Hans Konrad Biesalski

Hidden Hunger

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Translated by Patrick O'Mealy

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Foreword

As compact as it is, the title of the book *Hidden Hunger* by Hans Konrad Biesalski nevertheless packs in multiple meanings, as the hunger which it refers to is 'hidden' in at least three respects. First, hunger is hidden in the sense that it is not perceived by many people. Put bluntly, it is ignored. Second, hunger is hidden due to the fact that it is actively concealed, for instance for political reasons, by those who know very well where it exists and whom it affects. Third, hunger hides itself. The existence of a micronutrient deficiency is difficult to recognize and its impact is often only evident much later, if at all. Biesalski drags hidden hunger out from its lair and sheds light, in particular, on the widespread problem of micronutrient deficits. The fact that approximately 2.5 billion people suffer from some form of micronutrient deficiency has somehow barely found its way into the consciousness of the general public. It is vital and urgent that we uncover the many faces of hidden hunger and shine light on the ensuing problems which plague its victims. It lies with us as a society and with our politicians to take the necessary measures to finally put an end to it. To overcome hidden hunger, organizations that are already active in the fight against hunger will need to join governments and companies in increasing and widening the scope of their efforts to combat it. The corporate sector also needs to be on-board when it comes to developing effective measures for eradicating hidden hunger.

New insights into dietary problems are daring us to come up with solutions.

Has everything already been said about hunger that can be said? Is it not simply a matter of raising our voices a little louder and perhaps putting a new spin on facts that have been known for a long time? From a scientific perspective, the answer is clearly "no". There have been a series of new discoveries in dietary research which must first make their way into the mainstream so that they can provide the necessary impetus for change in politics and society. Innovations are being brought forth across the board. In the meanwhile, we have also gained a better understanding of the causes of food *in*security. Important discoveries have been made in research over the past two decades, among which are the following three:

1. It is clear that focusing on calories ignores important aspects of hunger. It is necessary to consider all of the factors of a healthy diet, one which provides all of the essential nutrients, particularly micronutrients. These factors must then be adjusted for the various age groups, especially in the case of small children.

2. Campaigns to fight poverty have been expanded in scope to include the institutional and legal aspects of malnourishment and undernourishment, for instance the right to food and the relevance of water, health, and care.
3. Static concepts have been replaced by 'vulnerability', or threats to the general living conditions which encompass undernourishment and the legacy of hunger over generations. We are presented with a vivid picture of the tragic relationship between undernourished mothers and their underweight babies.

In the past three years, new research and knowledge transfer have given rise to efforts to Scale Up Nutrition (SUN). This endeavor combines new research with established facts with the goal of taking more steps to improve nutrition during babies' first 1,000 days, beginning with pregnancy and ending with year two. Biesalski points out a number of successful new initiatives, as well as insights which have yet to be acted upon.

The solutions are there, but they are neither simple nor do they come cheap.

The scarcity that has led to price fluctuations on the agricultural markets in the past few years and the increasing number of hungry people around the world have put issues of global food security firmly in the spotlight, particularly the two questions "How can the current hunger situation be quickly resolved?" and "How can food security be guaranteed in the future without causing damage to the environment?". These are by no means new questions. The only new issue is the urgency with which they have been placed once again on the political and public agendas. Also new is the differentiated view of the situation thanks to recently gained scientific insights, which will allow us to face the issues involved in hidden hunger.

Fundamental to an improvement in the state of nutrition is a sustainable increase in agricultural production, particularly in Africa, Asia, and Latin America. In many regions of the world, not enough healthy and affordable foods are being produced. Hunger is not merely a distribution problem. Hunger is still predominantly a rural problem, thus overcoming it depends largely on being able to work and earn money. Boosting agricultural production, including small-scale farms, and extending the rural infrastructure are key elements of nutritional policy. These major investments must quickly be enlarged. The problems affecting food security cannot be solved with supposedly cheap, quick-fix measures.

Remarkable progress has recently been made in the war on hunger. A few noteworthy examples of dietary initiatives are the cash transfer programs to the poor in Mexico and Brazil, as well as the school meals programs which have been started in parts of Africa and Asia. Even if the goal of improving the micronutrient supply to millions of people is clear, it is nonetheless essential to apply an intelligent combination of measures which specifically address the problems. This includes industrial food fortification, biofortification (crop cultivation), and/or micronutrient supplements, all of which can complement one another—being ineffective on their own. The victims of hunger must not be the 'recipients' of such programs. Instead, they must be actively involved as decision-makers in the design and execution phases. Otherwise, the results are often less than satisfying.

Biesalski explores the possibilities and the limits of these and other initiatives in a knowledgeable manner.

I hope this work finds a broad audience who will feel inspired to take the necessary steps to put an end to hunger. Hunger must not remain hidden any longer—when it comes to eradicating hunger, what is needed is less tolerance and less patience.

Bonn, 2013

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And They Lived Hungrily Ever After

What may perhaps sound like merely a trite and ironic twist to the happy end of many of the Brothers Grimm's fairy tales actually sums up the bitter reality for many persons on the planet—namely those who suffer from malnutrition. Individuals who have just barely enough to eat and survive, but not enough to actually live, trapped on the border between life and death—a 'life' which seems to offer chances for improvement, yet has no future.

Whenever we see a report on the evening news about a massive famine which killed thousands, we generally first become aware that there are people on the planet who live in poverty and starvation. It is important, however, that we differentiate between 'hunger' and 'starvation' as these are two very different conditions. Hunger is a two-sided coin. It refers simultaneously to that which is visible and can be subjectively and objectively viewed, and that which is hidden.

This less-visible hunger, which even those afflicted do not see until very late, is known as 'hidden hunger'. Currently, three billion people are affected by it. Year after year, it is hidden hunger, and not the physical torture of starvation, which is responsible for the deaths of millions of men, women, and children. Chronically malnourished women and children, most of all are the ones who face the highest risk of suffering illness or death before having taken their first real steps in life.

Poverty and chronic malnutrition are inseparable, and yet the connection is very often overlooked. This combination dictates the daily activities of some 2.5 billion people. Despite numerous attempts to remedy this predicament and even more cries for change, there have hardly been any improvements during the past 25 years. In fact, the growth-centered globalized economy has led to even greater poverty levels, whereby the poor remain in the background. They may move temporarily to the forefront whenever a region is struck by famine, but then they inevitably disappear again into the shadows of the abyss.

Hunger: A Baseline Study of the Current Situation

1

In her eyes, Hassan was simply gigantic, although he was admittedly somewhat smaller and frailer than the other children. He took care of his sister, Suheila, who lay sleeping in Fatima's arms. Hassan would take her down to the river to play with tiny self-made wooden ships, that is, as long as the river still bore water. He built a tent made of leaves for her to shield her sensitive baby skin from the sun's hot rays. Fatima would hear Suheila giggling with delight whenever Hassan had her in tow, lying across a light blue plastic bag bearing the seal of UNICEF and appearing to drift on the wind like a feather. Hassan was 3 years old when he died. On the way to Mogadishu, beneath the heat of the midday sun, they stopped to take a short rest. With his sister sitting beside him, Hassan silently drew his last breaths. The fever and diarrhea had set in a few days earlier. His tired sister would let herself be pulled along by him if Fatima was not there to carry her. When he became unable to hold Suheila's hand any longer, he looked at her with his gentle smile and sat down along the wayside. Fatima attributed the diarrhea to the water, as was the case with so many other children. There was no milk to be had since the supply stations set up by the World Food Programme (WFP) were few and far between, the closest one being a three-day journey on foot. Were it not for the blockades set up by the Al-Shabaab militia, they might have arrived in Mogadishu earlier. Hassan, her husband, had wanted to accompany the children, but was afraid that seeing an adult male would cause the militia to attack them. And so Hassan stayed behind, also in order to look after Hassan's sick brother and his aunt, who were both unable to walk any more. Someone was needed to take care of all that was left. The animals they had kept were long since dead. He wanted that his son, his pride and joy, would survive at least. Day by day Fatima saw how Hassan gradually lost his connection to the outside world, how his smile became dazed and distant and she knew that Hassan was the second of her three children that she would lose.

Twenty thousand Hassans die of starvation everyday in countries all around the world where poverty and malnutrition are the status quo. Death in such cases is caused not so much by an acute shortage of food, but rather as the result of a gradual weakening of the body caused by malnutrition, which, in turn, makes such

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individuals incapable of surviving even short periods of food scarcity. For children, the setbacks that they suffer in their overall development resulting from malnutrition start even before they are born.

Hunger: What Exactly Is It?

To many, hunger is a state of being, a daily condition, a general feeling of angst. It is what causes both people and animals alike to throw caution to the wind, ignore their natural inhibitions, and set out in search of food. Hunger is an acute condition which evolves from a feeling of discomfort into an aggressive impulse to search and hunt for sustenance using any means necessary. This feeling is expressed in everyday language when we say that we are 'famished', or hungry as certain predatory animals, such as a lion, bear, or wolf. From an evolutionary point of view, becoming aggressive while on the hunt for food is an essential regulatory mechanism aimed at preserving the species. The process is guided by a multitude of biological activities, involved in which are numerous complex hormones in the metabolism and the brain. As we have seen in the past and will continue to see in the future, hungry 'masses' of people are a danger to any society as their potential for using violence in their hunt for food cannot be calculated or predicted. This fact should not, under any circumstances, be forgotten, even if those masses of people who face starvation seem hardly in a position to mobilize themselves beyond their respective geographical regions. Yet sooner or later, as history shows us, these hungry people are going to rise up and, in their search for food, start heading toward the (not merely proverbial, but—as seen by millions on the Internet—true) land of milk and honey. In the same way climate wars (which are also nothing more than an expression of mass hunger) are already being fought, internal strife will turn into external conflict and 'hunger wars' will be waged.

This visible side of hunger is the securing and consuming of food at any cost. It makes no difference what kind of food it is, only that it is edible and helps to still the hunger pangs for a short while. The other side of hunger is hidden hunger, chronic malnutrition—a perpetually harmful situation, which is neither felt by those who suffer from it, nor does it prevent its victims from surviving and carrying on in their impoverished state of existence. For every starved child, there are ten children suffering from hidden hunger and each of whom may ultimately die of starvation at any time, as well. Herein lies the real tragedy, namely that we only focus our attention on those who did not make it and not on the ones who perhaps still have a chance.

Hidden hunger is a state of chronic malnutrition, whereby one's very last energy reserves are not utilized to search for food, but rather are 'saved'. Seen from an evolutionary point of view, this is a very logical process. The 'saving' of energy, however, is only possible as long as the body still has reserves—starting with the small amounts of fat that are left in the body and then the protein in the muscles. After these reserves are gone, the body starts to metabolize the depots that are

essential for performing bodily functions. In the end, the body consumes itself by attempting to extract the remaining bits of protein and energy that are contained in the vital organs. This leads to stints in growth and development among children and to varying degrees of incapacitation and limited mobility among adults.

The story of human nutrition covers a broad spectrum: from the consumption of luxury goods by some to the hungering of others. In other words, it is a story of the haves and the have nots: those who can afford to buy high-quality foodstuffs and those who are not as fortunate. It is also influenced by the years of plenty and the years of belt-tightening, whereby for some individuals, every year is plenty while for others, every year is very lean.

One result of this historical dichotomy was the creation of emergency food reserves for difficult times. Learning from history and wanting to avoid the horrors of famine and revolts inspired by famine, governments today keep emergency stockpiles of food for their citizens. Oftentimes these are not produced domestically, but instead are cheap imports from overseas. Food to be kept in case of an emergency may also come from territory gained through expansion, stolen from another country, or purchased. These safeguarding systems, which have been evolving over the past few centuries and continue to exist in many areas, are partly responsible for the bleak and hopeless supply situation and the ensuing chronic malnutrition in many countries in Africa and Asia.

The principle of better nourishment for the rich and poorer for the poor has endured and poses a major problem in the fight against hunger. In terms of quantity, enough food is produced on the planet to supply each person with the minimum amount of energy (2,400 kcal) required on a daily basis—even in light of the growing world population. Three basic foodstuffs supply 50 % (in some countries even as much as 80 % and more) of people's daily caloric intake: rice, wheat, and corn. In rich countries, by contrast, these crops provide roughly 30 % or less of the calories consumed by the average person. People living in rich countries can even join the 'low carb' trend and opt out of eating carbohydrates completely! When it comes to just having a full feeling in our bellies, each of us is probably prepared to just eat rice or mashed potatoes for a while and perhaps a bit of vegetables or an egg. But we know very well that this kind of diet is neither what we would call healthy, nor is what we understand by the word 'nutrition'.

Worldwide Hunger

Every few years a region of the planet is struck by famine. It happened in 2011 in Somalia, in February 2012 there were alarming reports about an impending famine south of the Sahara. These famines and others are caused not only by the blocking of access to food as a means of political pressure by the local militias, but also due to the fact that the starving inhabitants often have no other choice than to revolt. To fully comprehend the different dimensions of hunger, one can hardly rely on numbers alone. Instead, one must experience them first-hand, either as a victim or

as an 'onlooker'. One chilling account is Michael Buerk's film about the massive famine in Ethiopia in the year 1984, during which roughly 1 million people starved to death. The film clearly shows the two sides of hunger: on the one hand, the panic and aggression that breaks out whenever food is being distributed and, on the other hand, the quiet desperation and depression that victims fall into while waiting for the next hand-outs. Caught up in the middle of this are the children. Without any means to defend themselves, all they can do is cry and waste away in the chaos.

We are moved to pity and the desire to help those afflicted when we see news reports about a recent hunger crisis, whereby another few thousand people are dying of starvation. Ultimately these numbers, as abhorrent as they are, serve only to shock us until the next famine, already in progress, makes its way into the news reports. This horrible situation is perpetuated by the millions of people around the world who currently live under the threat of starvation. A slight change in such outside influences as the price of staples or a dry period is enough to plunge thousands of men, women, and children into starvation in one fell swoop.

The progression of mankind from food gatherer and hunter to stationary farmer seemed to signify an end to the threat of starvation through the ability to stockpile reserves. Yet this only led to a new problem that has continued to affect the issue of world hunger to this day. Nobel laureate economist Amartya Sen sums up the situation in the following way: Hunger crises have less to do with the availability of food than with the ratio of the purchasing power of those who buy foodstuffs versus that of those who sell it. This explains the unfortunate and persistent correlation between poverty and hunger, two plights which, hand-in-hand, affect not only developing countries. The most colorful and wonderfully varied market is clearly of no benefit whatsoever to the poor, who cannot afford to purchase any of the produce on offer.

World hunger can essentially be attributed to the following key factors: wars and climate change, leading to the migration of peoples in search of nourishment, and a global economy which places profit above moral obligation.

Returning once again to the situation in Somalia: in the meanwhile, an 'all-clear' was given in January 2012 with regard to the situation there. The hunger crisis was reported to be under control, meaning that nobody was starving after days of having nothing to eat. Thanks to shipments of rice and corn, the stomach of the people were full enough to prevent them from starving. On top of that, the German foreign minister pledged the generous sum of six million euros to help alleviate the crisis. Yet that figure amounts to less than the combined annual salaries of the executive board members of the large banks and industrial firms, and is less than 0.5 % of the minimum amount which, according to UNICEF, is needed to hunger in the region to a halt, albeit temporarily. Compared with the so-called bailout package, it is merely bagatelle. Returning to the agenda means preserving the status quo. According to the International Food Policy Research Institute (IFPRI), the 'business as usual' attitude will lead to a further rise in the number of undernourished individuals by the year 2015 and not, as outlined in the Millennium Development Goals (MDGs), to that number being cut in half (Shengen 2010).

Millennium Development Goals and Worldwide Hunger

In the 1990, MDGs were announced as a political answer to worldwide hunger. As such, they include the roadmap for making headway, as well as the documentation of concrete steps taken in the fight against hunger.

The MDGs (see Box 1.1) were adopted by the 55th General Assembly of the United Nations on September 6, 2000. The overriding objective was a 50 % reduction in poverty by the year 2015. The starting point was provided by some rather dry statistics:

- More than 1 billion people currently live in a state of extreme poverty (20 % of the world's population have less than $1 a day at their disposal).
- 700 million individuals are undernourished.
- 120 million children have no prospect of receiving an education.
- More than 20 % of the world's population has no access to clean drinking water.

Box 1.1 Millennium development goals

1. The eradication of extreme poverty and hunger
   - The reduction of persons who have less than the equivalent of $1 a day to spend by 50 % from 1990 to 2015.
   - The reduction of persons who have less than the equivalent of $1 a day to spend by 50 % from 1990 to 2015.
   - Full-time employment in decent jobs for all persons including women and adolescents.
2. Primary school education for all
   - The guarantee that all children worldwide, both girls and boys, are able to finish their primary school education by the year 2015.
3. Gender equality/strengthening the role of women
   - The elimination of the gender gap in primary and secondary level education ideally by 2005 and in all levels of education by the year 2015.
4. A reduction in the infant mortality rate
   - Between 1990 and 2015, a reduction in the mortality rate of children under 5 years of age by two-thirds (from 10.6 to 3.5 %).
5. An improvement in mothers' state of health
   - A reduction in the mortality rate of mothers by three-fourths in the period 1990–2015.
   - The availability of reproductive health care for everyone by 2015.
6. Efforts to fight HIV/AIDS, malaria, and other serious illnesses
   - Bringing the spread of HIV/AIDS to a halt and creating a turnaround by 2015.
   - The providing of medical treatment to all HIV/AIDS-infected persons by 2010.
   - Bringing the spread of malaria and other serious illnesses to a halt and creating a turnaround by 2015.

7. Ensuring environmental sustainability
   - The pursuit of sustainable development in the political agendas of individual states and the curtailing of the destruction of natural resources.
   - A reduction in the loss of biodiversity and a significant curbing of the loss rate by the year 2010.
   - A decrease in the number of persons without permanent and guaranteed access to hygienically sound drinking water by 50 % (i.e., from 65 to 32 %) by 2015.
   - A marked improvement in the living conditions of at least 100 million slum dwellers by 2020.
8. The creation of a global development partnership network
   - Further steps toward developing an open, rules-based, predictable, and nondiscriminatory system of commerce and finance (a commitment to responsible leadership in government, to development, and to a reduction in poverty at both national and international levels).
   - Special consideration for the needs of the least-developed countries (the lifting of trade barriers, debt relief and cancellation, special aid for countries which actively work to combat poverty).
   - Accommodating the special needs of smaller, land-locked, and island-based developing countries.
   - Wide-ranging measures on both national and international levels toward dealing with the debt crises faced by developing nations.
   - The drafting and implementation of strategies for creating meaningful and decent work for young people in collaboration with developing countries.
   - Ensuring access to essential medicine at reasonable prices for persons in developing countries in cooperation with pharmaceutical companies.
   - Working together with the private sector to make certain that the benefits arising from new technologies, especially information and communication technology, can be utilized by developing countries.

To this day, not a single one of these goals has been even remotely achieved, although headway has been made. MDG 1 (the eradication of extreme poverty and hunger) is still merely an illusion. Both the number of people living in extreme poverty and those suffering from undernourishment have decreased only marginally.

According to the World Bank's definition, 'extreme poverty' equates to earnings of less than $1.25 per day. This is the case with 1.4 billion people. A further 2.6 billion earn less than $2.00, and those individuals who earn less than $3.00 a day are also in no position to adequately nourish themselves on a permanent basis.

In Thailand, a person who is responsible for cleaning sailing yachts that are moored in the harbor at Phuket (itself a rather privileged position) takes home 800 baht, roughly €20, in a month. In the least, the manager of the cleaning staff earns

the 'proud' sum of 1,200 Baht, roughly €30 per month. In both cases, large families with many hungry mouths must often be fed with that money.

Let us be clear once and for all about what that means: 1,000,000,000 undernourished men, women, and children! More specifically, there are 1 billion people who consume less than 1,800 kcal of energy per day and do not have the means to alter the situation.

> The WHO defines hunger in terms of the minimum daily requirement of energy, which currently stands on average at 1,874 kcal per person. Any less than that amount and one's ability to do even light manual labor is restricted. The minimum amount according to the World Bank lies at 2,200 kcal a day, any less than that representing 'absolute poverty'. With an intake of 2,200 kcal, light manual labor is still possible. The balance of energy and manual labor depicts the ratio of nutrition to productivity and, ultimately, the potential of individuals to free themselves from their state of poverty.

One dollar a day is not enough for one person to consume the daily minimum of 1,800 kcal, let alone an entire family. And then there are the family's expenses other than food. For these individuals, the situation not only concerns their daily survival, but also the realization and the acceptance that there will be nothing for them to eat—in the evening, tomorrow morning, or perhaps even for the next two days.

UNICEF gave a résumé of the results of the MDGs 20 years after their publication and 5 years ahead of the envisioned target date (UN 2010). The lofty goal of "eradicating extreme poverty and hunger" remained unaccomplished in 2010 and would also not be achievable by 2015. In 1990, the percentage of people living in extreme poverty was 38 %. Prior to the economic crisis in 2008 and 18 years after the proclamation of the MDGs, the figure dipped down to 31 %, but only to rise back up again to 37 % in 2011 during the crisis. In 1990, 20 % of the world's population went hungry. This figure sank to 16 % before taking a clear upward turn after the crisis in 2008. The tragic chain of events, climate change and dry periods resulting in price fluctuations, which in turn lead to food crises, is, along with other local occurrences, the reason why the percentage of hungry persons has remained largely unchanged. The ultimate consequence of this situation is that the physical and mental development of those persons who are undernourished is curbed from the very start of their lives. Thus, entire nations have no chance at economic development since their collective human resources are lacking and whole generations are without any hope or prospects of improvement. These people are trapped in a vicious circle, a merry-go-round which they cannot influence and most certainly cannot get off 'freely'.

Where Do We Stand Today?

Each year, the world's population grows by some 80 million people. That means that everyday an additional 220,000 people need food. An estimated 30,000 of these people will be sitting in front of a more or less empty plate. Others, by contrast, will have more on their plates than they can possibly eat, leaving the rest to be thrown away. So ultimately these 30,000 individuals begin their lives having a far less chance to develop adequately.

As ambitious as the MDGs may be, they did seem at the time to be achievable. Yet developments over the past 22 years show that the number of persons suffering from hunger has remained unchanged (see Fig. 1.1).

The total number of persons living in a state of hunger has essentially remained the same since 1969. The most noticeable change is in Asia (excluding the south), where by the year 2007 the number of undernourished persons had diminished from 500 to 200 million. In contrast, the number of hungry persons in Africa, especially in Sub-Saharan Africa, has continued to rise until the present day. One major reason for this is the financial crises of 2008 and 2011. The consequences of the latter became visible in 2012.

At the beginning of 2011, the Food and Agriculture Organization of the United Nations (FAO) observed: Although worldwide hunger is on the decline, it is still unacceptably high. The most recent economic crisis of 2011 put an end to this 'apparent' trend and sent the number of hunger-stricken persons further upwards, while simultaneously increasing the probability of increasingly severe hunger crises.

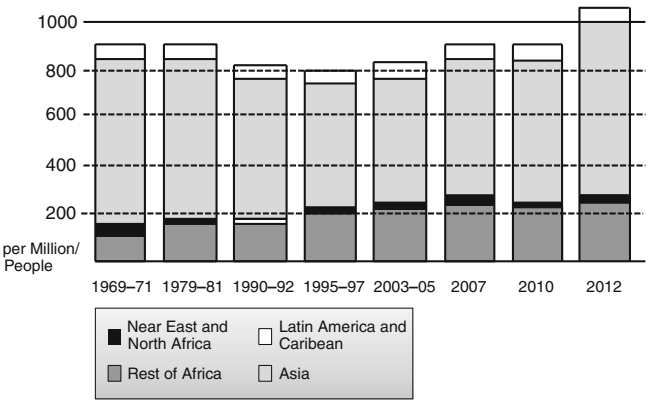

Fig. 1.1 Undernourished persons (in mil.) worldwide since 1969. Between 1990 and 2015 the numbers of undernourished persons were supposed to be cut in half in accordance with the Millennium Goals. Contrary to this lofty target, however, they have risen further (Fischer et al. 2008; input from FAOSTAT.fao.org 2011, 2012)

Somalia: 400,000 Children are in Danger of Starvation

The children in East Africa are the ones who are suffering from the hunger crisis most of all, with hundreds of thousands of them on the brink of starvation. Muslim countries and Great Britain have increased their assistance to the stricken country, however the UN still has only half of the $1 billion necessary.

Nairobi—as many as 400,000 children in Somalia are going to die of starvation—unless help arrives immediately. That was from a report by the British Secretary of State for International Development, Andrew Mitchell after visiting Mogadishu.

According to the World Bank, 29,000 children under the age of five died in Somalia during the past 3 months. Overall the lives of more than 12 million people are in danger due to the worst drought in 60 years. (*Der Spiegel*, 17 Aug. 2011)

What is unique about hunger crises? Why do we refer to it as being a 'crisis' when it has long been known that 1 billion people are starving? Is that not already in itself a crisis? The crisis brings to light the razor's edge separating a state of barely surviving and starving to death due to the fact that the ones who are starving are no longer scattered across the globe, but rather find themselves huddled together in refugee camps of 450,000 or more, predominantly women and children. Basically, what we have is a situation whereby all the persons living under the threat of starvation are not spread out across the country, but rather they are suddenly concentrated in one place. Their misery and imminent demise suddenly come into view. We first take notice of the situation when the threat of mass starvation looms large, and not as long as these people are 'only' undernourished.

However, a hunger crisis is only the tip of the iceberg, which alerts us of danger when we spot it on the horizon. A good 90 % of the problem lurks under the water's surface. When the tip of the iceberg has 'melted' and, apart from a few thousand individuals who died of starvation, the hungry masses are momentarily provided for with food, everything goes on in its usual way.

For every child that dies of starvation, there are at least ten others whose plight first becomes obvious once it is too late. Hunger, in terms of malnourishment, is not a passing condition and feeling in the lives of these children, but a permanent state much like the razor's edge on which they travel. One can only wonder why this dire situation does not attract more constant attention. The answer lies in the fact that this is indeed an on-going condition which cannot be resolved by temporarily shipping food aid and, with 1 billion people affected, is beyond our ability to imagine. The suffering and hopelessness of each individual victim does not make it onto our radar.

'Hunger crisis' is the technical term used to describe an on-going situation when it becomes clear that there is far less available to the inhabitants of a certain region than the 1,800 kcal/day needed to survive. The recent warnings concerning the drought, 50 % loss of crops and impending famine in the Sahel, particularly in Niger, Mauretania, Mali, Chad, Burkina Faso, and Nigeria, are a good example. When we help to provide food aid with our donations as a means of offsetting these losses, we assume that the threat of people starving is eliminated. In a narrow sense, this is true, provided of course that those in need actually receive the aid. In reality, the saving of lives today is nothing more than the prolonging of an extremely precarious existence—until the next hunger crisis.

Hunger: A Quantity Issue: Being Full and Peaceful Is (Not) Enough!

In order to predict hunger crises in the hope of planning relief efforts as early as possible, the respective organizations, such as the Food and Agriculture Organization (FAO) and the World Health Organization (WHO) use a variety of techniques which express the state of nutrition in different countries in plain figures.

Undernutrition is, according to the FAO, an intake of calories expressed as daily Dietary Energy Consumption (DEC) which is less than the Dietary Energy Requirement (DER) (Cafiero and Gennari 2011). Using this formula, the number of undernourished or hungry persons in any population can be calculated. To determine the DEC, factors such as gender and light manual labor are taken into the equation, as well as data regarding the average daily requirements from the Food Balance Sheets (FBS). The percentage of undernourished individuals is projected based on the averages values over a 3-year period. Hence the term 'undernourishment' is expressed strictly in terms of quantity, whereby the undernourished are understood as having an insufficient energy intake in relation to their physical workload. As a result, the phenotype undernourished individual is underweight and 'unproductive'.

Malnutrition in contrast is a qualitative description, i.e., those persons affected by it have a deficiency of one or more nutritional components without necessarily consuming too few calories. If the average caloric intake of the population is calculated as being sufficient, no measures are undertaken to determine what percentage of that population is malnourished. By definition, a person who is undernourished is malnourished. Yet the opposite is not true, namely a person need not be undernourished to be malnourished and may even be overweight. The phenotypical malnourished individual is recognizable either due to symptoms arising from a specific nutritional deficiency (e.g., iron deficiency anemia) or because he or she often falls ill or shows signs of a developmental disorder (stunting).

Food Balance Sheet

So how can the number of undernourished individuals be determined on the basis of a quantity-based analysis (kcal/day)? The FAO relies on a theoretical model to estimate the extent of world hunger which is not undisputed. The basic premise rests upon the assumption that hunger is the result of not consuming enough energy (kcal), a view shared by the WHO. The calculation follows five steps:

1. First, the total amount of food available in a country is taken from the Food Balance Sheet, a compilation of data regarding the amount of food which is produced, bought or sent into the country as food aid.

Table 1.1 Food balance sheet for Sri Lanka

Years	Calories/day			Protein in g/day			Fat in g/day		
	Total	Vegetable	Animal	Total	Vegetable	Animal	Total	Vegetable	Animal
2005	2403	2294	136	60.1	44.8	15.3	42.1	35.8	6.3
2006	2419	2263	156	60.4	42.9	17.5	43.3	36.2	7.1
2007	2369	2212	157	59.6	41.2	18.4	48.8	41.9	6.9
2008	2552	2396	155	61.3	43.1	18.2	45.1	38.2	6.9
2009	2434	2276	158	61.6	43.3	18.3	47.4	40.3	7.1

2. Next, the percentage of food which is either lost or is to be used for other purposes than human consumption is subtracted.
3. Then the food is equated into calories.
4. The distribution of food among the households and then within the individual households is approximated.
5. Based upon these data, the prevalence of undernourishment is estimated.

If we take Sri Lanka as an example (or any other country for that matter), it becomes clear that the quantitative approach to hunger can lead to incorrect conclusions by those in charge of providing help (see Table 1.1).

At first glance two things are noticeable: The percentage of valuable animal-based foodstuffs remained unchanged throughout the entire period of observation. The percentage of protein in relation to the total calories is roughly 11 % and does not meet the minimum level of 15 % set by the WHO. At 17 %, the amount of fat is far below the required 30 %. Hence, 72 % of calories are derived from carbohydrates and this presents a further problem since carbohydrates in this region are mostly obtained from cereal products. Cereal products are rather poor sources of essential nutritional components, such as vitamins and minerals. The people in Sri Lanka seem to be well-fed (with a daily consumption of more than 1,800 kcal/person), yet they are certainly not well-nourished!

Because the FBS only allows for a quantitative assessment of hunger, UNICEF's analysis of the situation came to the surprising conclusion that despite sufficient caloric intake, there appeared to be signs of inadequate nutrition among the population:

In a country where the inhabitants do not suffer from food shortages and have access to excellent, free health care for mothers and children, it is paradoxical that close to a third of all children and a fourth of all mothers are malnourished. (UNICEF Annual Report 2007).

- Every fifth child born has a low birth weight. 29 % of children under the age of five, in some districts as many as 37 %, are underweight.
- 14 % of all children under the age of five suffer from acute malnutrition, or so-called 'wasting'.
- 58 % of all children between the ages of 6 and 11 months and 38 % of all children between 12 and 23 months are anemic.

Table 1.2 The ten most important staple foods in Sri Lanka (FAOSTAT.fao.org 2007)

Staple food	Daily amount (kcal/pers.)
1. Rice	942
2. Wheat	309
3. Coconuts	258
4. Sugar	249
5. Coconut oil	82
6. Beans	56
7. Fish	42
8. Bananas	37
9. Cassava (manioc)	32
10. Fats, meat	29
Total calories/day	2,036

The apparent paradox, having enough to eat and being nevertheless malnourished, can be explained by simply taking a closer look at the figures in the FAO's statistics.

For Sri Lanka, a nutritional overview is given in Table 1.2, which presents a detailed yet mere quantitative view of the situation. It must be noted that the daily caloric intake an average value is which does not apply to every individual, most especially the poor.

1,758 kcal are distributed among the four staples rice, wheat, coconuts, and sugar. It is precisely those staples which could satisfy the nutritional needs of the population, especially of children, which are in extreme short supply. On the surface, as the FAO also announced, there is enough food for everyone. Therefore, there is no need for concern—or is there?

Once rice has been husked, only a small amount of B vitamins and absolutely no fat-soluble vitamins remain. It also contains only slight traces of minerals with the exception of magnesium. Certain B vitamins (B1, B2, and niacin) are contained in wheat, albeit in very small concentrations (<10 % the RDA of 100 g) and the minerals iron and zinc are difficult for the human body to absorb. Coconuts also contain very small traces of vitamin B (B1, B2, B6, folic acid), as well as vitamin C.

So all in all, 90 % of the calories consumed on a daily basis contain only a small amount of water-soluble vitamins. The amount of fat-soluble vitamins, such as vitamin A and C, is also negligible. The same is true with pro-vitamin A and a number of other micronutrients. According to the quantity-based assessment of nutrition, the food supply is nevertheless sufficient. A full stomach is simply not enough!

The quantitative analysis indicates that the inhabitants of Sri Lanka are sufficiently nourished. The fact that the quality of food is by no means sufficient and,

consequently, the population suffers from malnutrition is hardly given any consideration. Moreover, the situation is perceived as a paradox due to the fact that false interpretations rest upon assessments made by UNICEF:

> **Micronutrient deficiency, a condition which jeopardizes growth and development among healthy children, is less widespread, nevertheless it poses a serious health threat. The most common deficiencies among women and children** are iodine, which is essential for bodily and mental development, iron, a lack of which causes anemia and hampers the cognitive development of children, and vitamin A, needed for healthy eyesight and the immune system. One-third of children under 6 years of age are found to have a vitamin A deficiency and half of the children between the ages of five and ten do not receive enough iron. Every fifth child suffers from an iodine deficiency—the biggest and, at the same time, most preventable cause of bodily and mental illnesses. (UNICEF Annual Report 2007).

It is often overlooked that behind each of the deficiencies described by UNICEF due to an unbalanced diet there are further deficiencies that are not yet visible, yet which have a negative impact on a child's development. Likewise, a lack of other micronutrients than the three mentioned can lead to stints in development long before symptoms develop.

The fact that both the FAO and the WHO define hunger in purely quantitative terms, i.e., the result of too few calories, misses the mark. Even if the subjective aspect of hunger, the empty feeling in one's stomach, is addressed by this definition, there is another aspect of hunger which is left out in the cold: the body's craving for essential nutritional components. That is what is meant by 'hidden hunger'.

The quantity-based approach of the FBS leads us to believe that when a country produces more rice or wheat, the number of hungry people decreases since the distribution of those calories between the households presumably remains the same. In other words, the fruits of labor have provided a surplus for all to enjoy. The fact that the truth of the matter might be completely different is illustrated by recent reports from India. According to an article in the *New York Times* from June 18, 2012, rice and wheat production has risen in India so dramatically that the country is now in a position to export both crops, yet the number of undernourished persons is the same as before. A corrupt system and a lack of regulation are the reasons that only 41.4 % of wheat which is purchased by the government to be given to the hungry actually makes it to the afflicted families. There are apparently a number of stations along the way at which wheat is siphoned off with the intent to sell it for a profit somewhere else. In India, productivity and national per capita income have more than doubled in the last 10 years. The number of hungry persons, on the other hand, has not decreased, but has even risen from 17 to 21 % since 1997 (FAOSTAT 2012). In times of economic boom, the number of undernourished persons has grown in India by 65 million, in Pakistan by 14 million. These figures may very well be even higher since the FBS does not allow for a very precise analysis.

The FBS is a statistical tool which relies on average values and does not distinguish between the income levels of the different households and therefore does not differentiate or take into account the disparity between families with a

high income (i.e., well above the average) and a low income (i.e., well below the average). A significantly more accurate picture is presented by studies that take into account the adverse effects of undernourishment.

Global Hunger Index

The child mortality rate is the most sobering indicator of undernourishment and malnutrition. It is taken into account by the WHO's Global Hunger Index (GHI) for assessing the food security situation in different countries. Since undernourished children are always malnourished as well, they are counted solely among the former group. Strictly malnourished children, in other words those children that have a caloric intake above the minimum, are not considered and herein lies the problem. With such methods of analysis, it is difficult enough to identify the problem of hidden hunger, let alone attempt to rectify it.

Unlike the FBS, the GHI focuses on the negative effects of hunger. By doing so, the consequences of inadequate nutrition for those affected are more closely examined. However, only data for the particularly tender age of 6–59 months are collected. Mothers, pregnant women, and newborns fall here by the wayside.

Even the GHI only deals with the negative impact that inadequate nutrition (regardless of calories) has on one's health and development to a partial degree. It focuses far more on the impact that events have on the magnitude of hunger using three equally weighted factors:

1. the percentage of undernourished persons in the respective population (insufficient calories)(UP),
2. the percentage of undernourished children under age five (UK),
3. the child mortality rate for children under age five (USMR).

The index is then calculated using the following formula: GHI = UP + UK + U5MR/3. The highest possible value is 100. Such a score would mean 100 % in all three categories, which is just as improbable as reaching an index of 0! The higher the score is, the greater the hunger. An index of 10 depicts a serious condition, whereas a score of 30 sends alarm bells ringing.

With the GHI it is possible to track developments in specific countries. In South-East Asia, North Africa, and Latin America, the index declined in the years 1981–2006 and currently stands at around 10. Consequently, the nutritional deficiencies in these regions are categorized as less serious. A closer look reveals that using the child mortality rate as an indicator of poor nutrition addresses only part of the problem. Children who survive are not necessarily better nourished and may have been fortunate thanks to other health measures, such as better hygiene and vaccinations. One must not forget that slight shifts in the political or political landscape of these countries may suddenly send the index upwards.

The index has also shown a clear improvement in South Asia, where it has descended from an *extremely alarming* 40 to a 'merely' *alarming* 30. No such improvements have so far been observed in Sub-Saharan Africa, where the index

has been somewhere between *very serious* and *alarming* for at least the past 30 years. The situation is particularly alarming in countries which have been the scene of wars or on-going conflicts. The index also stands in close correlation to the national income, although these countries often have no respective data to draw upon. The lower the per capita income level, the higher the index. What ensues is a vicious circle of conflict and poverty, a merry-go-round of hunger which pulls more and more people on board.

If one observes the worldwide distribution of the Global Health Index and its development over the last 20 years, once can see that only a very few countries have achieved a reduction in score by 50 %. On a global scale, a reduction in the score has been achieved. In Africa, however, the number of undernourished children and the child mortality rate for children under five has barely diminished. If we look at South Asia, the number of child deaths has decreased, partly due to improved hygiene and medical treatment, yet the percentage of undernourished persons (based on weight and energy intake) has hardly fallen since 1996. One can hardly speak of an improvement in nutrition in this case. The same applies to Africa, where the percentage of persons who do not consume enough calories is clearly greater because there is simply not enough food to go around.

From the nine countries in which the GHI has risen, eight of these are in Africa and the other is North Korea. Since the GHI reflects the relationship between income levels and poverty, this fact is hardly of any surprise. However, when the total revenue of a country rises, is apparently in itself not sufficient enough to lower the percentage of those living in poverty and, consequently, the GHI as well. In South-East Asia, for instance, there was an 8 % in poverty, while the GHI only nominally decreased by 3 %. Thus an increase in a country's GDP is by no means a safe indicator whether or not the population is well nourished. The GDP itself says nothing whatsoever about the distribution of food within the population (as dependent upon availability, access, and price).

The GHI is indeed a valuable tool for assessing the hunger situation in a country since it shows negative trends at an early stage, therefore allowing them to be slowed down through rectifying measures. In 2010, the highest alert status was given to the Congo, Chad, and Eritrea because they had a GHI of over 30. At that time, there was no data available for Somalia, which suffered a severe famine in 2011. An appraisal of the situation by means of the GHI also went begging, although relief organizations had strongly warned of an impending catastrophe.

What exactly does the GHI actually show? In short, it is a fever thermometer which indicates the threat of a hunger crisis. The higher the number of undernourished and starving children, the higher the probability that this number will make a sudden jump if the amount of food available shrinks due to, for instance, bad harvests, price increases, or war. That also means that the children living in a country with an alarmingly-high GHI are already walking the fine line between survival and death by starvation, a fact which is in itself unacceptable. Such an existence means that children are quite simply excluded from enjoying a real life. They receive no education, they suffer from hampered mental and bodily development and, after they turn five, become 'statistically' irrelevant.