

*in addition to current spending*



**Continued improvements**  
**in underlying factors:**

**Water and sanitation**

**Women's education, health and empowerment**



**Food availability and diversity**

# Benefits of Achieving Nutrition Targets in 2025



## STUNTING

**65 million** cases of stunting prevented

**2.8 million** child deaths averted

## ANEMIA

**265 million** cases of anemia in women prevented

**800,000** child deaths averted

## BREASTFEEDING

**105 million** additional babies exclusively breastfed

**520,000** child deaths averted

## WASTING

**91 million** children treated for severe wasting

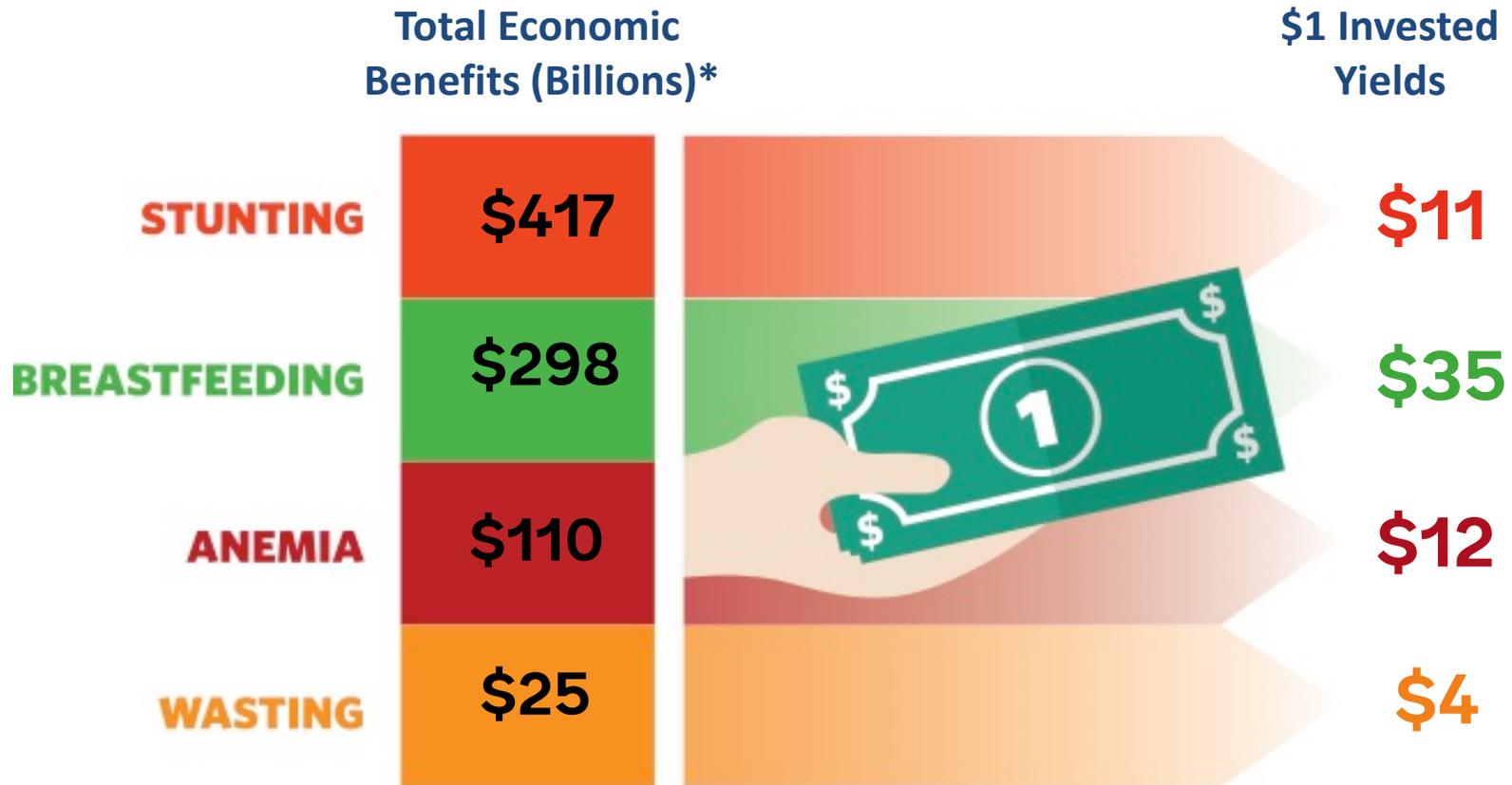
More than **860,000** child deaths averted

## BENEFITS OF ACHIEVING ALL FOUR TARGETS

65 million cases of stunting prevented

At least **3.7 million** child deaths prevented

# Investments to Meet the Global Nutrition Targets Have Enormous Economic Returns



# Using Economic Analysis to Support Nutrition Programs in Client Countries: 6 Years of Analytic Engagement

## Analytic program in partnership with BMGF:

- Analyses in 14 countries
- 10 stand-alone HNP discussion papers
- Multiple policy briefs and other dissemination materials

Country	Year	Analysis completed	Discussion Paper	Policy Brief
Nigeria	2013/4	✓	✓	✓
Togo	2013/4	✓	✓	
Mali	2014/5	✓	✓	✓
DRC	2014/5	✓	✓	✓
Zambia	2015/6	✓	✓	
Uganda	2015/6	✓	✓	
Cameroon*	2015	✓		
Kenya	2015/6	✓	✓	✓
Tanzania*	2015	✓		
Cote d'Ivoire	2015/6	✓		
Guinea Bissau	2016	✓	✓	
Madagascar	2016	✓		
Bangladesh	2016	✓	✓	
Afghanistan	2016	✓	✓	

# Analytic Reports

## COSTED PLAN FOR SCALING UP NUTRITION: NIGERIA

SEPTEMBER 2014

DISCUSSION PAPER

### Knowledge Brief

Health, Nutrition and Population Global Practice

#### COSTED PLAN FOR SCALING UP NUTRITION IN NIGERIA

Meera Shekar, Christine McDonald, Tonya Okoroabo, Ali Swardson, Julia Dayton Eberwein, Max Mattern and Jonathan Kweku Akuoku  
June 2015

#### KEY MESSAGES:

- Nigeria is home to the third largest population of children under five—28 percent—chronically undernourished.
- Implementing 10 key nutrition-specific interventions annually, produce tremendous health benefits (0.7 million saved and 3 million cases of stunting averted) and 19 percent of the productive lives of the beneficiaries and 19 percent of the population.
- Given resource constraints, eliminating the public provision of moderate acute malnutrition (which is the very cost-effective scenario that would scale up 9 interventions nationwide, could save almost 2 million disability-adjusted life years and 5 million lives over 10 years and over 100,000 lives. The cost would be almost 2 million disability-adjusted life years and 5 million lives over 10 years and over 100,000 lives.

## SCALING UP NUTRITION IN THE DEMOCRATIC REPUBLIC OF CONGO: WHAT WILL IT COST?

A POLICY BRIEF  
by Meera Shekar, Max Mattern,  
Luc Lavolette, Julia Dayton Eberwein,  
Wendy Karamba, and Jonathan Kweku Akuoku

WORLD BANK GROUP

## SCALING UP NUTRITION FOR A MORE RESILIENT MALI: NUTRITION DIAGNOSTICS AND COSTED PLAN FOR SCALING UP

FEBRUARY 2015

DISCUSSION PAPER

### Knowledge Brief

Health, Nutrition and Population Global Practice

#### SCALING UP NUTRITION FOR A MORE RESILIENT MALI: NUTRITION DIAGNOSTICS AND COSTED PLAN FOR SCALING UP

Meera Shekar, Max Mattern, Patrick Estemou, Julia Dayton Eberwein, Jonathan Kweku Akuoku, Emmanuelle Di Giuseppe and Wendy Karamba  
June 2015

#### KEY MESSAGES:

- Despite recent improvements, 18 percent of children under five are malnourished and produce tremendous health benefits (0.7 million saved and 3 million cases of stunting averted) and 19 percent of the productive lives of the beneficiaries and 19 percent of the population.
- Given resource constraints, eliminating the public provision of moderate acute malnutrition (which is the very cost-effective scenario that would scale up 9 interventions nationwide, could save almost 2 million disability-adjusted life years and 5 million lives over 10 years and over 100,000 lives. The cost would be almost 2 million disability-adjusted life years and 5 million lives over 10 years and over 100,000 lives.

#### Introduction

This Knowledge Brief presents a profile of the nutrition situation in Mali and cost estimates for implementing key interventions. It then compares the cost-effectiveness of several scale-up options. The goal of the analysis is to aid the Government of Mali in setting priorities for interventions and to help leverage additional resources from domestic budgets and development partners.

## Knowledge Brief

Health, Nutrition and Population Global Practice

WORLD BANK GROUP

### SCALING UP NUTRITION IN KENYA: WHAT WILL IT COST?

Meera Shekar, Jakub Kakietek, Wendy Karamba, Audrey Pereira, Julia Dayton Eberwein, Jonathan Kweku Akuoku and Priyanka Kanth  
February 2016



#### KEY MESSAGES:

- Although the proportion of children under five in Kenya who are wasted recently declined to below 11 percent, allowing Kenya to meet the Sustainable Development Goal target for wasting, over one-fourth of all Kenyan children remained chronically malnourished (stunted) in 2014.
- Implementing 11 key nutrition-specific interventions in all regions of Kenya would cost \$76 million in public investments annually, produce tremendous health benefits (287,000 disability-adjusted life years averted, 6,600 lives saved, and 434,000 cases of stunting averted), and is highly cost-effective at \$317 per disability-adjusted life year averted.

## Maternal & Child Nutrition

DOI: 10.1111/mcn.12281

### Original Article

## The costs of stunting in South Asia and the benefits of public investments in nutrition

Meera Shekar, Julia Dayton Eberwein and Jakub Kakietek

Health, Nutrition and Population Global Practice, World Bank, Washington, District of Columbia USA

#### Abstract

South Asia is home to the largest number of stunted children worldwide: 65 million or 37% of all South Asian children under 5 were stunted in 2014. The costs to society as a result of stunting during childhood are high and include increased mortality, increased morbidity (in childhood and later as adults), decreased cognitive ability, poor educational outcomes, lost earnings and losses to national economic productivity. Conversely, investing in nutrition provides many benefits for poverty reduction and economic growth. This article draws from analyses conducted in four sub-Saharan countries to demonstrate that investments in nutrition can also be very cost-effective in South Asian countries. Specifically, the analyses demonstrate that scaling up a set of 10 critical nutrition-specific interventions is highly cost-effective when considered as a package. Most of the interventions are also very cost-effective when considered individually. By modelling cost-effectiveness of different scale-up scenarios, the analysis offers insights into ways in which the impact of investing in nutrition interventions can be maximized under budget constraints. Rigorous estimations of the costs and benefits of nutrition investments, similar to those reported here for sub-Saharan countries, are an important next step for all South Asian countries in order to drive political commitment and action and to enhance allocative efficiency of nutrition resources.

**Keywords:** stunting, South Asia, cost-effectiveness, nutrition interventions, economic productivity.

Correspondence: Meera Shekar, Health, Nutrition and Population Global Practice, World Bank, 1818 H Street NW, Washington, DC 20433, USA. E-mail: mshekar@worldbank.org

For all publications see:  
<http://www.worldbank.org/en/topic/nutrition>

# The Way Forward

## Challenges

**Increasing demand within and outside the WBG for analytic support from countries**



**Challenges in applying results of cost-effectiveness analyses in national program and policy design**



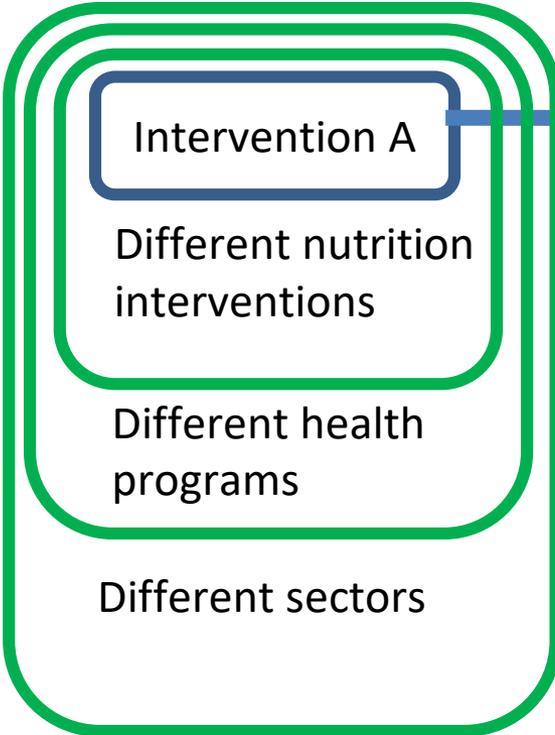
**Lack of tools to identify best resource allocations**



## Solutions

- **Developing and disseminating a set of tools and guidance documents for country teams**
- **Broader dissemination of tools and methods**
- **Incorporating or strengthening requirements for efficiency considerations in financing decisions (e.g. in IDA/other projects).**
- **Trainings and/or workshops for countries**
- **Partnerships- joint advocacy is stronger**
- **Optima Nutrition**

# Efficiency and Economic Analysis in Nutrition



**Technical efficiency** – maximizing outputs at given **cost**.



**Allocative efficiency** – maximizing outputs by allocating resources across different **activities**



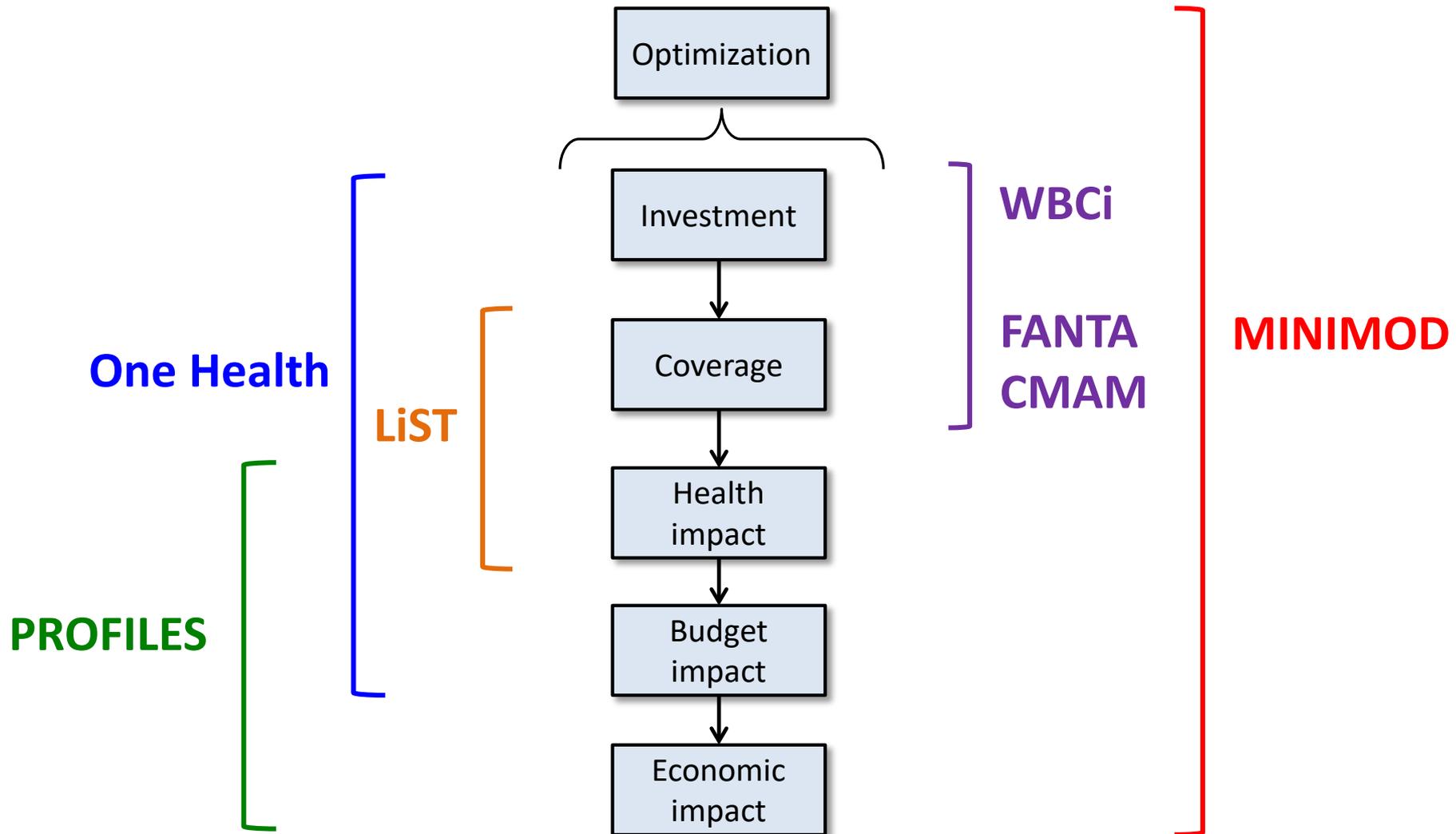
**Better Nutrition**



# Existing tools for economic and impact analyses for nutrition

*Multiple interventions*

*Single intervention*



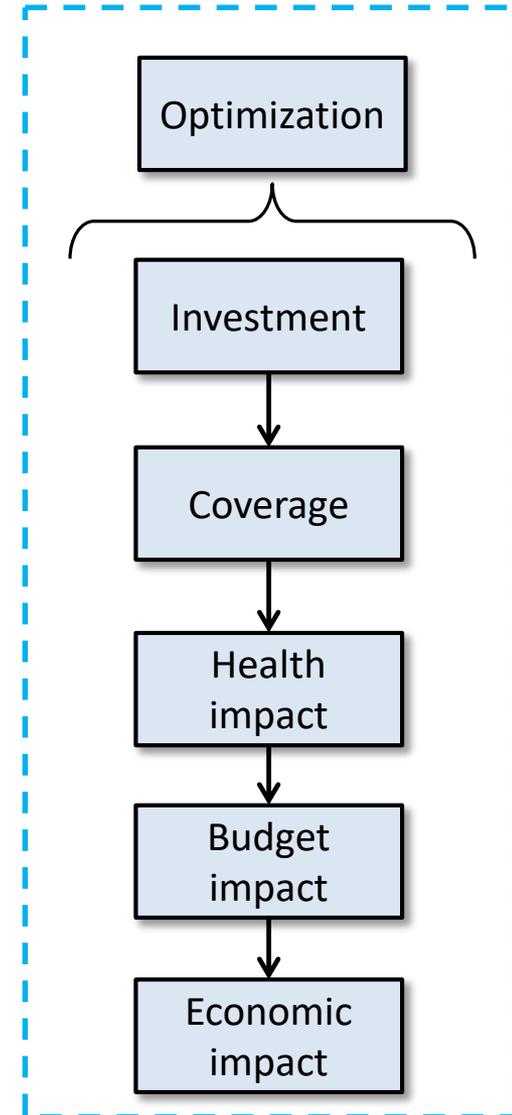
# Where does Optima Nutrition fit in the mix?

The Optima Nutrition model has two main uses:

- Optimising investment for best health and economic outcomes
- Projecting future scenarios: how will trends in malnutrition change under different funding scenarios?

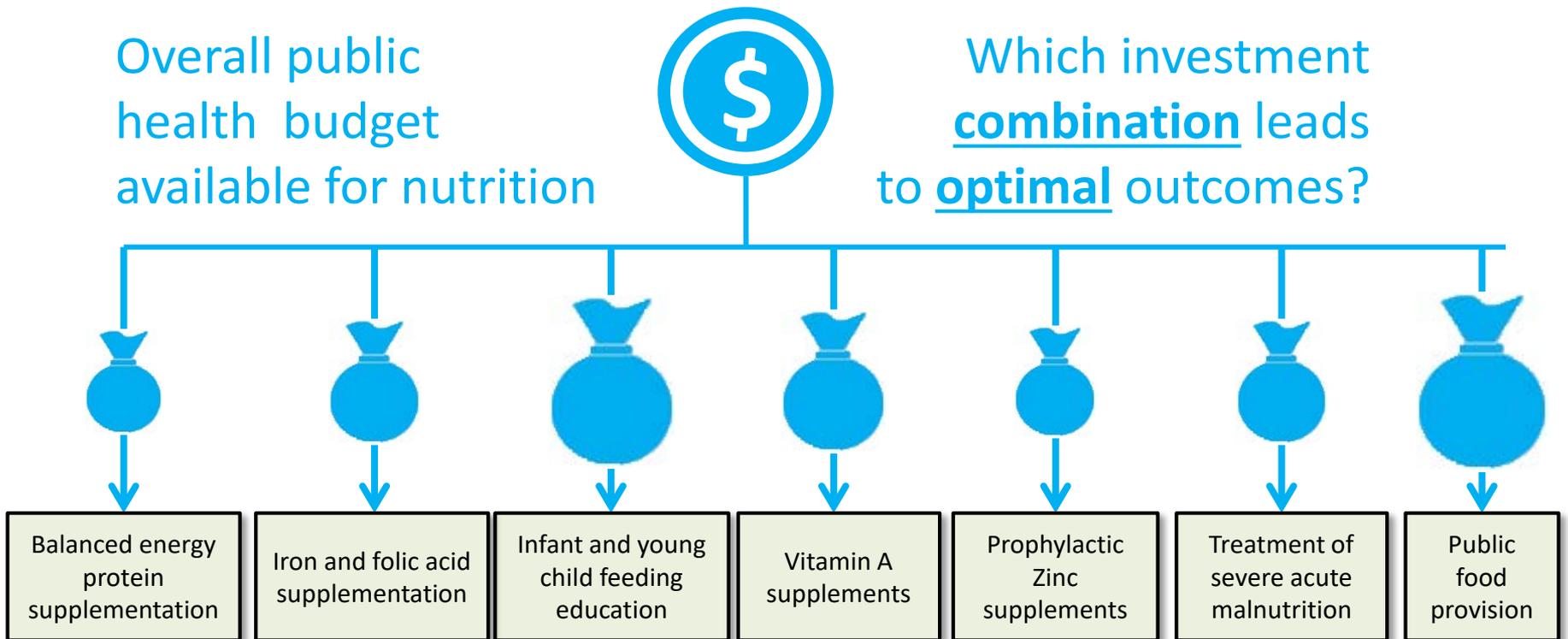
In addition, the model has secondary uses for:

- Assessment of the impact of interventions on different nutrition outcomes:
  - Stunting in children
  - Wasting in children
  - Anaemia in children and women of reproductive age
  - Child and maternal mortality



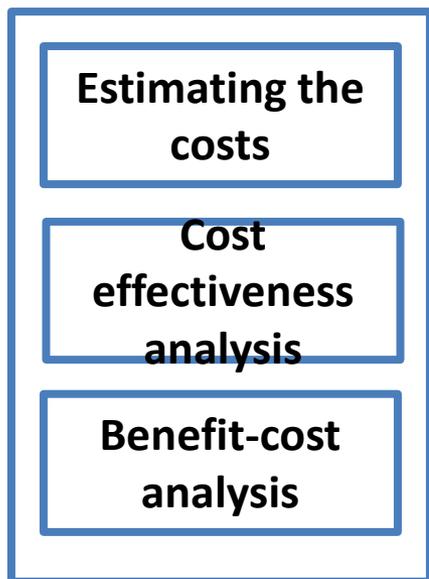
# Main Purpose of Optima Nutrition

For different funding levels, how should resources be allocated across a mix of nutrition interventions and what impact is achievable?

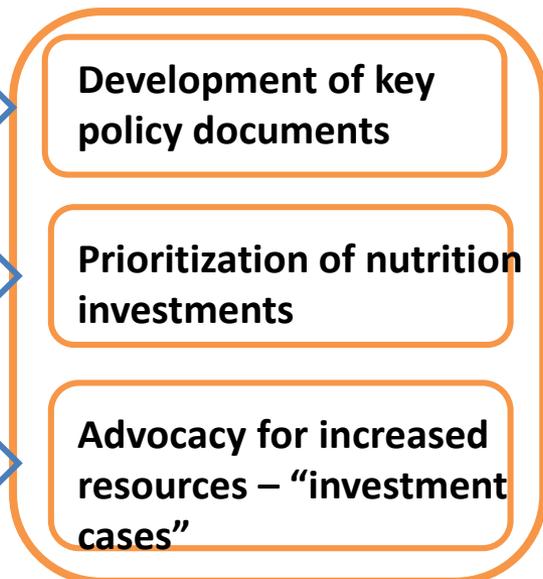


# Using Data Analytics To Mobilize Resources for Nutrition and Improve Efficiency

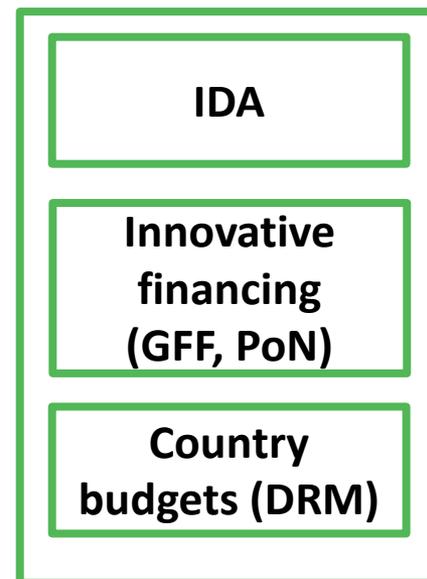
Types of analyses conducted



Types of engagement with governments



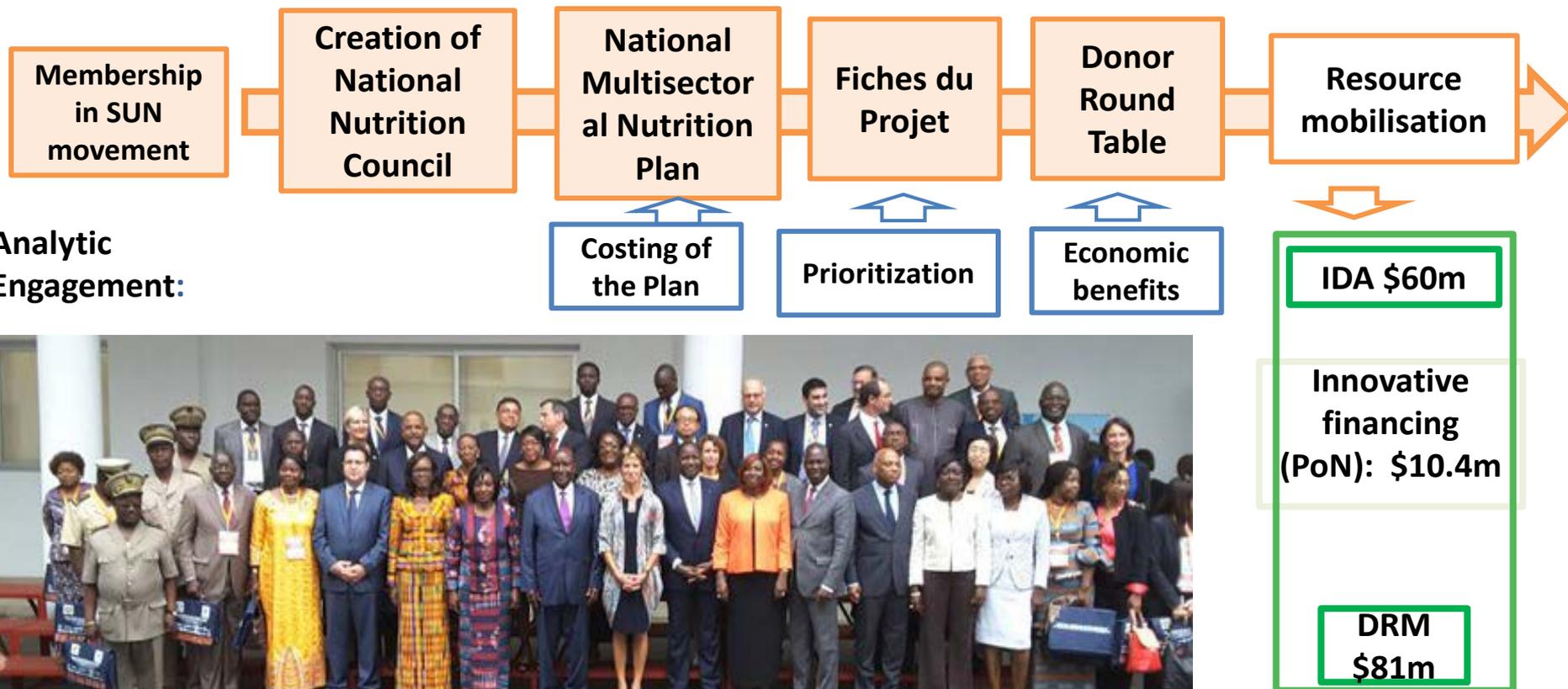
Types of resources mobilized



# An Example: Cote d'Ivoire

- **WBG Investment:**

- Supporting the government of Cote d'Ivoire through the program development cycle



**THANK YOU**