1 Introduction

MICRONUTRIENTS – OR VITAMINS AND MINERALS NEEDED IN SMALL QUANTITIES – are essential to a good start in life and robust growth and development. In particular, vitamin A, iodine, iron, zinc and folate play pivotal roles in maintaining healthy and productive populations.

With them, a young child has a chance to survive and thrive, learn and stay in school, and grow into a productive adult. Without them, a child's full potential can be lost forever. Likewise, when whole populations do not have access to basic vitamins and minerals, nations suffer enormous lost potential. Widespread deficiencies cripple health-care budgets, undermine education efforts, weaken a workforce, and debilitate an economy.

Around the world, at least two billion people live with vitamin and mineral deficiencies. The delivery of micronutrients to those who need them is a giant undertaking, but one that has already seen some significant successes benefitting large populations.

Many micronutrient programmes have yielded well-documented returns in improved physical and intellectual capacity. With increased long-term investment by national governments and their partners in development, they could yield much more. Emerging new programmes, which are affordable, feasible and well-grounded in science, are now also available to help expand still further the potential benefits offered by micronutrients.

The relatively low cost and high returns of micronutrient interventions are so good they have won the highest praise from the world's top economists. In 2008, the Copenhagen Consensus panel determined that vitamin A and zinc supplementation for children provided the very best return on investment across all global development efforts. Fortifying foods with iron and iodine was ranked third and biofortification ranked fifth out of a total of 30 possible programme choices, showing that across the board, micronutrient interventions are some of the most cost-effective development efforts.

Chapter 1 introduces the report's key themes:

- ✔ the importance of vitamins and minerals (micronutrients), and the costs of deficiencies to individuals and societies
- ✔ the proven and impressive cost:benefit ratio of micronutrient programmes
- ✔ how micronutrient interventions move us toward Millennium Development Goals
- ✔ the implications of volatile commodity markets and global financial instability for the world's poor

A mother and daughter in rural Bolivia. Vitamins and minerals play important roles in human development and physical well-being. © MI

Table 1. How micronutrient interventions support Millennium Development Goals

MILLENNIUM DEVELOPMENT GOAL	MICRONUTRIENT ROLE
GOAL 1 – ERADICATE EXTREME POVERTY AND HUNGER	• iron intake can reduce anaemia – leading to greater productivity and earning potential • salt iodization reduces iodine deficiency disorders – increasing learning ability and intellectual potential, and leading ultimately to better-educated citizens earning higher wages • zinc reduces stunting among children
GOAL 2 – ACHIEVE UNIVERSAL PRIMARY EDUCATION	• salt iodization reduces iodine deficiency – improving cognitive development and learning potential • iron in young children improves cognitive development to help them succeed academically later in life • zinc reduces the frequency and severity of diarrhoea – decreasing the number of school days lost • vitamin A prevents childhood blindness • folic acid prevents disability due to neural tube defects
GOAL 3 – PROMOTE GENDER EQUALITY AND EMPOWER WOMEN	• iron improves women's economic productivity • addressing under-nutrition empowers women more than men: improved micronutrient intake by women can help to correct inequalities in their access to adequate and nutritious food
GOAL 4 – REDUCE CHILD MORTALITY	• vitamin A significantly improves child survival rates • zinc reduces the frequency and severity of diarrhoea, a major cause of child mortality • salt iodization reduces iodine deficiency – lowering rates of miscarriage, stillbirth and neonatal death
GOAL 5 – IMPROVE MATERNAL HEALTH	• iron improves maternal survival rates • salt iodization prevents iodine deficiency disorders and its consequences such as spontaneous abortion, stillbirth, and impaired mental function

Millennium Development Goals

The belief that every human being has the right to benefit from scientific, technical, and social progress underpins the Charter of the United Nations of 1945. It was later enshrined as rights in the Declaration of Human Rights and the Convention on the Rights of the Child. At the outset of the millennium, the world's leaders set specific goals and a timeline of 2015 to bridge the gap between rights and reality for the world's poor.

Achieving the Millennium Development Goals (MDGs) by 2015, especially as the world adjusts to financial challenges, will require strategic vision on the part of those with resources to invest. Micronutrient interventions offer the world excellent and proven opportunities to meet these goals. As seen in Table 1, the provision of key vitamin and mineral interventions supports the realization of the MDGs in a variety of ways.

Prioritization of investments with high rates of return has become more important than ever.

The Escalating Number of Poor People

Recent trends in commodity markets and the worldwide financial situation are accelerating the numbers of people at risk of vitamin and mineral deficiencies. In 2007, the Food and Agriculture Organization index of food prices rose by 24%, and rose again by 51% between October 2007 and October 2008.[1] In November of 2008, the World Bank estimated that high food and fuel prices had increased the number of extremely poor by at least 100 million people, and had set back seven years of progress in meeting the MDG target for the reduction of poverty.[2]

The World Bank also estimated that in 2008 alone, increased food prices may have been responsible for an additional 44 million children experiencing permanent physical and cognitive setbacks due to malnutrition.[3]

The global financial crisis spells more bad news. National government revenues are down, jeopardizing budgets for health and education. Donor government revenues are also lower, jeopardizing overseas development expenditures.

Taken together, the financial crisis and underlying factors of increasing demand and expected future volatility in commodity markets have made the prospects for the world's poor especially grim. Prioritization of investments with high rates of return has become more important than ever.

Micronutrient intake decreased during Indonesia's financial crisis, leading to higher rates of anaemia

During Indonesia's financial crisis in the 1990s, families decreased their consumption of foods rich in vitamins and minerals. © MI

Poor women and children are especially susceptible to vitamin and mineral deficiencies. During economic crises, their vulnerability is much greater. Higher food prices and lower incomes usually force them to reduce their intake of foods that are high in micronutrient content.

A study of how the Indonesia financial crisis of the late 1990s affected micronutrient consumption confirmed this. The authors found that, among the poor, household consumption of eggs and dark leafy vegetables (both important sources of micronutrients) fell significantly.[4] This reduction in consumption of quality foods between December 1996 and July 1998 (approximately the peak crisis period) resulted in increased prevalence of anaemia for both mothers and children. In fact, the study found that anaemia rates among children increased from 52% to 68% during the period. The effects were particularly severe for children conceived during and immediately prior to the crisis.

With compelling evidence that adult labour productivity lost as a result of childhood iron-deficiency anaemia can lead to significant losses in gross domestic product (GDP), the long-term effects of such consequences of financial crises are staggering.[5]