SOCIETY OF NUTRITION AND FOOD SCIENCE

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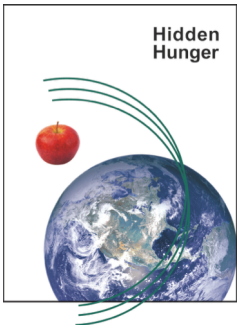

Report on the 3rd Congress Hidden Hunger

Introduction

The 3rd International Congress Hidden Hunger: "**Post-2015 Agenda and Sustainable Development Goals: Where are we now? Strategies to improve nutrition quality and combat hidden hunger"** was held in Stuttgart from 20 to 22 March 2017. The global meeting of members belonging to the scientific community, representatives from politics, government and the media as well as members of civil society organizations, advocacy groups and private and public sector bodies, was organized by the Institute of Biological Chemistry and Nutrition of the University of Hohenheim and the Federal Ministry for Economic Cooperation and Development (BMZ). Cooperating partners were the Food Security Center (FSC) of the University of Hohenheim and the Society of Nutrition and Food Science (SNFS).

The 3rd Congress Hidden Hunger was a continuation of the successful, international event series "Congress Hidden Hunger" which started in 2013. At the 1st Congress Hidden Hunger the causes and consequences of hidden hunger as well as possible solutions were discussed. The 2nd Congress Hidden Hunger which was hosted in 2015 addressed the specific problem of hidden hunger during pregnancy and the first years of life. Associated, serious consequences for child development and the increased risk for maternal mortality were also discussed. The considerable and continuous feedback to the first two congresses convinced the organizers to host the 3rd International Congress Hidden Hunger. The "Congress Hidden Hunger" provides an ideal platform for global interactions and network activities, as well as a forum to young scientists and members of small organizations. A characteristic feature of the "Congress Hidden Hunger" is represented by its associated, congress-owned scholarship program which consists of grants of external donors given to young scientists and members of small organizations from developing countries to travel to Germany and participate in the congress. Scholarship applicants must have the aim of supplementing the congress with a PowerPoint or poster presentation of their ideas and projects related to the fight against world famine and hidden hunger.

In March 2017, the 3rd Congress Hidden Hunger considered the question of how far the Post-2015 Agenda and other programs and measures adopted in 2015 to fight against world famine and poverty have already been implemented. To achieve this, political parties and industry representatives as well as representatives of civil society and advocacy groups (NGOs) were invited to take a position. Furthermore, successfully established projects and initiatives - such as the special initiative "One World – No Hunger" of the Federal Ministry for Economic Cooperation and Development (BMZ) - were presented at the congress. Ideas for cooperation and implementation of different measures in the fight against world famine and hidden hunger

were discussed together with young scientists and members of small organizations from developed and developing countries. It was important that all participants presented and discussed the specific objectives of such measures and how they are to be regionally implemented.

Sponsors and exhibitors

The organization of the congress was secured thanks to generous donations from different organizations and institutions mainly belonging to the public sector. All sponsors – both financial and non-financial – should be thanked again at this point. The main non-financial sponsors were the Cuvillier Verlag and Wittwer Uni-Buch Hohenheim. The main financial sponsors were the German Federal Ministry for Economic Cooperation and Development (BMZ) and the German Federal Office for Agriculture and Food (BLE). Donations of no lesser importance which also provided the financial background for the congress were given by the Foundation fiat panis, Sight & Life Foundation, Stiftung GESTE, Robert Bosch Stiftung, German Academic Exchange Service (DAAD), Rotary Distrikt 1820, Sabri Ülker Food Research Foundation, Hohenheim Research Center for Global Food Security and Ecosystems as well as Deutsche Welthungerhilfe e.V.

The scientific program of the congress consisting of speeches, lectures and discussions was complemented by a poster exhibition in which 74 scientific posters from allover the world were presented. Furthermore, it was enriched by an exhibition of NGOs and companies of the civil sector. The following organizations or institutions had an exhibition stand and were represented by information material as well as advice, and finally provided the opportunity to communicate and the basis for knowledge transfer: Shining eyes e.V., Gesund ins Leben – Netzwerk Junge Familie, the Assmann-Stiftung für Prävention, the German Academic Exchange Service (DAAD), the Sight & Life Foundation, Back to Life e.V., the German Federal Ministry for Economic Cooperation and Development (BMZ), the German Federal Office for Agriculture and Food (BLE), the Hohenheim Research Center for Global Food Security and Ecosystems (GFE) together with the Hohenheim Research Center for Health Sciences (FZG) as well as the Food Security Center of the University of Hohenheim (FSC) and the Society of Nutrition and Food Science (SNFS).

Highlights and side events

A parallel event already starting in the week before the 3rd Congress Hidden Hunger took place: the **International DAAD Alumni Expert Seminar "Hidden Hunger"**. There were two German universities which offered one week training seminars related to food security, followed by the visit of the 3rd Congress Hidden Hunger in Stuttgart. On behalf of the German Academic Exchange Service (DAAD), the Centre for International Capacity Development (CICD) at the University of Siegen as well as the Food Security Center (FSC) at the University of Hohenheim conducted this seminar in Giessen and Stuttgart, respectively. The Expert Seminar was organized by DAAD in close cooperation with the Justus Liebig University Giessen (JLU), Center for Development and Environmental Research (ZEU), Institute of Nutritional Sciences and Department of Agricultural and Environmental Policy as well as in close cooperation with the Food Security Center (FSC) at the University of Hohenheim. 50 Alumni out of 29 countries participated in the seminar. The

main objectives were to enhance competence in answering the challenges of the Nutrition – Water – Rural Development – Nexus as well as to prepare German alumni to contribute to the development of measures against hidden hunger using interdisciplinary approaches. Existing strategies to cope with the challenges of hunger and hidden hunger in different parts of the world were compared, analyzed and further developed based on sustainable resource management. All Alumni continued the discussion on strategies to fight hidden hunger with group work focussing on the topics food availability, food security, gender, communication, implementation, indicators, and rural-urban differentiation. They established and strengthened contacts between the participants and German educational institutions, authorities, and enterprises. Each alumni held a short presentation about the topic of hidden hunger in their country. To visualize the results of the seminar the alumni were divided in regional groups to design posters, which were presented at the congress. At the congress, Alumni took actively the chance to involve speakers of the congress in discussions and formulated their views and perspectives developed during the seminars in form of comments to the presentations. During breaks, several spontaneous side events were organized with experts for in-depth discussions and further networking. Following up the congress the alumni got the opportunity to publish their poster contributions in a book edited by the congress organizers.

On the first congress day, a **press conference** moderated by Philip Hedemann, a German journalist and author, was held. The podium consisted of: Thomas Silberhorn – Parliamentary State Secretary of the German Federal Ministry for Economic Cooperation and Development (BMZ), Friedrich Wacker – Head of Directorate "International Cooperation and World Food Affairs" at the German Federal Ministry of Food and Agriculture (BMEL), Stephan Dabbert – President of the University of Hohenheim, Shawn Baker from the Bill & Melinda Gates Foundation, Michael B. Krawinkel from the Justus-Liebig-University Giessen, and Joachim von Braun from the Center for Development Research (ZEF). On the evening of the second congress day, there was a **panel discussion on "Impact and challenges of food fortification"**. Panelists were: Howarth Bouis from HarvestPlus/International Food Policy Research Institute (IFPRI), Rolf Klemm from Helen Keller International (HKI), Michael B. Krawinkel from the Justus-Liebig-University Giessen, and Irwin H. Rosenberg from the Tufts University. Furthermore, the program also consisted of one parallel session per day. On the first congress day a parallel session with the title **"New approaches to monitor dietary intakes and its relation to health"** was hosted by the **Sabri Ülker Food Research Foundation**. This parallel session consisted of three lectures dealing with micronutrient gaps, new technologies for dietary intake assessment and a self-check program given by Hans K. Biesalski from the University of Hohenheim, Mirjana Gurinović from the University of Belgrade, and Burcu Aksoy from the Sabri Ülker Food Research Foundation. The session considered the question of the advances and challenges in novel technological approaches for dietary intake assessment as well as the question of how positive behaviour change can be implemented to improve nutritional status based on dietary assessment. On the second congress day the **Hohenheim Research Center for Global Food Security and Ecosystems (GFE)** hosted a parallel session on **"Transdisciplinary research for food and nutrition security: Chances and challenges"**. This session consisted of a keynote lecture on transdisciplinary methods and approaches given by Andrea Knierim from the University of Hohenheim followed by a panel discussion. Panelists were: Hanns-Christoph Eiden from the German Federal Office for Agriculture and Food (BLE), Irmgard Jordan from the Justus-Liebig-University Giessen, Stineke Oenema from the United Nations System Standing Committee on Nutrition (UNSCN) and Flavio Valente from FIAN International. The session had four main objectives. The first objective was to give an overview on the principles and core characteristics of transdisciplinary research, the

approaches and methods. The second and third objectives were to dialogue on opportunities for practice partners, decision makers and implications for researchers and to showcase examples of multi-actor projects, respectively. Finally, the fourth objective was to foster an exchange of views on how to best implement and encourage participants to engage in transdisciplinary research. The parallel session of the last congress day was entitled **"Rationale for a Public Health Address to Emerging Micronutrients in Hidden Hunger: Vitamin D, Vitamin E, Vitamin K, Essential Fatty Acids, Amino Acids".** It was hosted by the **Sight & Life Foundation** and consisted of four lectures given by Kevin D. Cashman from the University College Cork, Keith P. West from the Johns Hopkins University, Marius Smuts from the North-West University of South Africa, and Shibani Ghosh from the Tufts University. The lectures focussed on the vitamins D, K and E as well as essential fatty acids, proteins, amino acids and "emergent" micronutrients. Findings from population studies of both observational and interventional designs pointing to deficits in dietary intake and/or deficiencies in nutritional status were shared, explored, and discussed. The objectives of this parallel session were to inform and update members of the micronutrient community with scientific bases that point to the greater public health relevance of the above mentioned emerging nutrients as well as to set the bases for advancing consensus around when, how, and for whom more direct action in dietary diversification, food- and bio-fortification, and oral supplementation might become part of the tool-box for international micronutrient programs. All three parallel sessions were well attended and the presentations and discussions were very well received by the participants.

Finally, two additional activities were carried out prior to and during the congress. On the one hand, **students from the University of Hohenheim specializing in Communication Science and Journalism made a film about the topic of Hidden Hunger**. The leaders of the project were Bettina Ditzen and Rainer Bluthardt from the Institute of Communication Science of the University of Hohenheim. The film is shown on the websites of the 3rd Congress Hidden Hunger and YouTube. On the other hand, **the Society of Nutrition and Food Science (SNFS) awarded the three best poster presentations with a prize of up to 300 Euros**. The prizes were awarded to the following posters:
(1) First poster prize:
Authors: Demmler KM, Klasen S, Nzuma JM, Qaim M / Poster Title: "Supermarket purchase contributes to nutrition-related non-communicable diseases in Kenya"
(2) Second poster prize:
Authors: Senger E, Bohlinger B, Esgaib S, Hernández-Cubero LC , Montes JM, Becker K / Poster Title: "Chuta (edible Jatropha curcas L.), the newcomer among underutilized crops: A rich source of vegetable oil and protein for human consumption"
(3) The third poster prize was given to:
Authors: Debela BL, Shively G, Holden S / Poster Title: "Does Ethiopia's productive safety net program improve child nutrition?"

Scientific program and content

The scientific content of the 3rd Congress Hidden Hunger was divided over three days. The speeches and lectures of the first congress day took place under the main topic of **"One world without (hidden) hunger and the roadmap to success"**, the lectures of the second and third congress day under the main topics of

"The science behind the roadmap to combat hidden hunger" and **"Partnerships and NGO research cooperations incl. a special view on field research"**.

The first congress day:

The congress started with a welcome note given by the President of the University of Hohenheim, **Prof. Dr. Stephan Dabbert**. Highlights of the first congress day certainly were the official opening by **Thomas Silberhorn**, the Parliamentary State Secretary of the German Federal Ministry for Economic Cooperation and Development (BMZ) as well as the political speech given by **Friedrich Wacker**, Head of Directorate "International Cooperation and World Food Affairs" at the German Federal Ministry of Food and Agriculture (BMEL). These were followed by a further highlight, the honorary lecture of **S.E. Mme Dominique Ouattara**, First Lady of the République de Côte d'Ivoire, Founder and President of the Foundation "Children of Africa".

Hanns-Christoph Eiden from the German Federal Office for Agriculture and Food (BLE) was the first speaker of the scientific program of the first congress day which took place under the main topic of "One world without (hidden) hunger and the roadmap to success". He gave a speech about **"What does it need to improve nutrition quality? The role of public partners"** in which he emphasized and described the central role of public partners defining them as states, regions supranational and international organisations. He also talked about what is done in Germany and in this context introduced the Federal Center for Nutrition which has been established within the Federal Office for Agriculture and Food in response to growing concerns within the German population and political commitments deriving from the International Conference on Nutrition 2 in 2014 and the adoption of the Sustainable Development Goals in 2016.

Leslie Amoroso from the Food and Agriculture Organization of the United Nations (FAO) provided an analysis of several recent governance initiatives to address malnutrition in all its forms, including hidden hunger problems. The title of her presentation was **"Post-2015 Agenda and Sustainable Development Goals (SDGs): Where are we now? Strategies to improve nutrition quality and combat hidden hunger"**.

This was followed by a lecture of **Joachim von Braun** from the Center for Development Research (ZEF) who talked about **"Economic and political innovation for success in nutrition"**. He discussed the "how to" of nutritional improvement and claimed that sequencing nutrition policy actions needs more attention. He also stated that institutional, economic, and political innovations should accompany and may in some contexts actually need to precede nutrition and public health interventions for effective and sustainable nutritional improvement. Finally, Joachim von Braun considered that more nutrition policy and program implementation research at scale may be helpful.

The lecture of **Shawn Baker** from the Bill & Melinda Gates Foundation about **"Realizing the promise of ending hidden hunger: challenges and future directions"** concluded that all forms of micronutrient malnutrition can be ended by the year 2030 because more knowledge, tools and political will are available nowadays than ever before. Commitment must be translated to action. Firstly, Shawn Baker explained that it is needed to invest in a more timely manner and complete data on the magnitude of the problem and

coverage of interventions to better design programs, ensure constant improvement, and build national and global accountability. Secondly, it is needed to invest in the optimal deployment of the tools at hand including large-scale food fortification, supplementation, breeding plants for increased nutrients and promoting dietary diversity. Thirdly, consistent investment in research is needed that is rapidly translated into programmatic guidance to support implementation. Fourthly, it is needed to continue to build the political will to drive the multi-sectoral action required to end hidden hunger which is the most important point. Shawn Baker summarized that programs to end hidden hunger are almost 100 years old: Iodization of salt started in Europe in the early 1920s followed soon after by the US. Vitamin A fortification started as early as the 1930s in Denmark. Mandatory fortification of wheat flour with iron and folic acid started in the US in 1942. It is unacceptable that a problem affecting the lives and futures of 2 billion people across the world, with known solutions is still awaiting the political will for global scale up. Shawn Baker made a strong statement for moving the dial to end hidden hunger starting with relatively modest investments in these proven solutions. Such actions will help put countries on an upward trajectory, resulting in returns many times over the investment.

Beate Weiskopf from the German Initiative on Sustainable Cocoa (GISCO) talked about **"Nutrition and living conditions of smallholder cocoa farmers in Côte d'Ivoire – opportunities for improvement by the project PRO-PLANTEURS"**. She presented GISCO which has the aim to improve living conditions for cocoa farmers and their families as well as to increase production and commercialization of sustainable cocoa. She also presented the project PRO-PLANTEURS which aims to professionalize 20,000 cocoa-producing small farm enterprises and their organizations in the eastern and south-eastern region of Côte d'Ivoire. Project activities support rural families in increasing their incomes and improving their nutrition.

"Without land, no crops - and without diversity, no healthy and sustainable diets" was the title of the lecture given by **Mathias Mogge** from the Welthungerhilfe e.V. which highlighted that arable land becomes increasingly scarce due to climate change and the overexploitation of resources at a global and local level. The growing demand for agricultural goods leads to an even greater pressure on land. The majority of land deals to date have occurred in those countries that experience higher levels of hunger and where the population and national incomes depend heavily on agriculture. Examples from the work of the Welthungerhilfe and partner organisations illustrate how insecure access to land and a shrinking agrobiodiversity particularly threaten the food and nutrition security of small holders. Inclusive and integrated approaches which address these challenges on a technical as well as on a political level are examples on how programs can contribute to healthy and sustainable diets while at the same time improving the livelihoods of small holders. Mathias Mogge concluded that to ensure sustainable change, those groups which are most affected by malnutrition need to be enabled to participate in the design and implementation of policies and programs that affect their lives and hold their governments to account.

Claudia Warning from Brot für die Welt focused on the topic of **"Hidden Hunger – a challenge for international development cooperation"** and gave an overview of the abuses related to the big trouble with hunger and hidden hunger. There are not only 800 million people going to bed hungry every day, there are also 2 billion people who suffer from hidden hunger, lacking valuable micronutrients like vitamins, zinc or iron. They are more often ill, too weak to work in the fields or to go to school. Of these people 80% live in rural areas and 70% are women. 26% of children under five are stunted, up to 500 million go blind because

of vitamin A deficiency and 3 million children die every year as a consequence of hidden hunger. The causes of hidden hunger are as diverse as the consequences: cultivating monocultures depletes soils of nutrients; people in poverty want to fill their stomachs before they worry about a balanced diet. The quality of food is subordinated to its quantity and many women and men never learn about the importance of healthy nutrition or their right to it. Women are still disadvantaged, even though they are the ones who are responsible for tilling the fields, cooking and child rearing. This shows the challenges which are posed on sustainable development and thus, on international development cooperation. The Sustainable Development Goals (SDG) take up these challenges and provide a framework for tackling them. Although SDG 2 "End hunger, achieve food security and improved nutrition and promote sustainable agriculture" is the most prominent goal in relation to hidden hunger, most of the other goals are related to it as they are either a prerequisite or an outcome of the action against hidden hunger. Finally, Claudia Warning presented the organization Brot für die Welt which sets out six focal sectors in its strategic framework. All of them can be linked to the SDGs. All of them tackle, either directly or indirectly, causes and consequences of hidden hunger.

Channing Arndt from IFPRI/DSG talked about **"Effects of Food Price Shocks on Child Malnutrition: The Mozambican Experience 2008/09"** and presented a propitiously timed household survey carried out in Mozambique over the period 2008/09 to study the relationship between shifts in food prices and child nutrition status in a low income setting. The conclusion of the study was that the best available evidence points to food penury, driven by the food and fuel price crisis combined with a short agricultural production year, as substantially increasing malnutrition amongst under-five children in Mozambique.

Klaus von Grebmer from the International Food Policy Research Institute (IFPRI) gave an update on the achievements of Compact2025 – an initiative for ending hunger and undernutrition by 2025 – with a special focus on four countries Rwanda, Ethiopia, Bangladesh, and Malawi. The title of is lecture was **"Accelerating the elimination of hunger and undernutrition: Status report on Compact2025".** Compact2025 will bring stakeholders together to set priorities, innovate and learn, fine-tune actions, build on successes, and synthesize sharable lessons in order to accelerate progress. By building a knowledge base and promoting innovation, it will help countries develop, scale up, and communicate policies and programs for the biggest impacts. In so doing, it will help weed out ineffective or inefficient policies and prevent duplication of effort.

As at the last Congress Hidden Hunger, **Matin Qaim** from the Georg-August-University of Goettingen could also be welcomed again as a speaker who this time gave a lecture with the title **"On the link between production diversity and dietary quality in smallholder farm households**". He discussed under what conditions a positive association between production and consumption diversity can be expected and in what situations factors other than on-farm diversity may have a more important role in improving diets in smallholder farm households. As many of the poor and undernourished people are smallholder farmers, diversifying production on these smallholder farms is widely perceived as a useful approach to improve dietary diversity. Matin Qaim concluded that the analysis of data from various countries in Africa and Asia shows that on-farm production diversity is positively associated with dietary quality and diversity in some situations, but not in all. When production diversity is already high, the association is not significant or even turns negative, because households with too diversified farm production forego potential income gains from specialization. Analysis of other factors reveals that market access has positive effects on dietary quality,

which are larger than those of increased production diversity. Market transactions also tend to reduce the role of farm diversity for household nutrition. These results suggest that increasing on-farm diversity is not always the most effective way to improve dietary quality in smallholder households and should not be considered a goal in itself. The findings are robust to changes in the way production diversity and dietary quality are measured.

Michael B. Krawinkel from the Justus-Liebig-University Giessen who also belongs to the traditional speakers of the congress series talked about **"Sustainability of interventions against micronutrient deficiency"**. He gave an overview about what happened since 1999 and how sustainability can be achieved. Micronutrient deficiencies, here especially vitamin A, iron, and iodine, have been addressed with huge programs focussed on supplementation and fortification; some million dollars have been invested in agronomic or bio-fortification Very little has been done in regard to intervention research, and increasing dietary diversity towards provision of micronutrients through better diets. Michael B. Krawinkel explored the question "Why intervention research?" and stated that the effect of providing a vitamin supplement to somebody with vitamin deficiency is obvious – but the costs of providing a supplement to somebody living in a remote and eventually insecure area are to be studied locally only, and to cover these costs in a sustainable manner has never been rigorously addressed. One big challenge of increasing dietary diversity is that the efforts required for this intervention are training, education, and guidance – all coming along with a financial burden to states and societies rather than an opportunity for making financial profits for private stakeholders. He concluded that sustainability requires an approach to micronutrient deficiencies which transforms the perspective from a single-nutrient focussed rather medical or pharmaceutical perspective to a broader view based on the right to food, to food souvereignty, and to self-reliance.

The last speaker of the first congress day was **Keith P. West** from Johns Hopkins Bloomberg School of Public Health. He talked about **"Micronutrient Deficiencies in Pregnancy Worldwide: Health Effects and Prevention"**. After he had given an overview of worldwide micronutrient deficiencies which are deemed endemic he recorded in a summary that research frontiers include advancing micronutrient deficiency assessment, testing dietary, fortification and new supplement strategies, and following cohorts of offspring for later life-stage effects on health. Micronutrient deficiencies co-exist across all life stages, although health risks appear most consequential in children and women of reproductive age. In low income countries, prevalence estimates of single or combined micronutrient deficiencies during pregnancy are sparse, incomplete and vary widely by nutrient, signaling a global need for valid, affordable, reliable multiplex assays to assess and evaluate this complex nutritional burden. Mechanisms are known by which adequate micronutrients may help establish and maintain a healthy mammalian pregnancy, lower risk of adverse outcomes, and foster development of offspring. However, in populations, much work remains to be done.

A **Come-Together-Evening** closed the first congress day. The congress organizers invited all participants to celebrate together. This social evening provided a good opportunity of getting to know each other, networking, sharing experiences and exchanging practice as well as gathering ideas for future cooperations and conducting detailed discussions in a festive atmosphere.

The second congress day:

The second congress day took place under the main topic of "The science behind the roadmap to combat hidden hunger". The opening lecture was given by **Robert E. Black** from the Institute for International Programs, Bloomberg School of Public Health at the Johns Hopkins University. The title was **"Interventions to Reduce Malnutrition"**. Robert E. Black focused on stunting and wasting as well as their degree which is the most common characteristic of malnutrition, specifically undernutrition, in children in developing countries. Stunting of linear growth, a highly prevalent problem in children of low- and middle-income countries, is the result of exposures of the fetus and/or infant to nutritional deficiencies and infectious diseases. Wasting, too low weight for the child's height, remains a problem in sub-Saharan Africa and South Asia and is considered the result of the effects of nutritional deprivation and serious infectious diseases resulting in weight loss or failure to gain weight in a short period. Maternal undernutrition results in fetal growth restriction and infectious diseases in pregnancy can result in preterm delivery both contributing to stunting in early childhood. Robert E. Black explained the reasons for adverse effects on growth as well as improvements in birth outcomes that position the newborn for healthier growth. It is likely that a combination of interventions, including control of infections and improvements in nutrition during the 1,000-day-window, is needed to reduce both stunting and wasting. Finally, more evidence is needed.

The opening lecture of Robert E. Black was followed by a keynote lecture entitled **"Making Food Systems Work Harder for Improved Diets"** which was given by **Lawrence Haddad** from the Global Alliance for Improved Nutrition (GAIN*)*. He talked about and questioned food systems which are seen as important drivers of economic growth, but also as important drivers of an accelerated reduction in malnutrition in all its forms. The presentation highlighted some of the options policymakers have and made the case why they have to act now.

Moreover, the main program of the second congress day consisted of seven further keynote presentations. Ten lectures were also given by free presenters who got a scholarship which had allowed them to travel to Germany and participate in the congress. All these presentations were assigned to different symposia addressing different issues under different headings.

Symposium 1 with the title "Combating hidden hunger" included the lecture about **"Reducing Mineral and Vitamin Deficiencies Through Biofortification: Progress Under HarvestPlus"** given by **Howarth Bouis** from HarvestPlus. He explained the business of HarvestPlus and hereby the history of biofortification and biofortified crops. He stated that shortly it has been proven that biofortification works. Now, the final and major challenge is to mainstream biofortification into the fabric of "business-as-usual" of a range of organizations – public and private agricultural research, institutions that focus on bringing improved agricultural technologies to farmers including multi-lateral lending institutions, private companies, non-governmental organizations, and the policies and programs of national governments, regional organizations, and UN agencies. Howarth Bouis further explained that the vision of HarvestPlus is that the quality of food staples globally will be continuously improved as a matter of routine, not just with iron, zinc, and provitamin A, but eventually with additional minerals, vitamins, and compounds as well. Not only do crop yields need to be increased to feed a growing population under serious land and water constraints in the context of climate change, but to nourish these populations properly, the density of minerals, vitamins, and other compounds in

crops needs to be increased. He concluded that the science is there to accomplish all this quite cost-effectively, if the investments are made now. HarvestPlus intends to provide leadership in this effort over the next decade in one of the largest nutrition interventions ever undertaken.

The topic of **"Home Fortification with Micronutrient Powder: Challenges and Opportunities for Combating Hidden Hunger"** was the focus of the presentation of **Haribondhu Sarma** from the International Centre for Diarrheal Disease Research. It also took place within Symposium 1. Haribondhu Sarma explained that home fortification with micronutrient powders has been recognized as an effective approach related to the major public health challenge in many low-income countries in recent years. He presented his systematic review focusing on the implementation related challenges and the opportunities of home fortification with micronutrient powders programme in different low-income countries, based on two studies.

The last presentation of Symposium 1 was given by **Jack Winkler** from the London Metropolitan University about **"The most hidden of all the hidden hungers"**. According to Jack Winkler`s investigations, the accumulated scientific evidence demonstrates that the long-chain polyunsaturated fatty acids, EPA and DHA, are beneficial for health – for mind as well as body, for building capacities as well as preventing diseases. Of 33,000 published articles, 83% show positive results. Jack Winkler stated that most people of the world eat less of long-chain polyunsaturated fatty acids and considered the question "What can be done to ensure people get sufficient – or at least more than they are at present. He concluded that in sum the science is positive, practical action is progressing and finally, a place among the political priorities is needed.

Symposium 2 on "Supplementation" included a lecture of **Noel W. Solomons** from the Center for Studies of Sensory Impairment, Aging and Metabolism (CeSSIAM) about "**Trace element interventions - Public health interventions meet evolutionary biology: Examples from iron and zinc"**. The diet available to and selected by humans has been the major determinant of nutrition throughout evolution. Public health surveys can inform us as to the extent of deficiencies in a population. Noel W. Solomons reported that public health interventions can either take positive advantage of this biology or run afoul of it depending on their design and implementation. This can be usefully exemplified for the essential trace element nutrients: iron and zinc. Noel W. Solomons further explained these two examples and concluded that interventions with iron and zinc must be framed within the context of their intrinsic constraints to achieve certain public health goals and the fact that excessive or acute exposures may have adverse health consequences.

Within **Symposium 3 on "Microbiota and gastrointestinal tract" Tahmeed Ahmed** from the International Centre for Diarrhoeal Disease Research talked about **"Gut microbiota and malnutrition in children"**. He explained acute malnutrition and moderate acute malnutrition which are major causes of death and morbidity among children living in developing countries and affect about 19 million and 57 million under-five children worldwide. Recent evidence suggests a role for gut microbiota in the pathogenesis and the response to treatment of severe acute malnutrition. Tahmeed Ahmed reported on his studies on the gut microbiota of children suffering from severe and moderate acute malnutrition in Bangladesh. The results indicate that severe acute malnutrition is associated with relative immaturity of the gut microbiota amongst others. Thus, the immaturity of the gut microbiota in acute malnutrition may have an important role in metabolic and immunologic perturbations that result in suboptimal response to therapeutic measures. Finally, he talked

about his current studies on ways to improve the gut microbiota of children that can end up in promoting growth.

A further presentation within Symposium 3 was given by **Irwin H. Rosenberg** from Tufts University about **"Environmental Enteric Dysfunction (EED) as a causative factor in Stunting and Wasting Treatment Trials in Africa"**. As the title of his presentation implies Irwin H. Rosenberg explained the relationship between EED and malabsorption. Studies in Bangladesh in the 1970s established that EED was acquired and environmental, and that it was associated with malabsorption. Malabsorption of macronutrients (sugar and fat) and micronutrients (vitamin B12 and folic acid) was observed in stunted children and young adults. Thus, EED has gained renewed interest as stunting and wasting are increasingly observed as a global expression of malnutrition and hidden hunger. Current trials are conducted by the Tufts University's Food Aid Quality Review Team and its collaborators in Sierra Leone to assess best nutritional approaches to treating and preventing wasting or stunting. The research is investigating the prevalence and severity of EED in children treated with supplemental foods fortified with micronutrients and high quality protein in order to assess the implications of EED for responding to nutritional therapy and preventing relapse.

The last and **fourth symposium** of the second congress day dealt with the topic of **"Climate Change"**. Keynote speaker was **Rainer Sauerborn** from the Heidelberg University Institute of Public Health. The title of his presentation was **"Climate change and child under nutrition: hot topic or hot air?"**. He reported that the Intergovernmental Panel on Climate Change (IPCC) estimates that there will be 25 million more stunted children in 2050 due to climate change, compared to a modeled counterfactual world without climate change. This would certainly represent one of the largest climate impacts on human health. However, the evidence base for these projections is weak, as it is based on a set of different unrelated empirical studies the results of which is a climate impact function, which was fed in a climate projection model. Rainer Sauerborn talked about the current research challenge and presented the methodology and results from a study conducted in the rural district of Nouna in Burkina Faso, which for the first time link the major causal links in the change from climate to undernutrition.

The third congress day:

The third congress day which took place under the main topic of "Partnerships and NGO research cooperations incl. a special view on field research" started with an opening lecture of **Rolf Klemm** from Helen Keller International and Johns Hopkins Bloomberg School of Public Health about **"Micronutrient Programs in a Changing Epidemiologic and Programmatic Landscape"**. It considered the implications of a changing epidemiologic and programmatic landscape for vitamin A supplementation and micronutrient powder programs as well as challenges in implementing these programs. The presentation focused on the fact that deficiencies in vitamin A, iron, iodine, zinc and other micronutrients remain widespread in low-income countries despite changes in under-five mortality rates, morbidity patterns and intervention options. Rolf Klemm explained his review of the progress of vitamin A supplementation and micronutrient powder programs, assessment of gaps in data to plan or modify these programs, and assessment of data needed to guide decisions regarding optimal mix, targeting and dose of micronutrient interventions to maximize benefit and minimize risk. After reporting on his results he presented the conclusion of his investigations. In countries with a high prevalence of vitamin A deficiency and high under-five mortality, dedicated health

service delivery platforms for packages of preventive services, including vitamin A supplementation, is needed to reach infants as they turn 6 months and continue covering children twice each year through five years. In these contexts, vitamin A supplementation and other child survival interventions should become part of the national health system's recurrent programming, planning, financing, delivery, and monitoring systems. Program sustainability will depend on quality monitoring and evaluation systems, continued political commitment, and dedicated financial resources even as more visible and politically sensitive health issues compete for priority. With respect to micronutrient powder programs, Rolf Klemm stated that currently few micronutrient powder interventions are informed by a comprehensive landscape of micronutrient status, nutrient gaps, anemia causes, and mapping of key policies and programs, due in part to the lack of available data. Planning, coordination, and audience-specific advocacy for micronutrient powder interventions have been successful when built from an existing platform. Micronutrient powders offer a cost effective and efficacious intervention to prevent anemia in young children, and while initial costs can be borne by external partners, ultimately government financing or subsidized or full cost approaches may be needed. Further research is needed. Finally, the changing epidemiological and program landscape for many micronutrient interventions requires having an updated assessment of population risk of deficiencies, gaps in nutrient intake and other factors (e.g. infectious disease) that may contribute to biochemical deficiency, as well as coverage levels of ongoing interventions and their contribution to micronutrient intake to adjust intervention levels, targeting and intervention mixes.

Also on the second congress day **Lawrence Haddad** from the Global Alliance for Improved Nutrition (GAIN) enriched the 3rd Congress Hidden Hunger with a presentation. This day he talked about **"Business and Nutrition: Why Bother? Some Ways Forward"**. Food businesses are strongly shaping the demand for food and the supply of that food: its quantity, nutritional value, safety and affordability. But business and nutrition are uneasy bedfellows. There is a lot of distrust between communities and not many successful models to emulate. The presentation argued that sticking the head in the sand about business and nutrition does a disservice to those who are malnourished and puts forward some ideas for establishing a more productive relationship between those in public nutrition and those in businesses.

Detlev Grimmelt from Fairtrade Germany/TransFair e.V gave a presentation on **"Empowering Smallholders and Strengthening Rural Communities – the Fairtrade Approach to Combat Hidden Hunger & Poverty"**. He reported that the United Nations' Sustainable Development Goals (UN SDG) global food security and hunger eradication are closely linked to the promotion of sustainable agriculture: "End hunger, achieve food security and improve nutrition and promote sustainable agriculture" (UN SDG, Goal 2). The UN SDG agenda puts a focus on smallholders with the objectives to increase their productivity and their income. Detlev Grimmelt explained the international Fairtrade system which has more than 25 years of practical experience in empowering smallholders, promoting sustainable agriculture and thereby fighting poverty and hunger. Fairtrade works with smallholders in various countries in Africa, Latin America and Asia. These farmers obtain the Fairtrade certification for their production of coffee, bananas, cocoa, cotton, sugar and many other crops. The Fairtrade tools to empower smallholders are set forth in the international Fairtrade standards and are amongst others: (1) Fairtrade Minimum Prices protect smallholders from extreme price fluctuation in global markets. The Fairtrade Premium is paid on top and serves as an additional investment for the farmers' cooperatives and their communities, (2) Strengthening democratic farmers' cooperatives and increase access to loans and global markets, (3) Environmental criteria regulate

the use of pesticides, water management, biodiversity and adaptation to climate change and form the basis for sustainable agriculture and (4) Fairtrade develops and implements a strategy to achieve a living income for small farmers. Companies cooperate with Fairtrade to support smallholders in their supply chains worldwide. Thereby these companies invest in sustainable agriculture and at the same time provide a long-term perspective for the next generation of farmers. The presentation showed the impact of the Fairtrade approach by taking the cooperation with cocoa smallholders in Côte d'Ivoire as an example. Thereby the presentation created a bridge to the congress contributions by the First Lady of the Côte d'Ivoire S.E. Mme Dominique Ouattara and Beate Weiskopf from the German Initiative of Sustainable Cocoa on the first congress day.

"Structural causes of malnutrition and alternative solutions for sustainable food systems" was the topic of a further esteemed speaker, **Sarah Schneider** from the Bischöfliches Hilfswerk MISEREOR e.V.. She declared that the extent of the different forms of malnutrition worldwide – one in three people are affected by undernutrition, micronutrient deficiency and overweight – emphasizes the necessity to question the current food system. Apart from the direct causes of malnutrition, which are related to diet and food security, health status and environment (hygiene and sanitation), the structural causes need to be considered and addressed. They include people's lack of access to natural and productive resources such as land, wages that are too low to support a dignified livelihood, violations of women's rights and insufficient support to local food systems. Industrial agriculture promotes the production of monocultures for export, rather than producing diversified and nutritious food for local consumption. Furthermore, the market expansion of ultra-processed food and sugary drinks to countries of the global South is causing multiple nutrition problems. To address the underlying causes of malnutrition, coherent and cross-sectoral policies need to be developed. The transformation of the current food systems in sustainable ones should follow agro-ecological principles, promoting agro-biodiversity and resilient ecosystems. Solutions should be built from bottom-up and be based on the local knowledge and governance of communities. Product-based interventions may be helpful in specific (emergency) situations, but are not designed to address the structural causes of malnutrition. Therefore, policies are needed which support local food systems in producing healthy and affordable food for all, address social inequities and empower consumers through nutrition education.

Cooperations and cooperatives were the focus of **Paul Armbruster**`s presentation with the title "**The Role of Cooperation to improve Smallholder Livelihoods"**. Since ever subsistence farmers, smallholders and medium farmers have been the backbone for nutrition. Because of the growth of the world populations, all farmers have to produce more for rural and urban regions. The agriculture and food sector has to be modernized and professionalized. This includes smallholders. It has to be ensured that they take part of the added value and increased income. In an economically globalized world farmers, men and women, are forced to act as entrepreneurs. A modern agricultural sector is a pre-condition for social, ecological and economical stability in a country. Paul Armbruster explained that the economic relations and the markets even the local markets for small and medium farmers have changed as a result of globalization. Farmers need access to the markets for inputs (seeds, fertilizer, agro-chemicals etc.), for their products, for financial services (credit, deposits, insurance, payment-systems). He emphasized that cooperation among farmers is essential to take part of added value and higher income. Furthermore, cooperatives and other farmers´ organizations are an important way to reach economies of scale, economies of scope etc. Finally, to have better access to markets through organized cooperation and through strong bargaining power. To be

economically sustainable cooperation needs certain framework conditions as existing successful examples from all over the world show.

Mirjana Gurinović came from the Center of Research Excellence in Nutrition and Metabolism and Institute for Medical Research at University of Belgrade and talked about nutrition research in Central Eastern European countries and Balkan region. The title of her presentation was **"Diet Assess & Plan (DAP) software for dietary intake assessment in supporting public health nutrition research in Central Eastern European Countries (CEEC)"**. The Diet Assess & Plan (DAP) software is one of the elements of the research infrastructures in CEEC compliant to European standards, an innovative advanced dietary assessment software and a platform for standardized food consumption collection, comprehensive dietary intake assessment and nutrition planning. It represents a successful example of standardized and harmonized tools for dietary assessment surveys which is classified as a concurrent tool for large nutrition epidemiology studies not only in CEEC but in wider geographical context.

As a continuation of the series of symposia which started the previous congress day **Sabine Gabrysch** from the Institute of Public Health at Heidelberg University presented **"Food-based approaches to Hidden Hunger: The Food and Agricultural Approaches to Reducing Malnutrition (FAARM) project in Bangladesh"** within **Symposium 5 on "A short trip to Asia"**. Bangladesh suffers from high levels of chronic undernutrition with about a third of children under five years too short for their age. Diets are dominated by rice with little fruit and vegetables, and the limited dietary diversity leads to micronutrient deficiencies. Sabine Gabrysch presented the ongoing FAARM cluster-randomized trial evaluating the impact of an Homestead Food Production program implemented by the NGO Helen Keller International in Sylhet, Bangladesh on undernutrition in women and young children. She also talked about a baseline survey conducted in 2015 involving women who received a training and support in Homestead Food Production over three years Homestead Food Production programs with trainings for small-scale farmers in year-round vegetable and fruit gardening, poultry rearing, as well as nutrition, health and hygiene education have the potential to tackle the problem of chronic undernutrition sustainably.

Marisa Schroth from the Govinda Entwicklungshilfe e.V. gave a lecture about **"Multi-facet approach to fight malnutrition in Nepal"** within **Symposium 5a entitled "Excursion to Nepal"**. She presented Govinda and its work. Since 1998 Govinda supports Nepalese people in need. An orphanage and a school are the main projects that are run with the Nepalese partner association Shangrila. One main goal of the community projects in Makwanpur is to fight malnutrition in the communities. The multifaceted strategy against malnutrition combines agriculture, health care and education. On a field of 2 ha simple agroforestry-livestock system (SALT) is implemented. Local farmers and members of a local women association are trained to practice this diverse farming system which is characterized by high ecological sustainability. In addition to staples the SALT fields deliver many different types of vegetables and the goats kept provide milk and meat. Furthermore, nutritious mid-day meal is provided to the pupils of the local school from the fields. Local people can also get seeds for their own production. A nurse makes health check-ups and monitoring especially for pregnant women and infants. Informal education is provided for adults. In the trainings they learn about hygiene, dietary diversity, breastfeeding, nutrient-sensitive cooking and many other important topics. In 2016, Marisa Schroth won the German Engagement Award of 5,000 Euros in the category audience prize due to the varied and committed voluntary work and the commitment to health

services, and participation in society and education of herself and Govinda.

Besides Symposium 5a, a further **Symposium 5b on "Excursion to India"** took also place. Amongst others, the Welthungerhilfe e.V. was represented by two speakers within this symposium, such as **Nivedita Varshneya** from the Welthungerhilfe in India who talked about **"Linking Agriculture and Natural Resource Management towards Nutrition Security (LANN+) – a nutrition-sensitive multi-sectoral approach"**. At the beginning of her presentation, Nivedita Varshneya explained that the importance of the multisectoral approach in tackling malnutrition is clearly gaining universal consent, backed by empirical data from several countries. The Linking Agriculture and Natural Resource Management towards Nutrition security (LANN+) approach of the Welthungerhilfe is a step in this direction and addresses some of the underlying and basic causes of malnutrition. The approach tackles the issue of hidden hunger through increased diet diversity resulting from increased biodiversity on farm, homestead/nutrition gardens and collection of Neglected and Underutilized plant species (NUS). Food consumed from these sources, in addition to food from markets/government feeding programmes, provides health giving nutrients, which are missing from convenience foods. Based on the rural context of local communities and their dependence on the local natural resources for their food, water, livelihoods, fuel and fodder needs, LANN+ gives precedence to the interaction between communities, the local natural environment and local food systems to improve nutritional outcomes. It promotes sustained behavior change and practices across five core areas/sectors: (1) Agriculture, (2) Natural Resource Management, (3) Water, Sanitation & Hygiene (WASH), (4) Nutrition, and (5) Income Generation Activities (IGA). LANN+ offers an integrated multi-disciplinary, cross-sectoral, low cost, participatory community level approach that addresses the four pillars of food and nutrition security- availability, access, utilization and stability. Since its inception in 2009, Welthungerhilfe has applied LANN+ trainings across various programs in South East Asia, South Asia and Africa. The approach has evolved and adjusted to the particular socio-cultural and political settings and natural environments of different countries. Some examles from India include integration of water, sanitation and hygiene linkages; adoption of integrated farming systems, establishing home gardens, access to Government programmes related to food and nutrition security and using the Participatory Learning and Action (PLA) learning framework.

The second speaker of the Welthungerhilfe e.V. was **Debjeet Sarangi** from Living Farms, an Indian NGO. The title of his presentation was **"Uncultivated forest foods as rich sources of micro nutrients"**. He explained that forests and tree-based systems continue to play an important role in the lives of local communities by complementing agricultural production and contributing to dietary diversity. In this way, the uncultivated and wild foods support a shift away from calorific intake as the primary metric for food security, and towards nutritionally balanced diets. However, there has been an alarming degree of shrinking of farm level crop diversity and of the availability of forest foods – both in terms of quantity and diversity. In view of this, Living Farms conducted an exploratory study in indigenous communities in Odisha in 2013 to examine forests as food producing habitats and its potential to meet the food and nutritional needs of local forest-dependent villages, and the nutritional changes brought about by shifts in forest use pattern. A cross-sectional design was adopted for the study to record and analyse the collection and consumption of uncultivated foods by entire households by selecting a one-third-sample population in the chosen study villages. The findings show that wild foods gathered from the forest play a vital role in terms of micro-nutrients. They constitute almost 20 percent of the total cooked food consumed by the households. However,

the mainstream food and nutrition security discourse does not acknowledge the importance and critical role of uncultivated foods to address micro nutrient deficiencies. In 2016, as a follow-up, Living Farms and the Centre for Interdisciplinary Studies (CIS) in Kolkata realized an action development research on the role of the forest structure and biodiversity in the supply of food and nutrients, to assess the diversity and quantity of food items from forests under two contrasting governance regimes. The research examined the effect of the governance regimes under Community Forest Management (entirely managed by the user community), Joint Forest Management (co-managed by the community and the State Forest Department), and Reserve Forest (exclusively by the Forest Department) on the diversity and quantity of food flow into the user community and the total carbohydrates, edible protein, total fat and vitamins available in the forest food items were assessed. Debjeet Sarangi presented primary research findings and addressed the challenge of power imbalance which traditionally exists between conventional science/scientists and local communities. Finally, he presented how action oriented research can be realized in real partnership between NGOs, research institutions and local communities and how the evidence is used to strengthen the voices and effectiveness of forest communities in the governance of forestry programs.

Ravinder K. Soni from the Dayanand Medical College and Hospital explained **"The Nutrition Paradox in India: The coexistence of undernutrition and overnutrition"** within Symposium 5b and gave an interesting insight into a compounding dilemma: Undernutrition and overnutrition pose a significant challenge in many developing countries, including India. While one of the Millennium Development Goals (MDG) was to eradicate poverty and hunger by 2015, leaving health service workers are called upon to solve both undernutrition and overnutrition concurrently which both are linked with a range of adverse health conditions. The underweights are susceptible to poor maternal and infant health as well as childhood growth problems and compromised mental development whereas obese people are associated with chronic diseases as stroke, hypertension, cardiovascular diseases, type-2 diabetes, and certain form of cancer. Ravinder K. Soni summarized: that The National Family Health Survey (NFHS) is a large scale survey conducted in India which provides data on population, health and nutrition and that four rounds of the surveys have been conducted NFHS-1 (1992-93), NFHS-2 (1998-99), NHFS-3 (2005-06) and NFHS-4 (2015-16). Together with his team he analyzed the NFHS data to examine and compare the problem of undernutrition and overnutrition along with reviewing other studies. The prevalence of child undernutrition was 60% in 1990 which came to 40% in 2011. India still continues to have a larger share of stunted, underweight and wasted children. The underweight rate was about 52% in 1992-93 and declined to 47% in 1998-99 and remained nearly almost same (46%) in 2005-06. On the other hand, overnutrition is also becoming a major public health problem over the past several decades. Studies have shown an increase in the overweight in children and adult over the past two decades especially.

Monika Golembiewski, **Silvia Golembiewski**, and **Caroline Stiller** from Shining eyes e.V. – a non-governmental organization which has the objective to support people in India in their endeavor at independence also with the help of sustainable projects such as the building of solar installations, the organization of food programs and a small bakery – presented **"Community based nutrition programs for children aged 6-36 months and pregnant & lactating women to decrease anaemia and stunting prevalences in Bolpur, West Bengal, India"**. They talked about the work of Shining eyes e.V. and a study on "Nutrient dense supplemental meals with and without micronutrient sprinkles or micronutrient-rich leaf powder (Moringa/Amaranthus) to reduce the prevalence of anaemia in children living in Birbhum District,

West Bengal, India" which compares the effectiveness of three types of community based nutrition programs to decrease anaemia amongst Santal Adivasi children aged 6 to 36 months. First findings of this study were presented. The presentation of the three ladies also explained that Shining eyes e.V. initiated an awareness and kitchen garden program to help the families becoming independent with regard to feeding their children with micronutrient dense foods.

In West Bengal, India, **Rolf Bucher** and his wife have been working with the Santals, one of the largest groups of indigenous people (aka Adivasis) in the Indian subcontinent. In the past, Santals used to be hunter-gatherers. Nowadays they are rice farmers, work as farmhands or day labourers and live in small rural communities of 30-100 families. The highly interesting presentation of Rolf Bucher with the title **"Working with Santal Villagers, West Bengal, India: Moringa and Kitchen Gardens to combat malnutrition"** provided impressive insights into the selfless, valuable and hard work of Rolf and Anne Bucher directly on site as well as into the lives of the Santals. Their staple food consists of white rice plus potatoes and lentils. Hidden hunger and malnutrition can be found in all villages. Children below the age of five, pregnant women and young mothers are especially vulnerable because of chronic iron deficiency. Growing ones own vegetables in a kitchen garden is not widespread in that area so the Kitchen-Garden-Programme with its focus on vegetables has been a valuable opportunity to ameliorate the Santal diet. In November 2012, Anne and Rolf were asked by Doctor Monika Golembiewski to participate in her development project "Shining Eyes e.V.", which has been providing medical care as well as health and nutrition programs in Bolpur and the surrounding Santal villages. The Kitchen-Garden-Programme began at four Santal communities with just one or two Kitchen gardens per village. During their ten visits since the start of the project Anne and Rolf spent a total of 12 months with the Santals. Today, the picture is a different one: In 12 villages, about 60-90% of the Santal families now have their own kitchen gardens. Additionally, Anne and Rolf have also been promoting the planting and harvesting of Moringa trees. High-quality Moringa powder is needed for the nutrition programmes of "Shining Eyes". The presentation showed the development of both projects.

Finally, the last congress day was finished with **Symposium 6 on "A short trip to Africa"** which included three final presentations. One of the presenters was **Tounaba Belem** from ProgettoMondo Mlal – an Italian non-governmental organization – who presented highly interesting activities of this organization and their results in promoting good practices in infant and young child feeding and community management of acute malnutrition at community level in Burkina Faso. The title of his presentation was **"Nutrition Educational Cells (NEC), a community based approach to fight against child undernutrition and strength community resilience, in rural area in Burkina Faso"**.

The other two presenters were **Claudia Hensel** from the University of Applied Sciences Mainz who talked about **"Students fight hidden hunger in Zambia - A mulitlevel approach to establish Enset - The tree against hunger"** and **Daniel Knoblauch** from Enactus Aachen e.V. who gave a presentation about **"Samaki – An innovative approach to farm fish in rural Africa"**. The presentations explained two interesting ideas and projects to fight against micronutrient deficiency. In 2016, Claudia Hensel and Daniel Knoblauch together with their teams had won a 10,000-Euros-prize in the competition "Students4Kids – Gemeinsam gegen Hidden Hunger" of the Assmann-Stiftung für Prävention. That prize was assigned to promote their projects.

Summary and concluding remarks

The main program of the 3rd International Congress Hidden Hunger consisted of several political speeches and a series of scientific lectures given by renowned politicians, experts and young scientists. The congress organizers look back on a very successful and multifaceted, international three-day event of rich and diversified contents. There were 45 keynote presentations and 10 free presentations. A total of 327 participants from 5 continents and in total 54 different countries joined the congress. Via the congress-owned scholarship program, grants could be given to 10 scientists from Africa and Asia to enable them to travel to Germany and to participate in the congress. According to several feedbacks especially from the scientific community to the congress organizers, the “Congress Hidden Hunger” has now become a trademark and is regarded as being one of the most important events on the issue of hunger and hidden hunger.

On the last congress day, closing remarks of the congress chair **Hans K. Biesalski** included a thanksgiving on behalf of the University of Hohenheim, the Advisory Board and the organizing team to everyone for joining the congress as well as for everyones attention and the lively discussions on the topic of the "Post-2015 Agenda and Sustainable Development Goals: Where are we now? Strategies to improve nutrition quality and combat hidden hunger". The 4th Congress Hidden Hunger was announced for March 2019.

Speeches, lectures and abstracts as well as further information can be downloaded at the congress website www.hiddenhunger.uni-hohenheim.de

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