

**SESSION I: INTERNATIONAL PERSPECTIVES**

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**Global Alliance for Improved Nutrition**

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A number of years ago I was leading a research project for IFPRI in Northern Mali, and I had a really good, sort of hard-working team. And I thought, well, one weekend, you know, the guys have been working really, really hard. We should just take a day or so off and just go somewhere fun and just relax a little bit. So I took the team to the local big town, and that town happened to be a town called, Tombouctou known better to Westerners as “Timbuktu.” And it was absolutely a fascinating place – old mosques, interesting, dusty alleyways, fascinating markets.

But one of the images that stay with me from that particular trip was seeing Tourage nomads on a train of camels, literally coming in from the desert. And on these camels were huge sacks carrying giant sheets of salt that had been mined. And as I speak, I would like you to keep that image in your mind, because as it happens, it’s going to be something that which is going to be actually quite important to some of the messages that I want to convey to you this morning.

I’m going to speak this morning about the economic consequences of micronutrient status, the challenges and the opportunities they create for food fortification.

As we noted already in some of the earlier presentations, micronutrient deficiencies are pervasive in much of the developing world. Our best estimate is that approximately 2 billion people suffer from iron deficiencies, 140 million preschool children are deficiency in vitamin A, and 18 million children, or nearly 18 million children, are born annually with mental impairments resulting from iodine deficiencies. And fundamentally, this is just wrong. There is intrinsic value in addressing these micronutrient deficiencies, both in saving lives, reducing morbidity, allowing children and adults to live healthier lives.

But not only is it wrong in itself, it is also the case that addressing these deficiencies has instrumental value. What I mean by that is that improvements in micronutrient status can lead to improvements in economic outcomes. Some of you might say, well, you’re an economist, you would say that. Surely, isn’t it enough for us that the fact that these intrinsic benefits associated with improving micronutrient status, shouldn’t that be enough.

And yet already in some of this morning’s presentations and some of the first question and answer, it quite clearly is not enough. My own experiences, having worked as a treasury economist in an earlier life is that ministers of finance, premiers, presidents and so on are constantly being told that they need to invest resources in that – because it is a good thing.

So given that, the focus of the presentation I'm making this morning is not so much on the intrinsic value, which I think many and perhaps all of you in this room would agree with, but instead constructing an argument for its instrumental value – that not only is improving micronutrient status a good thing in its own right, but it is in fact critical for attaining other outcomes, which are also important to governments and are of particular importance to ministers of finance, presidents and so on.

Well, what are these pathways by which improvements in micronutrient status can improve economic outcomes? I would argue, in fact there are six potential pathways by which these improvements could come about.

First of all, improvements in certain forms of micronutrient status, most notably vitamin A, reduces infant mortality – and this conveys benefits. This conveys benefits in terms of saving resources that might otherwise have to be used to reduce mortality or to address it. And also the fact – by saving a life, you create a worker, someone who can be economically productive through their life. And that also conveys economic benefits.

Second, improvements in micronutrient status reduce both infant and preschool morbidity. And again this conveys economic benefits in addition to their intrinsic value. Some of these benefits are monetary benefits. You save on resources that households, families, public health services might have to devote to actually addressing this morbidity.

But perhaps as important or perhaps even more important, you also save resources in terms of time. As has been already alluded to this morning, mothers and women are often primary caregivers for children. Sick children impose additional burdens on these women. And so by reducing morbidity, you save that time of those women or the caregivers which can then be used for other activities, including those which have direct economic benefits.

Third, improvements in certain forms of micronutrient status, most notably zinc, assist in enhancing physical growth, and this conveys economic benefits, where increased stature in adulthood is causally related to productivity. Our best estimates at the moment are that a 1% increase in adult height is associated with somewhere between a 1 to 3% increase in adult incomes. And for those of you, particularly those of you familiar with working in agriculture and particularly in developing countries, this should come as no surprise.

One of the things I did in an earlier piece of fieldwork in Western Kenya is go out with some friends who were cutting sugar cane. I'm not sure how well you can see me from where you're sitting, but I'm only about 5-foot 9. And the guys who were sort of 5'11", 6'1", 6'2" could cut cane much faster than I could. Perhaps they just had sharper machetes. But a lot of it was down to the fact that they were taller, and taller and stronger allows you to be physically more productive.

In addition, other forms of improvements in micronutrient status, particularly iron status, enhances physical productivity. Individuals who are anemic are unable to work as hard as individuals who are not iron-deficient.

In addition to these gains in terms of physical abilities, improvements in certain forms of micronutrient status, most notably those relating to iodine and iron, can enhance cognitive

development and learning. These convey economic benefits in circumstances where cognition in schooling are causally linked to productivity.

And of these benefits that I'm going to speak of, it's actually worth pausing for a moment and focusing on this particular benefit. As we observe in the United States and other developed countries and increasingly in developing countries, income is generated not necessarily by brawn, by physical muscle, but by brains, by the application of knowledge. In turn, this implies that improving micronutrient status has particularly high economic payoffs, precisely through this impact on cognition and ability to learn. And indeed, in terms of our estimates that we've done on these benefits, it is the single most important economic benefit that improvements in micronutrient status convey.

Not only do these five benefits exist for the generation of individuals we seek to reach now, but some of these benefits will carry benefits across generations. So, for example, girls growing up who are nourished, who are healthier, who receive more schooling, will in turn with their children be able to produce children who are better nourished, better schooled, and so on and so forth.

So when we speak of these benefits, not only do they exist for individuals now, but they also have the potential to exist for individuals in the future.

It's worth bearing in mind that actually trying to measure these in some sort of economic or monetary sense is not straightforward. Quantifying benefits is difficult. Quantifying costs is difficult. A point I'll return to again is that, not only do we want to know what these levels of benefits and costs are, but we also want to know a little better what their distribution looks like. And none of this is straightforward.

One of the benefits of improving micronutrient status is that of reducing mortality. That literally requires you to ask the question – How do you value a life? In estimates that people use in developing countries, lives are valued as little as \$500 U.S. dollars, as high as a hundred thousand dollars. The United States Government, in its work on valuing a life saved, puts a figure of somewhere between two and three million dollars. Not surprisingly, as you might imagine, the benefits in terms of reducing mortality can be much larger if you use a large figure, or might look much smaller if you use a smaller figure.

How do you quantify some of the benefits in terms of reduced health costs in environments where medical services are public provided, or perhaps those medical services are not readily available and households don't use them?

How do you value gains in terms of cognition in schooling, where returns to those abilities in the future may be uncertain?

And of course, how do you take into account that some of the benefits, indeed many of the benefits I describe, are benefits which we receive in the future, which therefore need to be discounted back to the present?

Mindful of all this, our best estimates are measures that improve micronutrient status, particularly those relating to fortification, supplementation and biofortification appear to have high benefit:cost ratios. In other words, we take our best estimate of what these costs are, place

them into what these costs are today; we take our best estimates of what all the benefits are, not only benefits today but benefits in the future, which we discount back today, and we compare the two. In general terms, anything which has a benefit:cost ratio of greater than one can be considered a good investment – the benefits outweigh the costs. The benefit:cost ratios for different forms of addressing micronutrient deficiencies and micronutrient status are typically on the order of multiples of those. There are ratios of four to one, ten to one, thirty to one, depending on the intervention one looks at.

These are high numbers in absolute terms. But not only are they high numbers in absolute terms, they would appear to dominate almost any other investment one can think of making in developing countries.

So this suggests to us that in fact there may be very strong, big economic gains to be had by improving micronutrient status in developing countries. One of the mechanisms by which that can be attained, in addition to supplementation and biofortification, is that of fortification, which is a key strategy to reduce micronutrient deficiencies in developing countries.

My colleagues on the panel, I think, are going to go through examples of many successes there have been in terms of fortification. But I thought I would at least share with you two. And these relate to iodating salt.

For example, in China, which has an estimated 40% of the world's at-risk population, increased use of iodized salt reduced low iodine status in children by 75%. Madagascar, a poor African country, went from no iodized salt in 1992 to near universal coverage by the end of the century.

But while fortification can play an important role in reducing deficiencies in micronutrient status, it faces a number of challenges. I highlight four here this morning.

The first one is the importance of measuring impact. The figures I gave you at the beginning of this presentation are not hard figures. They are currently the best estimates as to what the extent of this problem is. Particularly those of you who work in policy arenas now, that in order to sort of understand exactly where one should put resources, one needs a good sense of exactly where the nature of the problem lies. So in terms of understanding where we should put our resources to address these micronutrient deficiencies, it's important to have a better sense of the magnitude of the problem.

But it's also important in other ways. Supposing different governments around the world decided that it would be worthwhile to massively increase the amount of money they put into addressing micronutrient deficiencies. Not surprisingly, those institutions would like to know – Is this money actually producing the benefits we expect? So in order to continue to justify work in this, it's going to be very important to demonstrate and monitor impact.

Not only is that role important, but also, too, monitoring, evaluating, continuing to observe not only creates accountability for the actors which are involved in these areas, but also in itself can create political pressures, political momentum. Programs which work which are seen as effective are ones that are going to be much more likely to attract political and policy support.

A second challenge relates both to technical issues associated with fortification but also regulatory issues. Fortification will require in many instances an appropriate mix of partnership

and regulation, partnership with the private sector. And there may be a number of mechanisms by which this can come about.

One of the points that my colleague, Patrick Webb, made this morning was the use by the World Food Program of locally sourcing of the salt they use in their school feeding programs, but ensuring as part of that sourcing that that salt is iodized. In doing so, one actually effectively creates local demand for a product and therefore encourages the private sector to actually ensure that iodine is included in the salt they sell.

Social marketing also may play a role to the extent which one can create demand for healthier products. Products which contain iron or iodine, for example, can also facilitate and encourage the private sector to take part.

The third point, and one which I'll just mention briefly – as it's been discussed several times this morning – is the issue of political economy. One of the reasons, presumably, we're all in this morning is in some sense we're convinced that issues relating to malnutrition are important. We are, as it were, the true believers. But in some ways, because we collectively are the true believers, you're actually the wrong audience for me to be speaking to. The audience that I think those of us who are concerned with these issues need to connect with are the finance ministers, the presidents – to create political awareness, to create political momentum to actually move this issue up the policy agenda.

And the final challenge for fortification, for broader issues in terms of addressing micronutrient status deficiencies, is that of distribution. The story which I began this short talk this morning was a story which, from the point of view of John Hoddinott, the traveler, looked exotic and romantic, seeing these nomads coming in from the desert. It really looked cool. But for John Hoddinott, the economist, it was truly depressing. And it was depressing because, of course, that salt wasn't iodized.

Mali, as it happens, has one of the highest prevalencies of iodine deficiencies in the developing world. A quarter of a million children are born every year with cognitive deficits as a result of lack of iodine in their diet. Fortification can play a role in that, but it will play a role most powerfully when in fact it reaches hard-to-reach populations.

We can succeed, for example, in fortifying or supplementing foods and distributing these in urban areas. Outreach in terms of micronutrients will appear to be increasing; goals relating to fortification will look like they are being met. But if the deficiencies lie in rural areas, or particularly in remote, rural areas, we may not necessarily be reaching the individuals who need it most. And that, I think, is both a terrific opportunity and a terrific challenge, not only for fortification but other approaches to addressing micronutrient deficiencies.

So this morning, I would like to leave you with three messages.

First of all, efforts to reduce micronutrient deficiencies have both intrinsic value but also have instrumental value. Second, fortification can play an important role in that and in a number of countries is also already showing significant benefits. Third, significant challenges remain. Some of those are technical. The political economy ones are important. But particularly important are those which relate to distribution.