

REPORT 2012

Nestlé Foundation

for the study of problems of nutrition in the world



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FOCUSED AND GLOBAL – THE FOUNDATION FOR THE STUDY OF THE PROBLEMS OF NUTRITION IN THE WORLD

HIGH-IMPACT – RESEARCH PROJECTS TO REDUCE MALNUTRITION

INNOVATIVE – FOR SUCCESS

CAPACITY BUILDING – AS A BASIS FOR IMPROVEMENT

SUSTAINABILITY – A KEY MISSION

ENDURABLE NUTRITION – THE PRESCRIPTION FOR SUCCESS

PUBLIC HEALTH – ORIENTATED

EVIDENCE-BASED – PROACTIVITY

THE FOUNDATION AT A GLANCE

PARTNERSHIP – FOR LONG-TERM SUCCESS

SOLUTION – ORIENTED ACTION RESEARCH

enLINK-ing FOR A BETTER WORLD



CAPACITY BUILDING



enLINK-ing FOR A BETTER WORLD



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PRESIDENT'S MESSAGE

One of the components of research projects considered as mandatory for funding by the Foundation is the capacity-building component of the project. All projects funded in 2012 and the years before contribute somehow to capacity building: either through training of members of the research team or by education of the mothers or professionals contributing to improve nutrition in a target population. Moreover, we most often fund projects for which the main applicant works and lives in the country where the project is carried out, or where the main researcher returns after training abroad. By imposing this priority, the Foundation intends to contribute to the fight against "brain drain", which means the migration of highly trained people from a developing to a developed country. The International Organisation of Migration estimates (1) that since 1990 Africa has lost over 20,000 professionals each year and that over 300,000 professionals reside outside of

Africa. Training a doctor in Kenya costs 40,000 USD and for a University student the costs are estimated at 15,000 USD, which means an enormous loss for these countries. In many African countries the departure of health professionals has eroded the ability of medical and social services to deliver even basic health and social needs and many countries fall below the WHO standard of 20 physicians per 100,000 people.

Recognizing the importance of the problem, which is addressed by several contributions in this year's report, what can be done about it? According to the global code of practice regarding the international recruitment of health personnel of the WHO, which is mentioned in the contribution of Samia Hurst (p 42), it is recognized that many rich countries do not train enough health personnel to cover their need. There is no valuable reason for that and slowly certain governments are becoming concerned

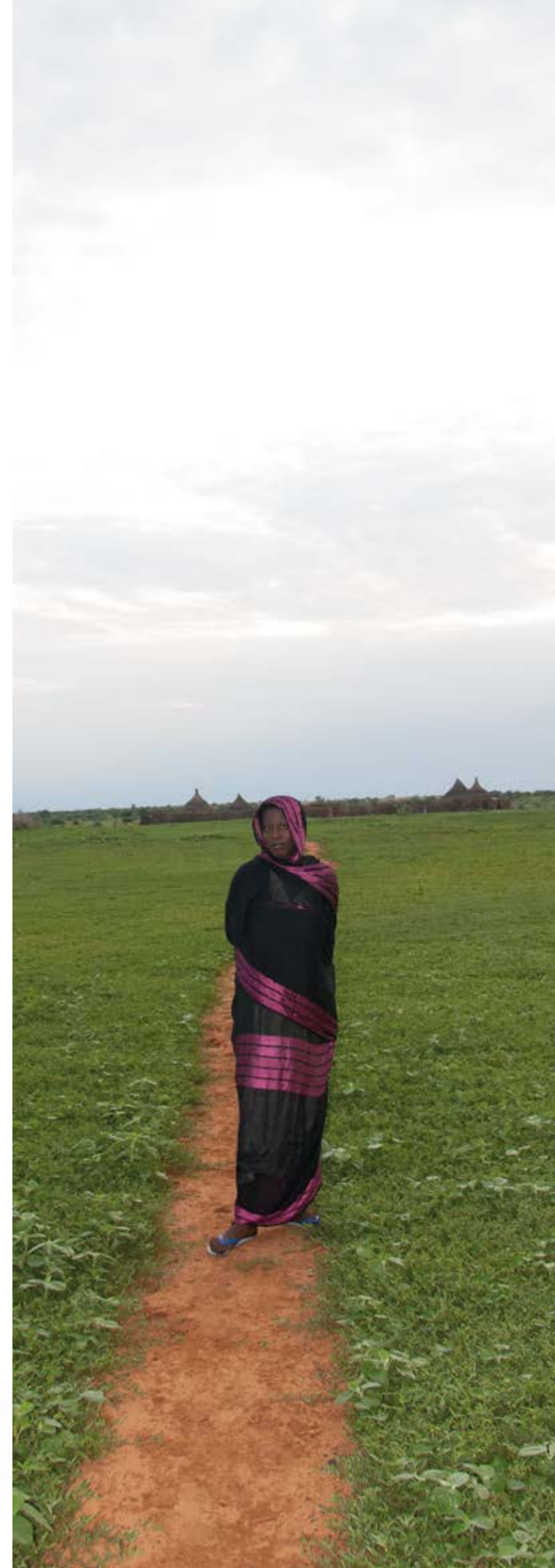
by the problem. Furthermore it is important that young scientists coming back to their home country find role models capable of motivating them to stay. Anna Larrey, president elect of the International Union of Nutritional Sciences, who has also contributed to this report (p 32) is certainly such a role model and the account of three young scientists (p 34) shows that programs including training partly abroad and partly in the home country can be very successful. It is the return of these people who help the Universities to build a staff to train their students (p 36). Finally, as Prof. Sangakkara emphasises (p 40), training programs in nutritional sciences should provide knowledge of the problems of developing countries. Providing knowledge which can be used only in a developed country is certainly not motivating to go back.

An interesting initiative is the idea to mobilize the African Diaspora for virtual participation in the development of Africa (1). Virtual participation sees the brain drain not as a loss, but rather as a potential gain in the sense that highly skilled expatriates are seen as a pool of potentially useful human resources for the country of origin: the challenge is to mobilize these brains. There are already encouraging examples: in Canada the Association for Higher Education and Development is a Diaspora group active in defining a role for the African Diaspora in Africa's capacity-building effort. Although the risk of brain drain is real, international exchanges of health personnel contribute enormously to the quality of training, not only from developing to developed countries, but also in the opposite direction. Arrangements encouraging the return to the country of origin can be part of the training agreement, and the return facilitated by continuing help in supervision for research projects. Such arrangements are part of some of the projects supported by the Foundation.

Not to be forgotten is the very important role of women's schooling and literacy in promoting the health of children and families, as described by Robert LeVine (p 44). In countries in which schooling of girls is not accessible to all it is not enough to train health personnel in adequate numbers. The promotion of literacy for the whole population must be part of the action. Mothers' school attainment in particular has been found to be one of the best predictors of child survival and health in the developing world. Since problems in nutrition are still major contributors to child morbidity and mortality in developing countries, every effort to improve the mothers' understanding of the nutritional needs of her child in a research project is supported by the Foundation.

Taken together, we hope that our request to integrate a capacity-building component in each research project contributes somehow to the fight against brain drain, not the least by the empowerment of the local research teams.

Susanne Suter
Susanne Suter





One of the Foundation's main aims is the transfer of scientific and technological knowledge to low-income countries. The Foundation advances nutritional science both by supporting nutrition research projects in established institutes and universities and by giving focused support to existing nutrition schools and educational programs. To further fulfil the mandate of the Council and also encourage sustainable improvement in nutrition, a proactive, strategic area of activities was introduced in 2003: The enLINK Initiative.

PROJECTS INITIATED BY THE FOUNDATION

THE enLINK INITIATIVE

- Promotion of specific research questions
- The enLINK digital library
- The enLINK hard-copy service
- Small mobile enLINK library trunk in English & French & Spanish
- The large enLINK library trunk



Vision without implementation
is hallucination.

Anonymous

THE enLINK INITIATIVE

Sustainability and public-health relevance are key issues for all activities of the Foundation. Research projects need to result in a short- and long-term public-health implementation. Knowledge and know-how have to be sustainable at all levels of the population.

The vast experience of the Foundation's Council members as well as the Foundation's past activities led to the creation of the **enLINK Initiative**, a project which illustrates the proactivity of the Foundation regarding its core issues.

This initiative focuses on information transfer in the area of nutrition and malnutrition as well as on the resolution of specific research questions and their implementation at the public-health level. The core competence and activity of the Foundation is the support of nutrition research in low-income countries. The **enLINK initiative** is an add-on to our key activities to improve the research capacity.

The name enLINK comes from the old English verb "**to enlink**", meaning "**to chain together**" or "**to connect, as by links**". The analysis of the semantic relations of "enlink" reveals related words which illustrate our central concepts and aims: to connect, to join, to associate, to unite, to tie, to conjoin.

Our mission is to link and join cultures; to associate and conjoin institutions and people locally to study and diminish the problems of malnutrition globally.

Malnutrition can only be solved by "enlinking" – connecting – different strategies and approaches. Malnutrition has to be addressed universally by joint strategies which address many levels, looking at the level of medical issues (such as infection) and hygiene (such as water quality), proposing changes at the level of agriculture as well as in the society at large, and, last but not least, working to improve the level of education and information.

The enLINK Initiative has four main levels:

1. **e**xploration in **n**utrition, which represents the research level
2. **e**ducation in **n**utrition, targeting populations such as researchers, medical doctors, or health care workers, or the general population or specific population groups such as women
3. **e**lectronic **n**utrition
4. **e**ndurable **n**utrition

The elucidation of the high bioavailability of provitamin A from spirulina algae has been studied and now efficacy and effectiveness studies are ongoing. The digital **enLINK** library is currently offering free full-text access to key nutrition journals and more than 30 e-books. The library is accessible free of charge to registered users who all receive a personal password – registration is also free as long as the applicant comes from a low-income country. The library will be updated and adapted to specific needs and in response to user feedback. Evidence and content which make it into textbooks are usually more practice-related than the research knowledge from latest findings which is published in research journals. Therefore the weight of the library lies more in the e-textbook section to assure a good basic knowledge transfer.

During 2012 different new preliminary projects in the field of e-learning and information transfer by new technologies have been evaluated. Despite all the advances in information technology, books and printed materials will remain indispensable. Therefore the small and large orange **enLINK** library trunks will remain a key activity for capacity building. During the reporting period, small and large trunks were sent to different institutions in Africa.



THE enLINK CIRCLE:

Should we all retire?

It is never too late or too early for implementation

Last fall we asked a recently retired Professor of Nutrition what he will be doing during his new period of life. "I will try to implement some of the findings from my studies. Even study results which I generated 20 years ago are not yet implemented". A rather surprising and somehow depressing, but also embarrassing answer. Nevertheless his aim is noble and should be applauded - better find the ultimate meaning of his work later in life than never. As we all know, the implementation of knowledge for the improvement of the problems of nutrition in the world has been one of the first and foremost aims and principles of the Foundation during the past 50 years. Back to basics, as we used to say: Why wait till retirement? Every day is a new day and we have to catch every and any opportunity to improve the world and improve the nutriture and health of women and children globally, but especially in low-income countries.

Without proper nutrition and food there is no development, health and life satisfaction. The Right to Food was formulated nearly 70 years ago and is anchored in the Universal Declaration of Human Rights. Despite the imminent and uncontroversial importance of the Right to Food, the Declaration is non-binding. As we all know, the implementation of this basic right is still rather poor (more than 600 million human beings suffer from hunger on a daily basis) and in some areas of the world even deteriorating. As recently outlined (1), to implement this basic right the tasks of right-holders and duty-bearers have to be remembered. Each one of them has a clear implementation assignment. What needs to be implemented? It is the present

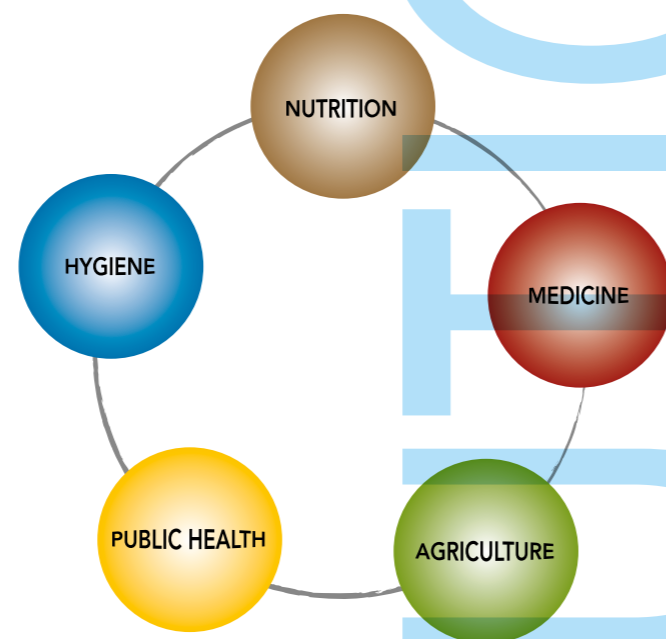


Figure 1: The enLINK circle: The five central fields of intervention for the control of malnutrition, hunger and poverty

knowledge in nutrition, medicine, hygiene, public health, agriculture and other "you name the fields", which needs to be implemented. It can be assumed that if only 50% of the present knowledge in these fields would be implemented the world would be much better off - we would in fact hardly face any malnutrition.

Unfortunately the Declaration of the Right to Food is non-binding and thus only insufficiently implemented. The global disparity of implementation is an unfortunate fact and it is time to globalize the implementation of our know-how. The basis for a

reduction of malnutrition and hunger is that the Right to Food will become a legally binding issue for all, both right-holders and duty-bearers (2).

Implementation of the right to food can be compared to a "supply chain" of capacities and know-how, as also reflected in the enLINK circle which corresponds actually to the modern concept of "food systems". If one link of the chain is dysfunctional, implementation cannot take place or will not be successful and/or not sustainable. In emergency settings the right to food is implemented by food assistance and food aid - an uncontroversial principle. However, in non-emergency settings, which are the rule, the implementation of the Right to Food has to go in the direction of the "right to feed oneself" with normal food (1), i.e. being able to produce and/or buy adequate food. To implement "the feed-onself strategy", specific capacities of the right-holders are needed or have to be acquired when lacking. In agreement with the enLINK circle, and as outlined in the United Nations Human Rights Fact Sheet No 34, the Right to Food is linked to other human rights, such as the human right to health, education, and last but not least the right to information (2). The right to information "enables individuals to know about food and nutrition, markets and the allocation of resources" (2). Access to knowledge and information and being able to apply the knowledge as well as understand interrelationships represents the basic requirement of successful implementation. It is not enough if only the program director - or the professor in a laboratory - understands the importance of his or her research results. To implement a concept or an idea all need a minimal level of understanding of the problem and the solution. This understanding can only be acquired by educational means and access to information as well as the ability to communicate. Not surprisingly, during the last few years

"implementation research" has become an emerging field of research. The word implementation stems from the Latin word "implementare", which means "to put in practice" or "to realize". Less known is the meaning "to enforce" (3). A basic right such as the Right to Food has to be enforced; however, for this a strong political will of all parties is needed. Further, it is not enough to enforce the Right alone; instead, all related other rights (see above) need to be implemented simultaneously to assure sustainability and success.

Implementation research (IR) is defined as a subset of health systems research (HSR) "that focuses on how to promote the uptake and successful implementation of evidence based interventions and policies" (1). Basically IR deals with all the issues around the central aim to implement change and to put theory into practice. Since most issues, especially in the field of health, are integrated into a network of different factors, IR requires per definition a multidisciplinary and multilevel approach. This multidisciplinary is once more reflected in the enLINK circle (see Figure 1). Especially in the field of health maintenance and assuring adequate nutriture, a combination of different strategies is associated with a much higher effectiveness than single strategies.

The need to push implementation research is reflected in the Worldmapper map (top of page 13) showing often preventable disease conditions (2). It is not surprising that the preventable conditions are just a handful of disease conditions: Infectious and parasitic diseases, respiratory infections, maternal conditions around childbirth, perinatal conditions and, last but not least, nutritional deficiencies. These conditions account for 30 to 40% of all deaths worldwide. In the Worldmapper map (bottom page 13) all nutritional deficiency deaths are shown. However, it is somehow

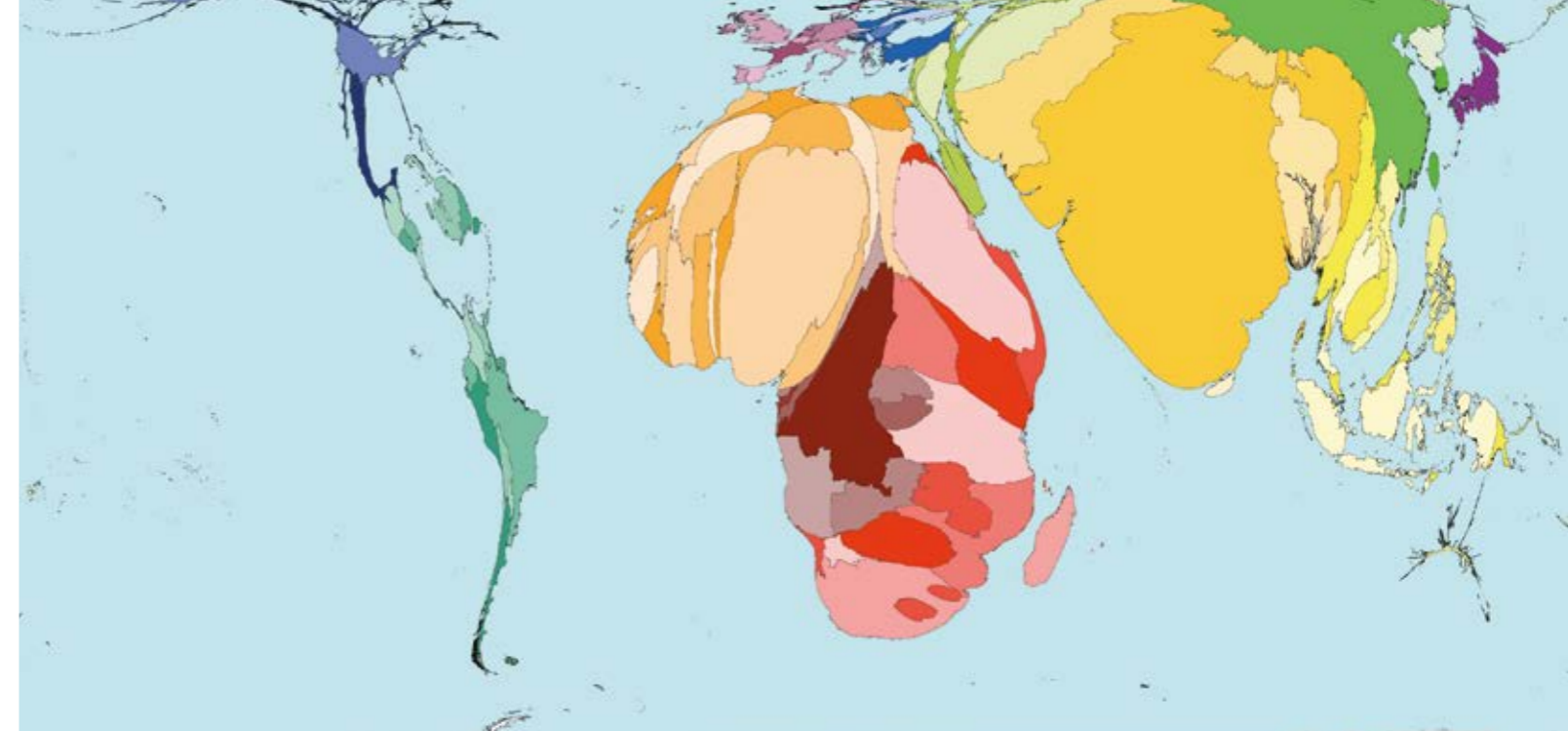




incredible that in a world in which we can send humans to the moon, we are still unable to control these root causes of morbidity and mortality. It is time not only to implement life-saving knowledge but to also “enforce” it globally for everybody and anybody.

The final aim is food and nutrition security for all. The term food security has undergone regular new definitions as knowledge and experiences advance. Today it is nearly forgotten that when the Foundation was established, nearly 50 years ago, food security corresponded to food production, i.e. it was thought that the key factor determining food security lies in food production. Today the term food security is a complex construct where nutrition security has entered the stage. Food production is nearly forgotten in the modern world, where single nutrients can be delivered in many different forms using a multitude of vehicles. In the last FAO “State of Food Insecurity in the World 2011” report (4) the critical role of more investment in agriculture is stressed once more. It is interesting to realize that countries which are more or less on track with the Millennium Goals (e.g. Thailand) list as the first objective “to increase the efficiency of resource management for sustainable food production” (5).

Eight years ago, the Foundation created the digital enLINK library for nutrition and nutrition research (see www.enlink.org). This year the enLINK library was completely newly designed and is open for free access to researchers from low-income countries. Since the library was created the digital divide has widened. There is even evidence that the divide increases as knowledge increases. This might be due to the fact that it is not only the access to information but also how this information is “digested”, that is, what is finally done with the information, that is important: Can the information be used for a better understanding of a problem and especially for a sustainable solution? Is the information of benefit for the specific local condition? What adaptations are needed...? There is the risk of information overkill and often “one cannot see the forest for the trees”. In the modern world it might be easier to develop new theoretical strategies than to implement locally adapted knowledge. One of the difficulties to implement knowledge is that there is no single “gold standard” for implementation. One strategy might work in one place and fail in another due to differences in the health and social system. Filling these implementation gaps was and will be one major objective of the Foundation: promoting local nutrition research for regional and supranational implementation.



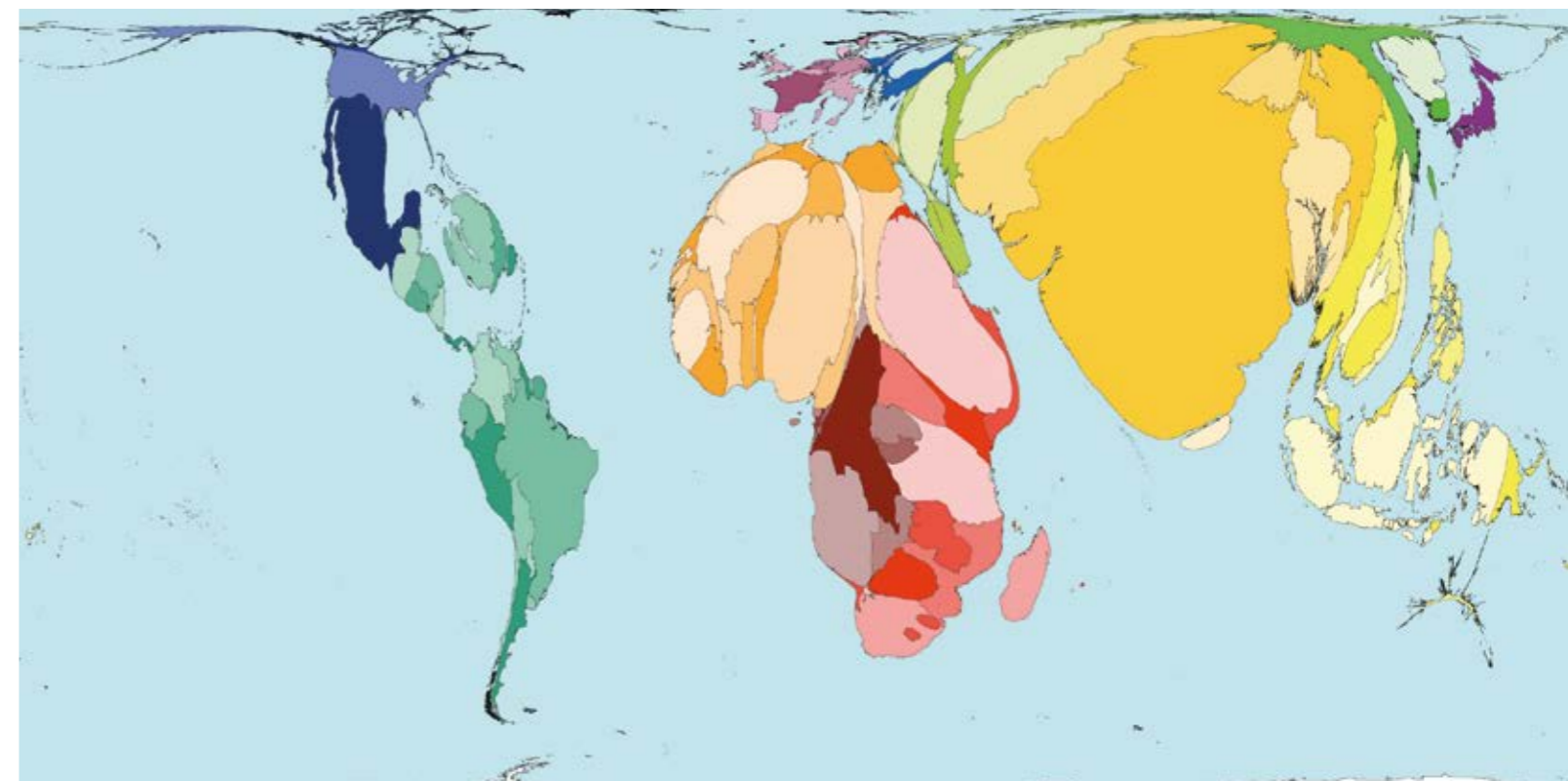
Map Legend:

Often preventable diseases (above)

The territories are sized proportionally to the absolute number of people who die per year from the most important preventable diseases (i.e. communicable infections, maternal and perinatal conditions and nutritional deficiencies). In the year 2002 (on which the map data are based), 32% of all deaths worldwide were caused by these potentially controllable conditions. On the average these conditions accounted for 2,968 deaths per million people.

Deaths caused by all nutritional deficiencies (below)

The territory size on the map shows the proportion to the absolute number of people per year dying from nutritional deficiencies. The map clearly shows the disparity among the different world regions. According to figures from the Food and Agriculture Organization of the United Nations (FAO), every year roughly 6 million children die, directly or indirectly, from the consequences of undernourishment and malnutrition (8).





THE enLINK LIBRARY



e-journals in nutrition e-books

There is no education and advancement in research without access to information. Information and information access is a basis for advancement for anybody in any aspect of life, and the right to information is actually one of the basic human rights as anchored in the Universal Declaration of Human Rights. Eight years ago, the Foundation constructed the Internet-based **enLINK** digital library of nutrition research, which is now appreciated by users in over 30 low-income countries.

The **enLINK** library is a concerted action between OVID Technologies, certain publishers, and the Foundation. As of December 2012, the following publishers or IT providers are engaged in the **enLINK** library, delivering functional full-text access to journals and e-books: Annual Reviews, OVID Technologies, Wolters Kluwer Health, Inc., and Lippincott Williams & Wilkins.

For nutrition information, the **enLINK** library is for many users an established and appreciated source of information. This year the library got a complete "booster" with a new Internet appearance, new journals, and many new e-books in nutrition and, last but not least, a completely new technological infrastructure platform. The latter will ensure even better functionality and accessibility for the users. The **enLINK** library targets individual users in low-income countries who are interested in nutrition and nutrition research.

With the new design the access mode has also been improved so that each user has a personal and unique password. For security reasons the password will be updated regularly.

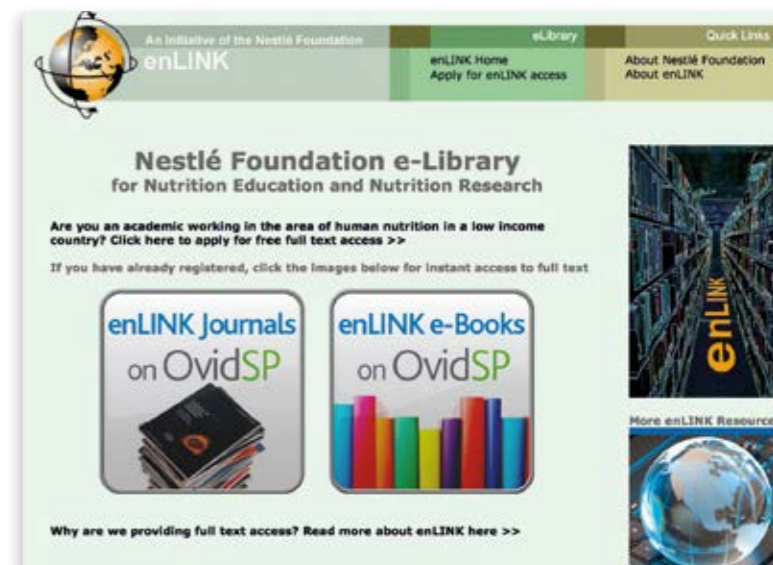
At present, 8 journals and 33 e-books are accessible in full-text mode. Users will find the content and information they need in a small number of high-quality sources. "Small but beautiful", as one user told us: the **enLINK** library is small but nevertheless you can easily find reliable and evidence-based information on nutrition and health-related topics. In the **enLINK** library there is no danger of being drowned in the information flood. The user can remain focused and this is what counts to advance.

The **enLINK** users will have access, with the help of OvidSP, to e-journals and book content. Further, users can take advantage of OvidSP's search, alerting, and results management tools to stay current on their research interests. The language options (English or French) make the use of this tool even more user-friendly. There are no "opening hours for this library" – **enLINK** can be accessed 24h/7d.

NEED ACCESS TO NUTRITION RESOURCES? – GO FOR ENLINK.

If you are from a low-income country and if you are working in your country of origin, apply at www.enlink.org to become a registered user. (Please read the instructions carefully and follow the guidelines).

Registration and use of the **enLINK** library are both free of charge.



The orange library
THE enLINK LIBRARY TRUNKS –
NOW ALSO IN SPANISH

Who does not know the famous book Where there is no doctor by David Werner? This book and many others are included in the orange enLINK book trunk from the Foundation since “where there is no Internet”, books are indispensable.

There is no education without access to information. In today’s world, information access is equated with access to the Internet and other electronic media. Yet despite all the developments in information technology and computer science, this statement is in part a misconception. It is well known that a combined, integrated access to hybrid collections of printed and electronic resources is at present the most powerful tool for education. In addition, there are many geographic areas without access to the Internet or only at high cost. There the mobile enLINK library trunk fills the gap.

The mobile enLINK library consists of an orange metal trunk containing more than 120 books, brochures and guidelines from the field of nutrition and health. Nutrition cannot be viewed separately from other disciplines, especially medicine, agriculture or public health. Accordingly, the enLINK trunk also contains books such as Harrison’s textbook of medicine and a textbook of tropical medicine. One can find “down to earth”, ready-to-use guidelines for the treatment of severe malnutrition or the construction of a home garden.

The large trunk
ENGLISH

Colour: orange
Height: 1.0 m
Weight: 80 kg
Number of books: 35
Number of brochures, booklets, etc: 120
Total number of pages: 30,000

The enLINK trunk has the same size and layout as the Blue Trunk Library from the World Health Organization (WHO). The enLINK trunk has been created as an addition to the WHO Blue Trunk Library and covers the major issues around the theory and practice of nutrition.

The enLINK nutrition library trunk will initially only be offered as a present free of charge (including free shipment) to selected nutrition institutes in low-income countries. Order forms for the enLINK trunk are available on the Foundation’s website.

So far a total of 120 trunks have been shipped to more than 30 different countries.

According to the saying “Knowledge gained through the mother tongue is best”, in 2012, the Foundation created a Spanish version of the small enLINK trunk.

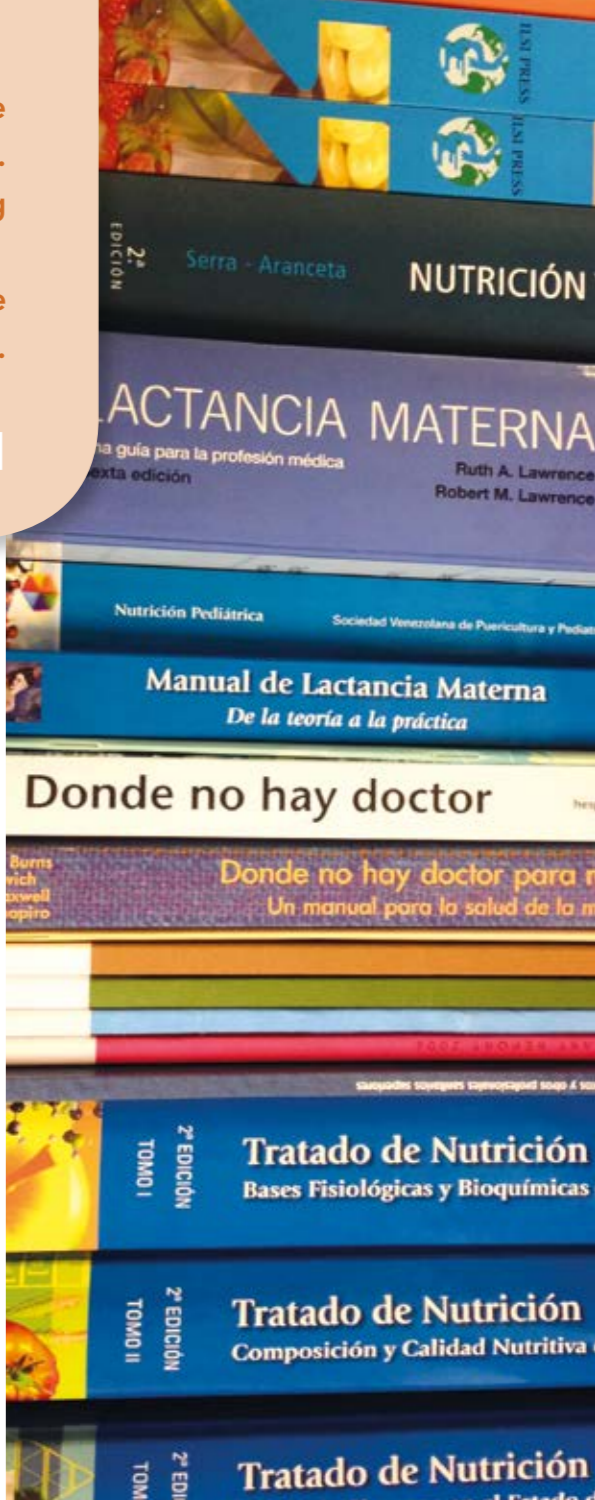
The small trunk
ENGLISH, FRENCH & SPANISH

Colour: orange
Height: 33 cm
Weight: 30 kg
Number of books: 10
Number of brochures, booklets, etc: 40
Total number of pages: 10,000

Order forms for the enLINK trunk are available on the Foundation’s website.
www.nestlefoundation.org

Remember that the trunk is free of charge (including free shipment) for institutions in low-income countries.

NEW IN SPANISH





OTHER ACTIVITIES

NEW RESEARCH PROJECTS

INSTITUTIONAL SUPPORT

OTHER CAPACITY-BUILDING ACTIVITIES



In 2012 the Council decided to fund 10 research projects.



GROWTH & DEVELOPMENT

Prenatal and young child nutritional supplementation and early childhood body composition, growth and development

Momodou K. Darboe
Sophie Moore

MRC International Nutrition Group
Keneba Field Station
Banjul
The Gambia, West Africa

USD 68,774

Timely and optimal nutritional interventions could potentially have effective lasting impact on early growth and development. Nonetheless, the effect of nutritional supplements on body weight and length alone does not tell us how the different body compartments are affected. It is planned to conduct an extended randomized controlled trial of lipid-based nutrient supplement (LNS) among 800 infants from 52-78 weeks of age, to assess the continued (from 26-78 weeks) effect on infant and early childhood body composition, growth and development. This will be an adjunct study to an ongoing trial: a pre- and postnatal randomized nutritional supplementation looking at the effects on infant immune development, growth, body composition and motor development; currently funded until the infants are 52wks of age. In the design, pregnant women are randomized to 4-arms: (Iron-folate (Fefol = local standard of care); multiple-micronutrients (MMN); protein-energy (PE)+Fefol; PE+MMN; and from 26wks of age the infants are further randomized to LNS with 23 micronutrients or an LNS of lower nutrient density up to 52wks of age. It is hypothesized that a life-course approach of prenatal daily LNS of a balanced protein-energy+MMN supplementation combined with promotion of 6mo exclusive breastfeeding and LNS+MMN from 26-78 wks of age will promote healthy growth by improving lean tissue mass, reducing the incidence of stunting and improving motor development among children in the first 2 years of life.

COMMUNITY-BASED PREVENTION

Sustainable community-based diabetes prevention program by lifestyle modification for at-risk populations in Thailand

Kitti Sranacharoenpong

Institute of Nutrition
Mahidol University
Nakhon Pathom / Bangkok
Thailand

USD 50,000

The main objective of this project is to implement and evaluate a culturally appropriate, cost-effective, and sustainable community-based lifestyle modification program (CLMP) for type 2 diabetes (T2DM) prevention in Chiang Mai province in Thailand. The project will use community-based strategies to encourage healthy eating and activity patterns that will require multisectoral approaches acting at a variety of levels, including community, schools and worksites. Through this project several issues will be addressed: 1) Support for diabetes-prevention education programs (DPEP) and CLMP for community health care workers (CHCWs) through learning technology. Health volunteers will be trained for regular, intensive DPEP and CLMP to monitor at-risk populations for diabetes in their communities. 2) A new template for a computer-based DPEP for change agent (children) will be developed and modified based on extensive input from key stakeholders. Children will play a role as change agents in their families and communities. 3) Geographic Information Technology (GIS) will be applied to understand the communities, people's lifestyle, cultures, food availability, food security, and environmental factors for the development of culturally CLMP for implementation phase. Lastly, 4) the CLMP regarding diet, physical activity, smoking related to diabetes and its risk factors of the at-risk population (obese) will be assessed and compared in intervention and control communities, both pre-, follow-up and post-community implementation phase.

NUTRITION EDUCATION

Drama for behaviour change communication on breastfeeding and complementary feeding practices in rural areas of Osun State, Nigeria

B. O. Ogunba
F. M. Ogunleye
A. O. Ajayi

Department of Family, Nutrition and Consumer Sciences &
Department of Agricultural Extension & Rural Development, Faculty of Agriculture and
Department of Dramatic Arts
Obafemi Awolowo University
Ile Ife
Nigeria

USD 18,985

The overall aim of this study is to promote behavior change in the feeding practices by mothers of children under five years in the rural areas of the Yoruba-speaking southwest zone of Nigeria. This project will use drama to communicate the need for behavioural change regarding appropriate feeding behaviour. Participants (n=400) will be purposively selected for the base line data to collect information on local practices, customs and cultural influences on the target behaviour relating to breastfeeding and complementary feeding practices. Messages and materials will be developed and pretested and a drama troupe will be educated on feeding practices. The theatre group will stage two drama pieces to promote the adoption of positive feeding behaviours. Messages will include initiating breastfeeding within one hour of birth, positions and attaching the infant correctly at the breast, breastfeeding during the night and the offering of the second breast after the infant empties the first. The intervention messages also include introduction of complementary foods at six months; types of foods, meal frequencies, amount to be fed to different ages; continued breastfeeding; hand washing, etc. Intervention will be highly participatory and will involve the community as representatives to help convert nutrition recommendations to messages in the local vernacular.

Effects of dietary/lifestyle counselling on risk factors and risk of cardiovascular events in Indonesian population

Iqbal M Husein

Postgraduate School of Medicine and Health
Gadjah Mada University
Makassar
Indonesia

USD 19,722

The high prevalence of CVD in developing countries is attributed to widespread CVD risk factors such as smoking, hypertension, dyslipidaemia, diabetes, obesity and physical inactivity. This study will investigate the effectiveness of dietary and lifestyle counselling in improving CVD. This study is a part of a PhD research project and will investigate the effectiveness of dietary and lifestyle counselling on risk factors and risk of major cardiovascular events in CVD and non-CVD populations. The CVD study population will be CVD patients visiting the National Heart Hospital Harapan Kita in Jakarta, while the non-CVD study population will be people without CVD residing near the hospital. A randomized control trial with a pretest-posttest control group will be used. Two hundred patients will be randomly selected from the CVD population and assigned to the study group and 200 subjects from a non-CVD population will be assigned as a control group. Subgroups in the CVD and non-CVD populations will be divided into intervention and non-intervention groups. The intervention group will receive repeated, 30-minutes dietary and lifestyle counselling, health education and video presentation. They will be followed-up for nine months regarding acquired and retained knowledge from the health education. Those in the non-intervention group will not receive any specific counselling or other programs.

IODINE

Community salt iodization & relation of iodine intake to visual information processing (VIP) of Ethiopian infants

Tafere G/Egziabher
Barbara J. Stoecker

School of Nutrition, Food Science & Technology
Hawassa University
Hawassa
Ethiopia

and

Human Sciences, NSCI
Oklahoma State University
Stillwater, OK
USA

USD 20,000

Several recent studies from Hawassa University found widespread iodine deficiency and almost universal lack of knowledge of the importance of iodine. To alleviate this endemic problem, local programs to iodize salt and to increase community awareness of the public health implications of iodine deficiency are critical to develop sustainable solutions. The goal of this pilot project is to test the efficacy, measured by urinary iodine concentration (UIC), infant visual information processing (VIP), and iodine awareness, of community-based small-scale salt iodization in southern Ethiopia. The hypotheses are: 1) 6-month-old breast-fed infants whose mothers used iodized salt throughout lactation will demonstrate better cognitive performance, assessed by VIP, than infants whose mothers had not consumed iodized salt (data collected at baseline) and 2) small-scale salt iodization projects will improve community iodine status. Specific aims are: 1) To assess VIP in six-month-old infants before introduction of iodized salt and in infants whose mothers received iodized salt from the infant's birth to six months of age. 2) To test the introduction of small-scale salt iodization and testing through community women's associations and assess impacts of availability of iodized salt and community iodine awareness on UIC of a random sample of community members.

PROTEIN-ENERGY MALNUTRITION

Food-based approaches to reduce
childhood protein energy malnutrition in
Bangang Community, Cameroon

Marie Modestine Kana Sop

Faculty of Science
Department of Biochemistry
University of Douala
Douala
Cameroon

USD 39,400

Malnutrition and poverty are on the rise in Cameroon. The aim of this study is to understand current dietary practices, food availability and accessibility for formulating an implementable and sustainable food-based strategy to reduce nutrients and energy malnutrition (NEM) in Bangang Rural Community in Western Cameroon. Knowledge of feeding practices, availability, accessibility and affordability of local foods could help to define local specific nutrition guidelines. The project is divided into four stages: 1) Identification of local stakeholders, training of enumerators and planning surveys. 2) Carrying out surveys that include: anthropometric measures, food diary recalls, identification of available foods rich in nutrients, proteins and energy, understanding local food practices and taboos that may cause NEM, descriptions of cooking methods and identification of undesirable dietary habits. 3) Then composite complementary foods from local food stuffs should be developed and implemented. 4) It is expected to formulate an implementable and sustainable approach to reduce NEM and protein energy malnutrition.

COMPLEMENTARY FOOD

Effect of nutrient-dense complementary
food on catch-up growth of Indonesian
moderately stunted children

Duma Octavia Fransisca
Umi Fahmida

SEAMEO RECFON
University of Indonesia
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USD 79,459

In developing countries, 32% of under-five children are stunted. In Indonesia, reducing stunting has been the most challenging to accomplish and national prevalence of stunting remains above 35% despite the target to reduce it to < 32% by the year 2015. There is a growing interest in treating moderately malnourished children using highly nutrient-dense locally available foods since their nutritional requirements are not as high as severely acute malnourished children.

This community-based, cluster-randomized, controlled trial will be undertaken in Dompu District, West Nusa Tenggara Province, Indonesia. The objective of this study is to determine the effect of higher and standard nutrient-dense complementary foods on the catch-up growth of moderately stunting children aged 12 to 23 months old in Dompu District, Indonesia. There will be three types of interventions: children receive higher nutrient-dense complementary food (HND-CF), FAO/WHO standard nutrient-dense complementary food (SND-CF) or non-optimized complementary food (N-CF/control). At the end of the intervention, increments of recumbent length and catch-up growth velocity between the three groups will be compared. The study requires a variety of foods available in the area including nutrient-dense foods. The aim is to use only locally available food.

GUT MICROBIOTA

Optimized complementary feeding versus iron supplementation on micronutrient status and gut microbiota of children

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USD 49,944

Complementary feeding diet in developing countries including Myanmar cannot meet the micronutrient requirements (mainly Fe, Zn and Ca) of infants and young children. Iron supplementation is mostly used to treat iron deficiency. Iron is essential for most gut pathogens and iron supplementation might also have similar or worse effects on gut microbiota composition. Therefore, nutrition interventions would not be justified by assessing micronutrient status alone while ignoring any possible deterioration of gut microbiota. We hypothesized that optimizing nutrient intake from local foods based on complementary feeding recommendation (CFR) is the most feasible and sustainable approach for obtaining the required amount of problem nutrients for these children to tackle not only iron deficiency but also the co-existence of multiple micronutrient deficiencies while maintaining healthy gut microbiota composition. The aim of this study is to compare the efficacy of optimized CFR to iron supplementation on micronutrient status and gut microbiota composition of one- to two-year-old children (n=408). Individual children will receive one of four intervention groups (CFR, CFR+Fe, Fe, or Placebo). Fifteen children from each group will be randomly selected for gut microbiota assessment (total=60). The study will be conducted in Ayeyarwady division where both acute and chronic childhood undernutrition is prevalent. Anthropometric measurements, usual intake of iron, zinc and other problem nutrients, blood for iron and zinc status and stool for gut microbiota composition will be assessed at baseline and endline.

VITAMIN A

Consumer acceptability of spirulina in Zimbabwe, and effect of cooking on spirulina provitamin A carotenoids

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USD 20,000

Current efforts to address VAD such as vitamin A supplementation and food fortification are expensive and eventually become unsustainable. Food-based strategies can be affordable and sustainable in addressing vitamin A deficiency. Plant foods are the main source of vitamin A, providing more than 80% of vitamin A requirements. Vitamin A intake from plant foods is limited by the bioavailability of provitamin A carotenoids, access to provitamin-A-carotenoid-rich fruits and vegetables, and households’ food preparation practices. Increasing households’ all-year access to other affordable vitamin-A-rich food sources may lead to elimination of VAD. Spirulina is found naturally in many parts of central Africa is a very rich source of vitamin A. Spirulina can be grown at the household level using locally available resources. Spirulina can provide the daily vitamin A requirement to the households all year round in a cost-effective manner. However, spirulina is not currently part of the regular Zimbabwean diet. The dark green color and seaweed taste of spirulina may present a challenge for Zimbabwean consumers. Therefore, a consumer acceptance study of spirulina-fortified local foods is important before embarking on a large-scale spirulina effectiveness study. This study will use a hedonic scale to evaluate the acceptance of spirulina added to commonly consumed foods in Zimbabwe such as cowpeas, kale and maize. This study will also determine the effect of local cooking practices on the β -carotene content of spirulina.



ZINC

Maternal zinc nutrition its influence on human health and development in Peruvian children

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USD 200,000

This is a cross-sectional evaluation of a cohort of children born to women who participated in a RCT of prenatal supplementation, with iron and folic acid with or without zinc. Results of this trial (funded by the Nestlé Foundation) showed that children from Zn-supplemented mothers had improved fetal growth and neurobehavioral development. At follow up at 4.5 years of age persistent effects of maternal Zn supplementation on child neurobehavioral development were found. There were no differences in child cognitive, social or behavioral development at that time, although children of Zn-supplemented mothers did achieve performance with less autonomic stress. Therefore it is hypothesized that differences in autonomic function will support learning and lead to differences in human capital over time as children develop and as life stresses augment during the adolescent period. Zinc has multiple direct roles in central nervous development, and thus, even in the absence of autonomic differences, differences in human capital may still emerge. Autonomic function is a marker of stress response, and thus continued evaluation is important for linking the intrauterine environment with later health and performance outcomes. The study children are now 12-13 years old (at follow up 80% of the cohort was evaluated). A clinical exam, a nutritional evaluation, and an assessment of their development in a comprehensive fashion will be done. Indicators of social support and the broader family/environmental context will also be assessed. The findings of this unique long-term study will provide exceptional information on the long-term relevance of the effects of maternal micronutrient supplementation on child development.

One of the major aims of the Nestlé Foundation is the transfer of sustainable capacity-building knowledge to low-income countries. During 2012 several different capacity-building activities were supported.



INSTITUTIONAL SUPPORT AND OTHER CAPACITY-BUILDING ACTIVITIES

AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT

Local dissemination of nutrition knowledge is of great importance. There are only a few nutrition journals on the African continent, one of them being the African Journal of Food, Agriculture, Nutrition and Development (AJFAND) (see also <http://www.ajfand.net>). The AJFAND is meant to create awareness of the multiplicity of challenges facing Africa that lead to abject poverty and destitution. The Foundation is supporting this important effort with a regular contribution for the infrastructure as well as for each issue. The journal is only available as a web-based publication. The submission of original articles and other contributions can only be encouraged.

THE ORANGE enLINK TRUNK LIBRARY: NEW IN SPANISH

Also during this year the Foundation mailed several small and large French as well as English book trunks, mainly to Africa. Recognizing how much easier it is to learn in one's mother tongue, small Spanish trunks were also assembled. These trunks contain classic books such as the "Donde no hay doctor" by David Werner and 3 volumes of the newest edition of the "Tradado de Nutricion".

DISSEMINATION OF RESEARCH RESULTS

During 2012 the Foundation supported several researchers from Vietnam, Guatemala, Ghana and Kenya to attend conferences in the US and Cuba as well as to attend the African Nutrition Congress in Bloemfontein, South Africa to present results from their research projects which were supported by the Foundation. The presentations included several specific topics on obesity and physical activity, breastfeeding, and iron bioavailability but also the role of Amaranth grains for the reduction of malnutrition in small children.

BOOSTER FOR THE enLINK LIBRARY

During this year the Internet-based digital enLINK library for nutrition and nutrition research has been much improved. A completely new layout has been created, and new journals and books have been added (see page 14). The functionality and success of the site is assured by designing a completely new site on a new platform using the latest technology. The new technology by Ovid Technologies allows easy access and search of all books and publications in the library.

CAPACITY



VISION 2012

"Come back – we are back – thank you". This should be the usual sequence for most students from low-income countries who study abroad: they study abroad and they come back. However, this sequence bears forgotten responsibilities: when they go back home we need to keep in touch with them and support them – also with small matters such as a journal subscription. This is what the Foundation has pursued during nearly 50 years. Three young researchers who have been supported as students by the Foundation report about their "homecoming" experience. One of their local Professors describes how he feels about their "coming home". Brain drain, should be a matter of the past. In agreement with the policy of the Foundation, we all should

promote "brain gain", that is, helping researchers to study abroad and then come back and promote local research and capacity building. Ravi Sangakkara from Sri Lanka reminds us of the "need of the times" in learning, i.e. the importance of promoting the teaching of know-how which is actually needed in the target country and which is implementable and, last but not least, sustainable. In the same setting, the needs should be more focused towards and around women and children, as outlined in the contribution from Robert LeVine.

It is the wish and dream of all of us that the call of the IUNS President Elect Prof. Anna Lartey will be heard and followed by many others: Please, come back.

COME BACK

WE ARE BACK

THANK YOU FOR COMING BACK

THE NEED OF THE TIMES

BRAIN DRAIN

WOMEN'S LITERACY



COME HOME

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2009-2013

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Getting the privilege to study in another country is a unique opportunity we must take advantage of when it comes our way. I had the opportunity of studying in Canada and the USA for my master's and doctoral degrees, respectively. There are many benefits of studying in another country, especially in countries that are more advanced than mine. I was exposed to new and modern techniques in my field of study. I had the chance to meet accomplished professors I had read about. As a graduate student, my supervisors made it almost mandatory to attend the annual nutrition conferences. The networking among my graduate student colleague was great. My school colleagues have now become my professional colleagues.

It all started in 1979 when nine of us were sent from my home country of Ghana to study in North America. I pursued a BSc in Nutritional Biochemistry and then a Master's in Nutritional Science. When I completed my Master's in 1985, I packed my bags and decided to come home. It was not an easy decision. In fact, my friends felt I was crazy to make a decision like this at a time when most professionals were leaving Ghana for greener pastures. I was determined. I got home without a job waiting for me and no vehicle. After several months I was invited for an interview at the University of Ghana and was taken immediately. There was a mass exodus of University Professors from the country so there were vacancies waiting to be filled. I served eight years as a lecturer and the University nominated me for a Fulbright Scholarship to the University of California, Davis for my doctoral studies in International Nutrition. Looking back at the choices I made regarding my professional career, the best decision I made was to come back home to start my career.

Many young people today believe it is almost impossible to launch a successful professional career from our home countries in Africa. I am the first to disagree with this. The going was not easy but with determination, hard work and persistence it will work out. I started small as a lecturer and researcher, working on small local grants. Today I am involved in large studies, many of which are impacting on maternal and child nutrition. The World Health Organization's Multicenter Growth Reference Study, of which I was the local Principal Investigator in Ghana, has resulted in the release of the WHO Child Growth Standards, which has been adopted for use in 125 countries. We are also conducting a randomized controlled trial to find ways of preventing undernutrition among children during the vulnerable complementary feeding period.

Africa is in need of researchers and well-trained professionals who will contribute to the development effort. Africa is the continent not likely to meet the Millennium Development Goals by 2015. Among the many constraints is the high burden of malnutrition Africa carries. Thankfully a lot of attention has now been drawn to improving nutrition, especially in Sub-Saharan Africa. Over the last two years we have seen unprecedented attention to nutrition at the global level. Also, many countries in Sub-Saharan Africa have committed to Scale Up Nutrition (SUN). Resources are now being re-directed to nutrition. The stakes are high for addressing nutrition in Africa. This is the time for us to grab this opportunity. Many organizations are now looking for competent nutritionists to hire to support their programs in Africa. A key ingredient for the success of SUN at the country level is the human capacity to develop and support these nutrition programs. Take the opportunity to improve yourself. If you have the opportunity to study outside your country, come back home. Africa needs you.





YES, WE ARE BACK

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Flying to Europe or America to complete one's training is a dream for many young Africans. This dream can become reality for some people because of international cooperation between states or institutions and availability of scholarships. The three of us (Evariste, Catherine and Abdul-Razak) did our PhD studies at Wageningen University, The Netherlands. Evariste from Benin received a fellowship from the Interdisciplinary Research and Education Fund (INREF) of Wageningen University in 2002. Catherine from Kenya received a fellowship from the International Nutrition Foundation (INF/EMF) and Wageningen University in 2007, with research grant support from the Nestle Foundation. Abdul-Razak from Ghana received a fellowship from Wageningen University in 2008 and a research grant from the Nestle Foundation in 2010.

After training abroad, African trainees either become a "brain gain" or "brain drain" to their countries. At the Nutrition Congress Africa, held in South Africa in October 2012, the problem of coming back home after training abroad was raised as a concern. As we are back, we have decided to share our view point on the issue. Our decision to come back was motivated by many reasons.

Job situation at home

Having a job or a promise to be engaged before going abroad for studies is a motivating factor for coming back home. With the doctorate degree, we all have the opportunity to be at a higher position in our respective jobs. Studying abroad gave us the opportunity to build our own professional network of people and institutions to support our jobs. "I am currently a contributing scientist on the EU-funded INSTAPA project in Benin. Through this I also get visibility as a researcher", Evariste said.

Training program

We were all enrolled in Wageningen University in what is called a "Sandwich Program". With such a program, part of the training was done in Wageningen and part in our home country, especially the field work. As we did not have the possibility to travel with our families, this way we never lost touch with our colleagues and with what was happening in our home institutions. This gave us the chance to easily integrate into our jobs back home compared to people who did not have a job before travelling for further training.

Patriotic reasons

We think that we are indebted to our countries for partly supporting our training and giving us the opportunity to study abroad. Most of the time, the scholarships or financial support from the Governments are loans and should be paid back to donors. Governments are losing financial and human resources if we do not go back home after graduation. We are in developing countries and using the limited financial resources to train experts who will work for the development of institutions outside our countries or for other countries is simply unacceptable. We are aware that nobody will develop our institutions or countries for us. We all want to contribute to finding solutions to the myriad of problems in our institutions.

Personal motivations

"Observing what was happening in the nutrition field in Kenya was exciting enough to make me want to come back home and be part of the process and the success story. One thing I'm sure about is that I want to be involved in scientific research in my country and therefore deliberate efforts to keep links with my Alma Mater, and other partner institutions continues", Catherine said. The pride of being an actor of the development process of our country is a source of motivation for coming back. There are a lot of people who succeeded at home and are also well known at the international level. We are proud of them and we endeavour to be even better. "I love to teach and my job in the university gives me the opportunity to do that so it made it easier for me to return home. Being a relatively young university, it gave me responsibilities and opportunities that challenge me personally and create room for professional growth. It is clear to me what my role is now and I can see my future role in my institution". These together have facilitated Abdul-Razak's desire to return after completing a PhD abroad.

Challenges

After exposure to efficient systems abroad, re-entry and integrating into old jobs back home is daunting. Going back to the old ways of doing things makes us unhappy, pushing for reforms makes us feel rebellious and the fear of getting annihilated holds back enthusiasm. These got each of us to contemplate returning but we understood that change takes time and our resolve to return and stay home can contribute to the critical mass needed to achieve the changes we desire. It feels good to come back and play our part in the development of our respective institutions and countries.



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Introductory words

I have noticed that, just like many other highly skilled people, you decided to stay abroad in Europe at the end of your studies. You had even migrated to a country other than the country where you studied because life seems easier there. You stayed there for a very long time, until you started feeling nostalgic. I knew that you could not make the decision without thinking about the possibilities you would have once back in your home country: to have a job with a good salary, to have access to quality health care, to have the facilities to perform the job and research activities that you like, to manage probable adaptation questions for your family, to find your way in the administrative system, etc. I knew you were asking yourself if you could actually live a better life once

back in your home country. I could imagine that you wanted to come back but because these questions were so redundant without many answers, you started having some doubts.

Before moving abroad

Before moving abroad, you studied in your home university and showed you were a very good student during your training. You completed your degree and worked to serve your country and to make your contribution to its development. You had a salary and were living quite a peaceful life. The salary was actually low but you did not perceive it as such. It was actually enough to live on, albeit not to finance a luxurious life, but still it gave you the opportunity to gain work experience. It is normal that once you acquire part of this work experience, you aspire to a better life. This aspiration gives you the will to study further and to further specialize in your study area, especially in a domain that is not too common in your country. Your thoughts were right as far as you could come back after your study so that your country can benefit from your knowledge. Because you were sure to come back to your country, you could benefit from scholarships and fellowships from the country. You can guess it is a big investment and part of the contribution of people from the country. Maybe your parents for whom it was also an investment helped because you could not benefit from scholarships from the Government. You moved abroad for your studies, which is very nice. Your parents were hoping that you would come back after your study period was over.

Your first days of life abroad

After moving to Europe, you realized that life is different than in your own country. The difference from a social point of view was very negative. You received a big social shock, one which persisted actually throughout your stay. However, considering the working conditions and administration performance point of view, the difference was very positive. You noticed that the educational system is very developed and that study conditions are very good, as are the working conditions. In addition, you now had the opportunity to perform some student jobs during your holidays and it became clear to you that salaries are much higher than in your home country. You also realized that the health system is almost perfect.

You started thinking of staying abroad

The studies were moving smoothly. The study period was also over shortly. You started thinking about a good job or the right job for you. You thought that



because you were now more specialized in your study area, the right job was no longer in your home country and that only the countries abroad could offer you the best job; but you were not right. You had already forgotten that you promised to serve your country after completing your studies!

You argued that in your host country, you would have all facilities to work in nearly perfect conditions; you would have a relatively big salary even if you did not get the right job; you would have the right health care at the right moment. It was possible but not obvious. At that time, I got into touch with you, asking you to come back before it got too late. You did not want to listen; you wanted to extend your stay, and you were looking for means to have a permanent residence permit or even take on the citizenship of your host country. I even explained to you that you did not need all this when you are highly skilled in your country. Because you are highly skilled, you will most often get visas wherever you go. It is true that living with no need of asking for a visa is better, but you will not struggle with this back home. You were thinking that in your home country, there is not much evolution compared to the developed country. You were thinking that job opportunities are sometimes scarce for the specialist you had become; that the salaries are mostly low and there is almost no social security for you; that health care systems are sometimes deficient and life expectancy is generally low and that the political situation is sometimes not enviable. You may be right. Nevertheless, I assured you that there is a place for you in the system. In any case, the decision was yours.

While staying abroad

After all the thoughts mentioned above you had managed to extend your stay at least for a while and had decided to stay abroad and try to work and get integrated in the system abroad. You were working to have some money to survive but did not have a good job. You had tried your best to have the right job in the system but it did not work. As highly skilled person, you had no choice other than working below your actual level or even as unskilled labor to survive. You had very limited social activities to relax and had the feeling that nobody cares about you. You have noticed now that despite your will for integration, you remained a foreigner after all these years.

Your friends who came back some time ago were doing quite fine even though they were living in their country. You had probably heard that your friends had the right job back home though they are highly skilled. They have good salaries and good opportunities. Your friends have received support from their elders and are now living an enviable life back home. I was telling you that I would help you

to be reintegrated in the system. I really wanted you to come back before you became a foreigner in your own country.

You are back home

Now that you are back, I'm surprised that you have such a profusion of new ideas. Only those who have seen many other things abroad can convert so many problems into business opportunities. It means that you are more prepared than many of us to create your own business and be self-employed. You can even become an employer. What you have learned abroad needs to be shared for local development.

Thanks for coming back. Yes, the beginning could be hard. You have support from elders and family members to find your way in the system back home. You will now live a normal life in an environment where almost everybody cares about you. You will find a good job or create one. You will contribute to the development of your country. You will travel again whenever you want and will be in a hurry to return. Thanks for coming back!





THE NEED OF THE TIME

Research and higher education in agriculture for the developing world

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The first Millennium Goal is to “halve, between 1990 and 2015, the number of people who suffer from hunger”. This is a gigantic task in the developing nations, where education, research and development projects on agriculture need to emphasize this aspect for greater production of food, using and managing available resources optimally to achieve this goal while possibly containing population growth.

The economies of most developing nations are based on agriculture, and a major percentage of the populations are involved in this venture. Thus, secondary - and more importantly tertiary - education in agriculture is vital to encourage the young to take up this noble vocation of producing food while preserving the natural environments of their nations. This requires well-trained and educated

professionals, especially at tertiary institutes of education, to provide knowledge and skills and instill a sense of values in the students, while also conducting research to improve food production utilizing available resources. There is still much research yet to be done with basic but scientifically validated and statistically acceptable methods, which could also be published in indexed journals. The current Science Citation Indices present such publications from the developing world, which proves this fact. This signifies that progress can be achieved with small inputs of resources, with a high efficiency.

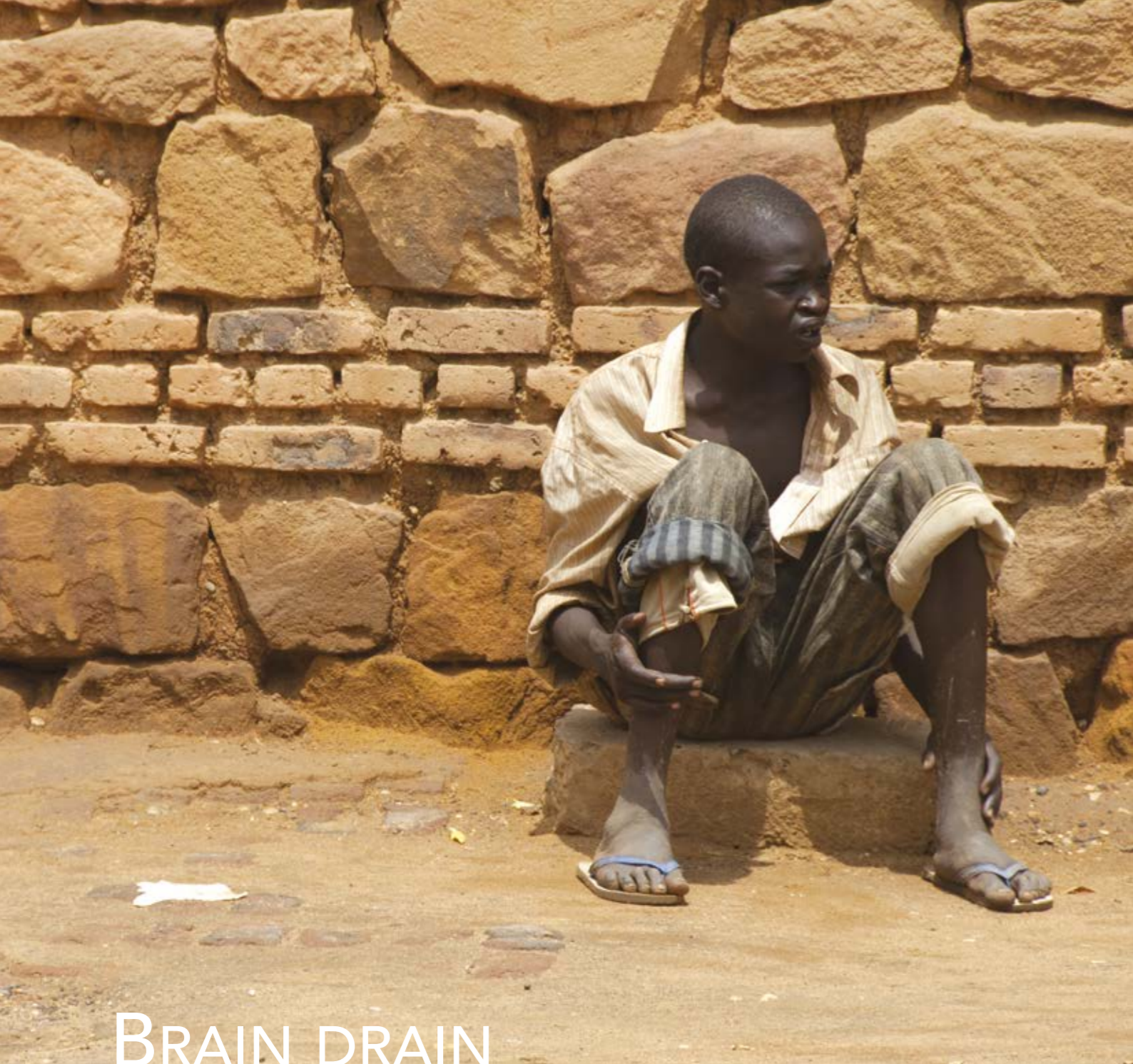
Obtaining higher degrees from a developed nation is a dream of educationists and researchers of developing countries. Most staff of the agricultural institutions of the developing world apply for grants and scholarships to undertake studies and read for higher degrees from reputed universities of the developed world. These universities and institutions are at the frontiers of science, using modern and highly sophisticated methods, which require large sums of money for equipment and chemicals and also trained technical assistance. For example, research programs related to crop science are based on cells, genes, modifications of genes and processes involving functionalities. This is basic frontier plant science which receives funding and also worldwide acclaim - although in some instances, the organisms used as models for research have questionable values for agriculture! However, this science is vital, as it provides answers to mysteries of nature and would, for instance, facilitate development of genetically modified plants and organisms, which may become useful in the future. Students from developing countries get involved in these projects - these have funds and opportunities! Therein lies the crunch: Would these students, after receiving training in highly advanced research systems which generally cannot be maintained in the developing nations without external funds, return to the basics of reality of their nations? Would they undertake field-oriented applied research in vital areas to enhance food supply to their nations?

In most instances, this does not happen - enthusiastic researchers, trained in the most modern methods in frontiers of agricultural research, return to their home nations eager to set up laboratories similar to the ones they have worked in and teach the students the latest in science. In these enthusiastic ventures, the well-trained young scientists are disappointed - their institutes and countries cannot afford to supply them with the required infrastructure and facilities - and the result is “brain drain” or the development of internal frustrations within the younger generations. Time-tested curricula which meet the production-oriented aspirations of the nations are changed and specialized courses added, which may have no value to local conditions - thus gearing the younger generations to move away from agricultural

production to science, even as the national need is increased agricultural production and processing. Numerous examples could be cited from the developing nations to highlight this problem of academics, who should be trained in field research, coming back to their respective nations with experience in genetic engineering and gene transfers, only to be frustrated - and we talk of brain drain!

Is there a way to overcome this deadlock? It can be done. It is strongly believed that one could strike a balance between these two worlds so that young, energetic academics and researchers from the developing nations are taught the frontiers in science while undertaking field-oriented research as a part of their training. Sandwich programs and in-country research are in place in programs offered to the developing world. Field testing of new methods and systems with practical value can easily be done, at a lesser cost to the funding agencies, which are also rewarded through training the future generations to be useful academics and researchers to their home nations! An additional advantage would be that young researchers experience local ecological conditions and social parameters, as agriculture is an integrative science which combines these two aspects.

Agriculture today is taken for granted, even though it provides the basic needs: FOOD AND NUTRITION! This aspect is especially vital for the developing world, which also derives income via exports. In this context, agricultural education is a very efficient and sustainable approach to development. Thus, good academics and researchers for the research institutes, and graduates for commodity organizations, extension services and even for administration, with their feet on the ground and on reality, with capacities to identify the needs of the nation and region, are vital. Their education must be geared to national needs through consensus with the developed world. The concept of research for science is vital: for the developed world, it means leading the way to find answers to the mysteries of nature and also possibly to develop new crops and genotypes. For the developing world, it means conducting research to enhance food production with available resources and supporting and encouraging today's farmer communities through education and demonstration, stimulating and motivating students to take up this noble vocation of agriculture - to provide sufficient quantities of nutritious food for people to achieve the goals of food security at family, national, regional and finally global levels.



What can we do about the medical brain drain?

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Imagine you are a freshly graduated doctor in Ghana. Your family is intensely proud of you but, typically, your prospects are limited. Chances for promotion look poor. You will find that your work environment and living conditions are difficult. Your health care system is very poor indeed. You are unlikely to be able to practice the sort of medicine you learnt. In the mid-2000s, your pay would have been approximately 1/16th of what it would have been in the UK, 1/22nd for the US (1). What would you do? In such situations, doctors from Sub-Saharan, Asian and Pacific countries often migrate to resource-rich countries. Of your colleagues from Ghana, over half of those trained between 1986 and 1995 are now abroad (2), a global trend that has continued in the interval.

Now, imagine you are an enthusiastic candidate medical student in Switzerland. Your family is intensely proud of you but, typically, your prospects are limited. Chances for your completion of medical school look poor. Admissions are competitive, with 3.8 candidates for each slot in 2009 (3). Among those like you, most (including some highly intelligent and capable people) will never become doctors. This will happen despite the fact that doctors are needed where you live. Fears of shortages have been voiced repeatedly over the years regarding certain medical specialties. One result of falling numbers is that immigration of foreign doctors is on the rise. Currently, a little over 25% of doctors practicing in Switzerland are foreign-trained. Doctors trained outside the EU and practicing in European countries reach from 0.7% in Poland to 37.5% in the UK (4). The US employs half of the world's English-speaking doctors.

The link between those two stories is glaringly obvious. Why do we allow this to happen? Mainly, because immigration from poorer countries is a very good deal for richer ones. Rich countries are theoretically in a position to train doctors in greater numbers. Doing so, however, would cost taxpayer money. To be more exact, it would cost their taxpayers' money. Doctors in other parts of the world are, after all, often trained at the cost of local taxpayers as well. When those doctors migrate to Europe, Australia, or the US (5), this represents an indirect subsidy of the - often - rich by the - often - poor.

We usually avoid looking too closely at the magnitude of the problem by thinking that migrant doctors often come from closer areas of the world. But our relatively well-off neighbor has a poorer one, to which it will turn to recruit doctors to fill slots left empty by migrants. And so on. The result is predictable: the only countries with no one poorer to turn to will be the poorest on earth. The net result is a global flow of health care professionals moving away from the greatest needs. In the process, they also turn their intelligence away from their communities' problems, to problems affecting their patients in rich countries.

Medical brain drain represents both a personal problem for all involved and a major global health issue. An issue which the World Health Organization recognized in 2010, when the 63rd World Health Assembly unanimously adopted the WHO Global Code of Practice on the International Recruitment of Health Personnel, perhaps the most significant code of practice it ever recognized in the area of health policy. What, then, can be done to mitigate medical brain drain?

Medical schools in countries which doctors tend to leave can take measures to keep them there. They can demand that they work for pre-defined times in rural areas (6) or they can train them to be able to function as better doctors there (7). Governments

in source countries could also tax migrant doctors' foreign income: the so-called 'Baghwati tax' (8). Rich countries could and should train more doctors at home, aiming for a sustainable medical population. This is not just right, it should be required: through international institutions, many such countries share in the responsibility for the absence of health workers in these countries. They are the ones that force many poor countries to limit their public sector, eliminating potential budgets for health worker positions (9).

This is also an area in which the private sector should do much more than it currently does. Many doctors cite frustration with the possibilities offered by local medical practice as a reason to migrate. How different might the situation be if clinical tools adapted to local circumstances were available to them. Some, such as self-contained anesthesia units, acute malnutrition therapies, or cell-phone powered ultrasounds, have already been developed. Doctors from poor countries often have very good ideas as to what would make their practice more effective, better adapted to local circumstances, or simply less frustrating. Hire them - locally of course and leaving them time to practice medicine there - engage them in assisting in the development of new techniques and technologies, and a small revolution might be the result. Indeed, technologies developed in this way might be useful the world over. But in the mean time, our Ghanaian doctor will have been offered a locally precious attraction: a chance to excel and be recognized, and a career ladder. An offer many might very well take.

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WOMEN'S LITERACY

Women's Schooling, Literacy and Child Health in Less-Developed Countries

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Harvard University
Boston, Massachusetts, USA

Mothers' school attainment is one of the best predictors of child survival and health in the developing world, but explaining this consistent finding has proved problematic. More than thirty years of demographic and health surveys have shown a woman's schooling to be robustly associated with the survival and health of her children. The most comprehensive analysis to date, published in 2010 by Gakidou et al., shows that almost half of the decline of under-five mortality in developing countries between 1990 and 2009 was due to a rise in women's school attainment, but this only deepens the mystery of what it is about schooling that could lead to such a remarkable outcome. My research group at the Harvard Graduate School of Education studied this problem in Latin America, Asia and Africa, and we provide a new answer based on literacy research in our book: *Literacy and Mothering*:

How Women's Schooling Changes the Lives of the World's Children (2012, Oxford University Press).

Detecting the possible impact of women's schooling in the less-developed countries over the last 50 years is complicated by the fact that it is usually associated with other socioeconomic advantages such as household income, husband's schooling (and occupational status) and urban residence - all of which are also positively correlated with survival and health outcomes. When these other factors are statistically controlled, however, maternal schooling usually remains a strong, often the best, independent predictor of child survival and health, particularly after infancy. But the independence of the relationship between schooling and health highlights the need to identify the intervening processes.

Economists of the human capital school simply assume that schools confer cognitive skills and find no need to test that assumption with empirical evidence. Other analysts, knowing that schools for the majority in developing countries are often of poor quality, have been reluctant to attribute the maternal schooling effect to learning or the acquisition of skills in school. Instead, some have speculated that girls who go to school become more autonomous, assertive or ambitious than those who never go, and that more schooling amplifies these social dispositions and leaves them more likely to take preventive and curative actions for their children. This is undoubtedly true in some places at some times but may not be widespread enough to explain the consistent effects of women's schooling across so many diverse populations. So we decided to examine a question neglected by demographic and epidemiological researchers: whether mothers with more school attainment retain skills acquired in school that might affect their health behavior as mothers.

What we found in our research in Mexico, Nepal, Venezuela and Zambia (fully reported in the book) can be summarized as follows:

1. Academic literacy skills. Mothers who had attended school longer performed better on tests of reading comprehension and academic language than those with less schooling, though often below the level at which they had left school.
2. Health media skills. Mothers with more schooling were better able to comprehend public health messages in printed or oral (radio) form. Their academic literacy skills were shown to mediate the effect of schooling on health message comprehension in all four countries and in rural as well as urban samples.
3. Health navigation skill. Mothers with more schooling gave more organized health narratives in an interview situation. Academic literacy skills mediated these effects too.

These findings can be understood in terms of a theory of bureaucratic communication. Schools and clinics are Western-type bureaucracies in which novices (pupils, patients) communicate with authoritative experts (teacher, doctor/nurse) distinguished by their superior knowledge and formal status. A girl learns from classroom experience how to act like a pupil by attending to, comprehending and following a teacher's instructions and using the abstract vocabulary of the classroom. Retaining these skills into adulthood, she activates them in comprehending health media and following the instructions of medical experts. Bureaucratic schooling, in other words, gives children from rural communities in less-developed societies the tools for using newly available bureaucratic services in hospitals, clinics and the media.

For women, this means schools change the ways they act as mothers. The unschooled mother is less likely to seek expert help in time for her child's health, understand health and nutrition messages in the media (even on radio and TV, where reading is not involved), report a coherent health narrative to a clinician, and follow the instructions of doctors and nurses. The newly bureaucratized world of developing countries favors those who have attended school because they have learned how to communicate according to the norms shared by Western-type schools and other bureaucratic institutions. It results in re-distributing survival risks to those without these skills, but sending all girls to school is the first step toward mitigating this unfairness.

By replicating our findings in four diverse countries, we have a strong preliminary basis for asserting that literacy and language skills are central to explaining the impact of maternal schooling. But larger and longer studies are urgently needed, studies in which thousands of girls are followed from school entry to motherhood. As we argue in the book, new methods of literacy assessment have become available to make possible research that will resolve once and for all why women's schooling is such a good predictor of health outcomes in developing countries.



PROFILE OF A NUTRITION INSTITUTE



SEAMEO-RECFON

SEAMEO Regional Centre for Food and Nutrition (RECFON)

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The Southeast Asian Ministers of Education Organization (SEAMEO) Regional Centre for Food and Nutrition (RECFON), one of the 20 SEAMEO Centres in the region, was inaugurated on 27 January 2011. It is a transformation from the previously known SEAMEO Tropical Medicine and Public Health (TROPMED) Regional Centre for Community Nutrition (RCCN), established in 1967, to cater to the rapid development of nutrition science including the need for comprehensive and multidisciplinary approaches to handle the multifacets of current nutrition problems. The transformation also means higher responsibilities to increase the quantity and quality of the Centre's service coverage and scope of program content by including a broader aspect of food and nutrition.

SEAMEO RECFON was established with a vision to be the Centre of Excellence in human resource development in the area of food and nutrition in Southeast Asia and with a mission to conduct research, education, capacity building and information dissemination in food and nutrition through partnership for sustainable human resources development. The program and activities are run by 18 academic staff consisting of 2 (retired) Professors, 10 PhDs, 2 PhD candidates and 4 Master's degree holders and 32 supporting staff members.

Capacity Building

The capacity-building activities at SEAMEO RECFON are intended to produce professionals in food and nutrition through academic degree programs and to train professionals in food and nutrition to strengthen both individuals and institutional capacity in education, research, program planning, program delivery/implementation, and program policy. The activities consist of degree programs within the

INDONESIA

AREA

Total (land only):	1,811,569 km ²
Arable land:	11.03%

POPULATION

Total:	248,645,008 (2012)
Urban population:	44% (2010)
Under age 15:	27%
Median age:	28.5 years

POPULATION GROWTH RATE

Total:	1.03% (2012 est.)
Urban areas:	1.33% (2001-2011)
Total fertility rate:	2.23 children born/woman (2012)

GNP (per capita)	\$4,700 (2011 est.)
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LIFE EXPECTANCY AT BIRTH

Total	71.6 years
Male	69.1 years
Female	74.3 years

MORTALITY RATES

Birth attended by skilled health personnel:	79% (2006-2010)
Neonatal mortality rate (2010):	17/1000
Infant mortality rate (under 1):	27/1000
Under-five mortality rate (2010):	35/1000
Under-5 mortality rate (2009), Rank:	72
Maternal mortality ratio (2012):	220/100,000 livebirth
Life expectancy at birth (2010):	69 years

UNDERWEIGHT

Low birth weight (2006-2010):	9%
Underweight prevalence in children under five (%) 2006-2010:	18%
Stunting prevalence in children under five (%) 2006-2010:	36%

INFANT AND YOUNG CHILD FEEDING

Six-month exclusive breastfeeding rate (2010):	15.3%
Timely complimentary feeding rate (6-9 months):	75%
Children who are still breastfeeding (12-23 months):	69%

KEY NUTRITIONAL ANTHROPOMETRY

Stunting in children under 5:	36% (2006-2010)
Prevalence of wasting (moderate and severe):	13% (2006-2010)

MICRONUTRIENT DEFICIENCIES

Percentage of households consuming iodized salt:	62%
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OTHER PARAMETERS

Total adult literacy rate:	92%
Primary school net enrolment ratio (%), 2007-2009:	98%
% of population using improved sanitation facilities 2008, total:	52%
% of population using improved sanitation facilities, 2008, urban:	67%
% of population using improved sanitation facilities, 2008, rural:	36%
% of population using Improved drinking-water ources 2008, total:	80%
Immunization 2010, 1-year-old children immunized against Measles:	89%
Immunization 2010, 1-year-old children immunized against Polio:	93%
Immunization 2010, 1-year-old children immunized against DPT:	94%
Antenatal care coverage (%), at least once:	93%
Delivery care coverage (%), skilled attendant at birth:	79%

Faculty of Medicine, University of Indonesia (Master's Program in Community Nutrition, and Doctorate in Nutrition), non-degree programs including short courses on food and nutrition-related topics, roll out of food safety training, and the Southeast Asian Nutrition Leadership Program (SEANLP). Each year, SEAMEO RECFON invites around 13 consultants/lecturers from SEA and outside the region to maintain the international quality level of the program. The degree program has produced 127 graduates with Master's degrees and 22 graduates with Doctorate degrees between 1992 and 2012. The majority of the alumni are from Indonesia (80%), other Southeast Asian countries (18%) and from African countries (2%). The Master's Program courses are also offered for short-course participants as regional trainings for which scholarships from the Government of Indonesia are available.

Research

From 2011-2015, the research topics will be focused on but not limited to the theme of Maternal and Child Nutrition, covering food, nutrition and health aspects and assessed rural and urban populations in East and West parts of Indonesia. The on-going and recently accomplished studies were multi-centre studies and conducted in collaboration with various partners. Most of the research has been published in international and national scientific fora, journals and books. In the last five years, the Centre has conducted 62 research projects and produced 82 scientific publications.

SEAMEO RECFON has received six research grants from the Nestle Foundation in the last few years:

- Strategic roles of fathers in optimizing breastfeeding practices: A study in the urban setting of Jakarta
- Effect of tempe and vitamin-C-rich fruit supplementation during pregnancy on iron status and pregnancy outcomes
- Food-based intervention and psychosocial stimulation to improve growth and development of under-two-year-old Indonesian children
- Exploration of Myanmar rural caregivers' conceptualization of childhood diarrheal diseases and its management, as related to ORS and feeding
- The role of sub-clinical inflammation on the iron and vitamin-A status of Myanmar adolescent girls during micronutrients supplementation
- Intensive education on nutrition and hygiene in order to improve the nutritional status of 6- to 12-month-old children

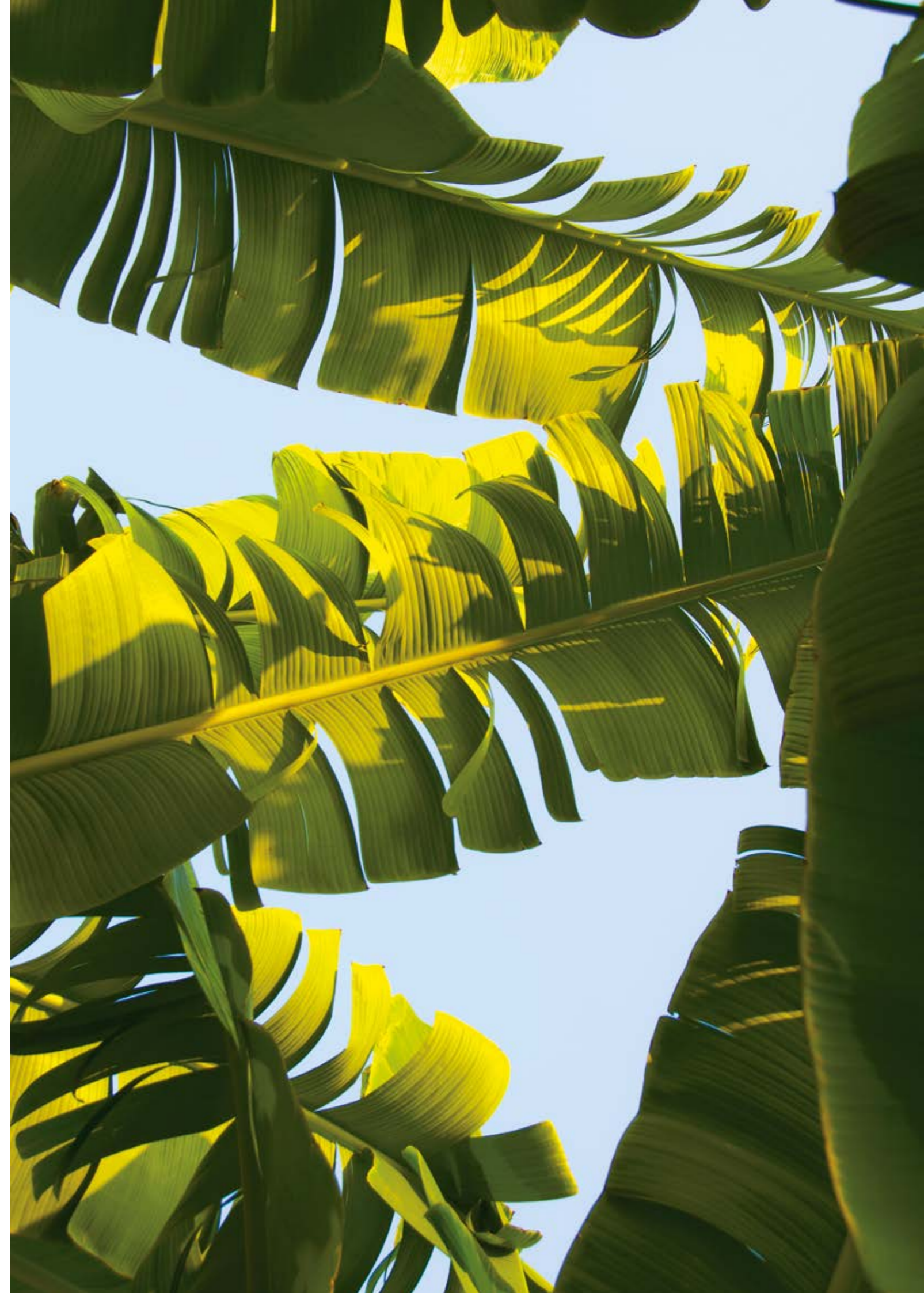
Information Dissemination and Collaborative Activities

Workshops, seminars and panel discussions, either at the national or international level, are conducted every year as part of the information dissemination activities on food and nutrition. Other activity includes nutrition competition for the public such as journalists and high school students. Access to the SEAMEO RECFON program is continuously improved by updating information on the Centre's website, newsletters, brochures and program announcements. Modules for teaching are developed both for the courses participants and for the public.

The collaborative activities for education and capacity-building programs are signified by the various scholarships, fellowships and internship programs provided through SEAMEO RECFON. In the last two years, SEAMEO RECFON has had a collaboration with the Harvard School of Public Health for the Higher Education Network Ring Initiatives (HENRI) program. HENRI is a program that brings together national and international educational institutions to train Indonesian scientists and public health professionals specifically for integration, analysis and use of country-level data for improved public health decision-making.

Facilities

The Centre is equipped with a laboratory, library and IT system, which have been continuously maintained to support the activities of the Centre. SEAMEO RECFON's laboratory provides three types of service, namely biochemical, anthropometry and dietary assessment, to support education and research activities. The laboratory is in the process of acquiring ISO 17025-2005 accreditation for four parameters of biochemical assessments (retinol, tocopherol, beta-caroten and zinc).





ONGOING PROJECTS

- 1 2001 / Effect of vitamin A and B2 supplementation added to iron on anemia of pregnant women in China Aiguo Ma
Qingdao University Medical College, Institute of Human Nutrition, Qingdao, China
- 2 2002 / Effects of an additional meal fortified with multiple micronutrients on the nutritional and micronutritional status of Vietnamese children Nguyen Quang Dung
National Institute of Nutrition, Basic Nutrition Department, Hanoi, Vietnam
- 3 2004 / Effect of iron fortification of nursery complementary food on iron status of infants Kim Su Huan
Institute of Child Nutrition, Pyongyang, Korea, Democratic Republic
- 4 2004 / Investigation of blood, hair lead and manganese levels in children with different degrees of iron deficiency in Karachi Mohammad Ataur Rahman
University of Karachi, Karachi Institute of Biotechnology and Genetic Engineering (KIBGE), Karachi, Pakistan
- 5 2004 / Vitamin A value of spirulina carotenoids in humans Guangwen Tang
Tufts University, Human Nutrition Research Center on Aging, Boston, Massachusetts, USA
- 6 2005 / Stability and efficacy of vitamin-A-fortified cooking oil on nutritional status of Vietnamese children 36-60 months Cao Thi Thu Huong
National Institute of Nutrition, Department of Micronutrient Research & Application, Hanoi, Vietnam
- 7 2006 / Vitamin A status of households according to the seasonal availability of vitamin A and beta-carotene rich foods Romain A.M. Dossa †
University of Abomey-Calavi, Department of Food Sciences and Nutrition, Cotonou, Benin
- 8 2006 / Effect of psychosocial stimulation on development of iron-deficient anemic infants: a randomized controlled trial Jena D. Hamadani
ICDDR,B, Centre for Health and Population Research, Dhaka, Bangladesh
- 9 2006 / Assessment of iron status of children in rural communities in Abia State, Nigeria Ignatius Onimawo
Ambrose Alli University, Biochemistry Department, Ekpoma, Nigeria
- 10 2007 / Iodine supplementation in mild-to-moderately iodine-deficient pregnant women: effects on pregnancy outcome and infant development Sumitra Muthayya
St John's National Academy of Health Sciences, Institute of Population Health & Clinical Research, Bangalore, India

- 11 2008 / Improving micronutrient status of Chinese children using dietary spirulina Shi-an Yin
National Institute of Nutrition & Food Safety, Beijing, China
- 12 2008 / Effects of vitamin A supplementation during lactation on infants' antibody response to hepatitis B vaccine in China Zhxiu Wang
Nanjing Medical University, School of Public Health, Nanjing, China
- 13 2008 / Impact of vitamin A and zinc supplementation on pathogen-specific diarrheal disease in Mexican children Kurt Long
University of Queensland, Division of International & Indigenous Health, Brisbane, Australia
- 14 2009 / Effect of maternal zinc supplementation during pregnancy and lactation on infants' immunity Mohammad Bakhtiar Hossain
ICDDR, B, Clinical Research Division, Mohakhali-Dhaka, Bangladesh
- 15 2011 / Effect of soybean supplementation, parasite control and nutrition education on iron status of adolescent girls in rural China Lei Li
Medical College of Xiamen University, Siming District, Xiamen, China

- 16 2008 / Information and education to support and promote exclusive breastfeeding Ada C Uwaegbute
Michael Okpara University of Agriculture, Umuahia, Nigeria





17	2005 / Food-based approach for the control of stunting among preschool children	Chineze Agbon University of Agriculture, Department of Home Science & Management, Abeokuta, Nigeria
18	2006 / STEP I: Complementary-feeding-based approach to alleviate linear growth retardation and nutrient deficiencies in infants aged 6 to 12 months in the south of Benin	Romain A.M. Dossa † University of Abomey-Calavi, Department of Food Sciences and Nutrition, Cotonou, Benin
19	2007 / Potential of amaranth grain seeds to improve the nutrition and health status of schoolchildren	John Muyonga Makerere University, Department of Food Science and Technology, Kampala, Uganda
20	2007 / Improving nutritional status of children aged 6-18 months in semi-arid area in Kenya: the potential of amaranth seed flour	Alice Mboganie Mwangi University of Nairobi, Applied Nutrition Programme, Uthiru-Nairobi, Kenya
21	2008 / Nutrition, anaemia, growth and oxygen weaning in low-birth-weight oxygen-dependent infants in a Kangaroo Clinic	Nathalie Charpak Fundacion Canguro, Bogota, Colombia
22	2008 / The effect of a 10-month school-based provision of high-calcium milk and weight-bearing exercise program on the bone mineral status of 7- to 9-year old prepubertal girls	Pura Rayco- Solon Nutrition Center of the Philippines, Manila, Philippines
23	2009 / Food-based approach to alleviate linear growth retardation and nutrient deficiencies in young children aged 6 to 11 months	Joseph Hounhouigan, Romain A.M. Dossa † University of Abomey-Calavi, Department of Food Sciences and Nutrition, Cotonou, Benin
24	2009 / Community-based nutrition intervention to improve the nutrient-density of meals for young children (6-24 months)	Margret K Kabahenda Makerere University, Department of Food Science & Technology, Kampala, Uganda
25	2010 / Effect of fish meal and Vitamin C on the iron status of Ghanaian children consuming cowpea-based food	Godfred Egbi University of Ghana, Noguchi Memorial Institute for Medical Research, Legon, Ghana
26	2010 / Intensive nutrition and hygiene education for improving nutrient intake of children aged 6-11 months	Dwi Nastiti Iswarawanti SEAMEO Regional Center for Food and Nutrition, Jakarta, Indonesia

27	2010 / Testing the efficacy of an audio program and discussion guide in promoting exclusive breastfeeding in Cameroon, Africa	Susanne Montgomery School of Public Health, Loma Linda University, Loma Linda, California, USA
28	2010 / Efficacy of combined selenium and iron supplementation on micronutrient status of school children	Nguyen Van Nhien National Institute for Food Control, Hanoi, Vietnam
29	2010 / Feeding practices in Guatemalan infants: adherence to the WHO recommendations and barriers to their implementation	Noel Solomons CESSIAM, Guatemala City, Guatemala
30	2011 / Effect of hookworm elimination and vitamin A intervention on anaemic status of preschool children in Sichuan, China (resubmission)	Ke Chen Chengdu Maternal and Children's Health Care Hospital, Chengdu, Sichuan, China
31	2012 / Food based approaches to reduce childhood nutrients-energy malnutrition in Bangang community, Cameroon	Marie Modestine Kana Sop University of Douala, Faculty of Science, Douala, Cameroon
32	2012 / Drama for behaviour change communication on breastfeeding and complementary feeding practices in rural area of Osun State, Nigeria	Beatrice Olubukola Ogunba Obafemi Awolowo University, Department of Family, Nutrition and Consumer Sciences, Ile ife, Nigeria





TITLE

PRINCIPAL INVESTIGATOR

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|----|---|--|
| 33 | 2007 / Nutrition education to improve mother and cadre nutritional knowledge and children nutritional status in Indonesia | Ali Khomsan
Bogor Agricultural University, Department of Community Nutrition, Bogor, Indonesia |
| 34 | 2007 / Effect of tempe and vitamin-C-rich fruit supplementation during pregnancy on iron status and pregnancy outcomes | Maria Wijaya-Erhard
University of Indonesia, SEAMEO RECFON, Jakarta, Indonesia |
| 35 | 2008 / The development of new norms for indicators of iodine status during pregnancy and its impact on the prevalence of mental retardation in children | Chen Zupei
Tianjin Medical University, Institute of Endocrinology, Tianjin, China |
| 36 | 2009 / Impact of daily consumption of vitamin-A-fortified oil on breast milk vitamin A concentration and vitamin A status of lactating Moroccan women | Najat Mokhtar
Ibn Tofail University, Nutrition Unit, Kenitra, Morocco |
| 37 | 2009 / Role of vitamin B12 supplementation during pregnancy and postpartum to alleviate nutritional anaemia in Bangladeshi women and their infants | Towfida Jahan Siddiqua
ICDDR, B, Nutritional Biochemistry Lab, Dhaka, Bangladesh |
| 38 | 2010 / SMS and web-based support for appropriate infant feeding to prevent childhood obesity in urban China | Hong Jiang
School of Public Health, Fudan University, Shanghai, China |
| 39 | 2010 / Urinary iodine concentration of pregnant women in Zambia as an indicator of their iodine nutrition status | Cyprian Katongo
Copperbelt University, School of Mathematics and Natural Sciences, Kitwe, Zambia |
| 40 | 2010 / Pre-conceptional vs gestational food supplements and pregnancy outcomes in rural Vietnam | Tu Ngu
National Institute of Nutrition, Department of Applied Nutrition & Nutritional Surveillance at the National Institute of Nutrition, Hanoi, Vietnam |
| 41 | 2011 / Assessment of iodine status in pregnant women and weaning infants in eastern region of Nepal | AK Nepal
Koirala Institute of Health Sciences, Department of Biochemistry, Kathmandu, Nepal |

CHILD BEHAVIOURAL DEVELOPMENT

- | | | |
|----|---|---|
| 42 | 2009 / Food-based intervention and psychosocial stimulation to improve growth and development of <24mo Indonesian children | Umi Fahmida
University of Indonesia, SEAMEO RECFON, Jakarta, Indonesia |
| 43 | 2011 / Effects of maternal iodine supplementation in an area of mild iodine deficiency on infant development to 2 years (a follow-on study to our previous Nestlé Foundation grant) | K Srinivasan
St. Johns Research Institute, Bangalore, India |
| 44 | 2012 / Maternal zinc nutrition: its influence on human health and development in Peruvian children | Nelly Zavaleta
Instituto de Investigacion Nutricional, Lima, Peru |

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| 45 | 2002 / Nutrition assessment of children orphaned from HIV/AIDS | Judith A Ernst
Indiana University, School of Health & Rehabilitation Sciences, Indianapolis, Indiana, USA |
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| 46 | 2002 / Examination of the relationships between low body mass index and micronutrient malnutrition and the risk of morbidity in adults aged 18 to 60 years in rural Vietnam | Tran Thanh Do
National Institute of Nutrition, Hanoi, Vietnam |
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| 47 | 2004 / Molecular and biochemical analysis of intestinal microflora in malnourished children with cholera treated with oral rehydration solution with and without amylase resistant starch | Motiur Rahman
ICDDR,B, Centre for Health and Population Research, Dhaka, Bangladesh |
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| 48 | 2010 / The role of sub-clinical inflammation on micronutrient status of Myanmar adolescent girls during micronutrient supplementation | Min Kyaw Htet
SEAMEO TROPED Network, Jakarta, Indonesia |
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| 49 | 2011 / Exploration of Myanmar rural caregivers' concepts on childhood diarrheal disease (6 -24 mo) and its management related to ORS use and feeding | Khaing Mar Zaw
SEAMEO RECFON UI, Jakarta, Indonesia |
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IMMUNE DEFENSE AND INFECTION



TITLE

PRINCIPAL INVESTIGATOR



TITLE

PRINCIPAL INVESTIGATOR

50 2004 / Changing diets, levels of physical activity and environments and their relationship to the emergence of adolescent overweight and obesity in Ho Chi Minh City, Vietnam
Hong K Tang
Community Health Department, Training Centre for Health Care Professionals, Ho Chi Minh City, Vietnam

51 2007 / Diet, physical activity or environmental change: what are the key factors underlying the emerging child obesity epidemic in Ho Chi Minh City, Vietnam
Hong K Tang
Community Health Department, Training Centre for Health Care Professionals, Ho Chi Minh City, Vietnam

52 2009 / A pilot study of school-based peer education and obesity-related behaviours in adolescents in Beijing, China
Zhaohui Cui
University of Sidney, The George Institute for International Health, Sydney, Australia

53 2006 / Application of learning technologies to support community-based lay health care workers and build capacity in chronic disease prevention in Thailand
Rhona M. Hanning
University of Waterloo, Department of Health Studies and Gerontology, Waterloo, Ontario, Canada

54 2008 / Care empowerment of mothers, cadres, and premarried women to improve children nutritional status
Euis Sunarti
Bogor Agricultural University, Department of Family and Consumer Science, Bogor, Indonesia

55 2011 / A multi-approach intervention to empower posyandu nutrition program to combat malnutrition problem in rural areas
Ali Khomsan
Bogor Agricultural University, Department of Community Nutrition, Bogor, Indonesia

OTHER RESEARCH AREAS

56 2008 / Causes and control of food insecurity: a pilot model in the Northwest of Iran
Saeed Dastgiri
Tabriz University of Medical Sciences, Faculty of Medicine, Tabriz, Iran

57 2008 / Contribution à l'amélioration de l'état nutritionnel et sanitaire des enfants de 06 à 59 mois dans la commune de bopa par des actions communautaires
Romain A.M. Dossa †
University of Abomey-Calavi, Department of Food Sciences and Nutrition, Cotonou, Benin

58 2010 / Improving nutritional status of schoolchildren through consumption of cowpea: A food sovereignty perspective
Abdul-Razak Abizari
School of Medicine and Health Sciences, Community Nutrition Department, Tamale, Ghana

59 2010 / Pilot study to assess the acceptability of pearl millet grain at macro- and micro-levels in rural Eastern Kenya
Mueni Hellen Ndiku
University of Eastern Africa, Baraton (UEAB), School of Sciences & Technology & Department of Public Health, Eldoret, Kenya

60 2011 / Factors influencing household nutritional status in relation to increasing food prices in Sri Lanka
Mahinda Lal Baddawelage
Faculty of Agriculture, University of Peradeniya, Peradeniya, Sri Lanka

61 2011 / Effectiveness of nutrition package in improving growth of rural children (6-23 months): a cluster randomised trial
Kissa B.M. Kulwa
Sokoine University of Agriculture, Department of Food Science & Technology, Morogoro, Tanzania

62 2012 / Prenatal and young child nutritional supplementation and early childhood body composition, growth and development
Momodou K Darboe
MRC International Nutrition Group, Banjul, Gambia

63 2012 / Optimized complementary feeding versus iron supplementation on micronutrient status and gut microbiota of children
Lwin Mar Hlaing
University of Indonesia, SEAMEO RECFON, Jakarta, Indonesia

64 2012 / Effects of dietary/lifestyle counselling on risk of major cardiovascular events in CAD and non-CAD population in Indonesia
Iqbal M. Husein
Gadjah Mada University, School of Medicine, Makassar, Indonesia



TITLE

PRINCIPAL INVESTIGATOR



65	2012 / Consumer acceptability of spirulina in Zimbabwe, and effect of cooking on spirulina provitamin A carotenoids (resubmission)	Tawanda Muzhingi Tufts University, Avondale, Harare, Zimbabwe
66	2012 / Sustainable community-based diabetes prevention program by lifestyle modification for at-risk populations in Thailand	Kitti Sranacharoenpong Institute of Nutrition, Mahidol University, Phuttamonthon, Thailand
67	2012 / Community salt iodization & relation of iodine intake to Visual Information Processing (VIP) of Ethiopian infants	G Tafere Hawassa University, Human Nutrition, Hawassa, Ethiopia
68	2012/Effect of nutrient-dense complementary food on catch-up growth of Indonesian moderately stunted children	Duma Octavia Fransisca University of Indonesia, SEAMEO RECFON, Jakarta, Indonesia

OTHER RESEARCH
AREAS



PUBLICATIONS

Abizari AR, Moretti D, Schuth S, Zimmermann MB, Armar-Klimesu M, Brouwer ID. Phytic acid-to-iron molar ratio rather than polyphenol concentration determines iron bioavailability in whole-cowpea meal among young women. *J Nutr* 2012;142:1950-5.

Abizari AR, Moretti D, Zimmermann MB, Armar-Klimesu M, Brouwer ID. Whole cowpea meal fortified with NaFeEDTA reduces iron deficiency among Ghanaian school children in a malaria endemic area. *J Nutr* 2012;142:1836-42.

Htet M K, Dillon D, Akib A, Utomo B, Fahmida U, Thurnham D I. Microcytic anaemia predominates in adolescent school girls in the delta region of Myanmar. *Asia Pac J Clin Nutr* 2012;21:411-5.

Jiang H, Li M, Yang D, Wen LM, Hunter C, He G, Qian X. Awareness, intention, and needs regarding breastfeeding: findings from first-time mothers in Shanghai, China. *Breastfeeding Med* 2012; Epub ahead of print.

Ma Aiguo. Micronutrient status and effects of supplementation in anemic pregnant women in rural China. Published thesis Wageningen University, the Netherlands 2012; ISBN 978-94-6173-493-8:148 pp.

Macharia-Mutie CW, Van de Wiel AM, Moreno-Londono AM, Mwangi AM, Brouwer ID. Sensory acceptability and factors predicting the consumption of grain amaranth in Kenya. *Ecol Food Nutr* 2011;50:375-92.

Macharia-Mutie CW. Efficacy of amaranth grain (*Amaranthus cruentus*) on anaemia and iron deficiency in Kenyan pre-school children. Published thesis Wageningen University, the Netherlands 2012; ISBN 978-94-6173-291-0:168 pp.

Macharia-Mutie CW, Moretti D, Van den Briel N, Omusundi AM, Mwangi AM, Kok FJ, Zimmermann MB, Brouwer ID. Maize porridge enriched with a micronutrient powder containing low-dose iron as NaFeEDTA but not amaranth grain flour reduces anemia and iron deficiency in Kenyan preschool children. *J Nutr* 2012;142:1756-63.

Rahman MA, Rahman B, Ahmad MS, Blann A, Ahmed N. Blood and hair lead in children with different extents of iron deficiency in Karachi. *Environ Res* 2012;118:94-100.

Reinsma K, Bolima N, Fonteh F, Okwen P, Yota D, Montgomery S. Incorporating cultural beliefs in promoting exclusive breastfeeding. *African J of Midwifery & Women's Health* 2012;6:65-70.

Thakwalakwa C, Ashorn P, Phuka J, Cheung YB, Briend A, Puumalainen T, Maleta K. A lipid-based nutrient supplement but not corn-soy blend modestly increases weight gain among 6- to 18-month-old moderately underweight children in rural Malawi. *J Nutr* 2010;140:2008-13.

Trang NH, Hong TK, Dibley MJ. Cohort profile: Ho Chi Minh City Youth Cohort-changes in diet, physical activity, sedentary behaviour and relationship with overweight/obesity in adolescents. *BMJ Open* 2012;2:print 2012.

Trang NH, Hong TK, Dibley MJ. Active commuting to school among adolescents in Ho Chi Minh City, Vietnam: change and predictors in a longitudinal study, 2004 to 2009. *Am J Prev Med* 2012;42:120-8.

Van Beusekom I, Vossenaar M, Montenegro-Bethancourt G, Doak C, Solomons NW. Estimation of exclusive breastfeeding rates among mother-infant dyads in Quetzaltenango, Guatemala varies by interview methods and time-frame. *Br J Nutr* 2012; to be published.

Vossenaar M, Garcia R, Solomons NW, Doak CM, Peters L, Campos Ponce M. Ritual fluids in relation to early child nutrition in Quetzaltenango, Guatemala. *Sight and Life* 2012;40-46.

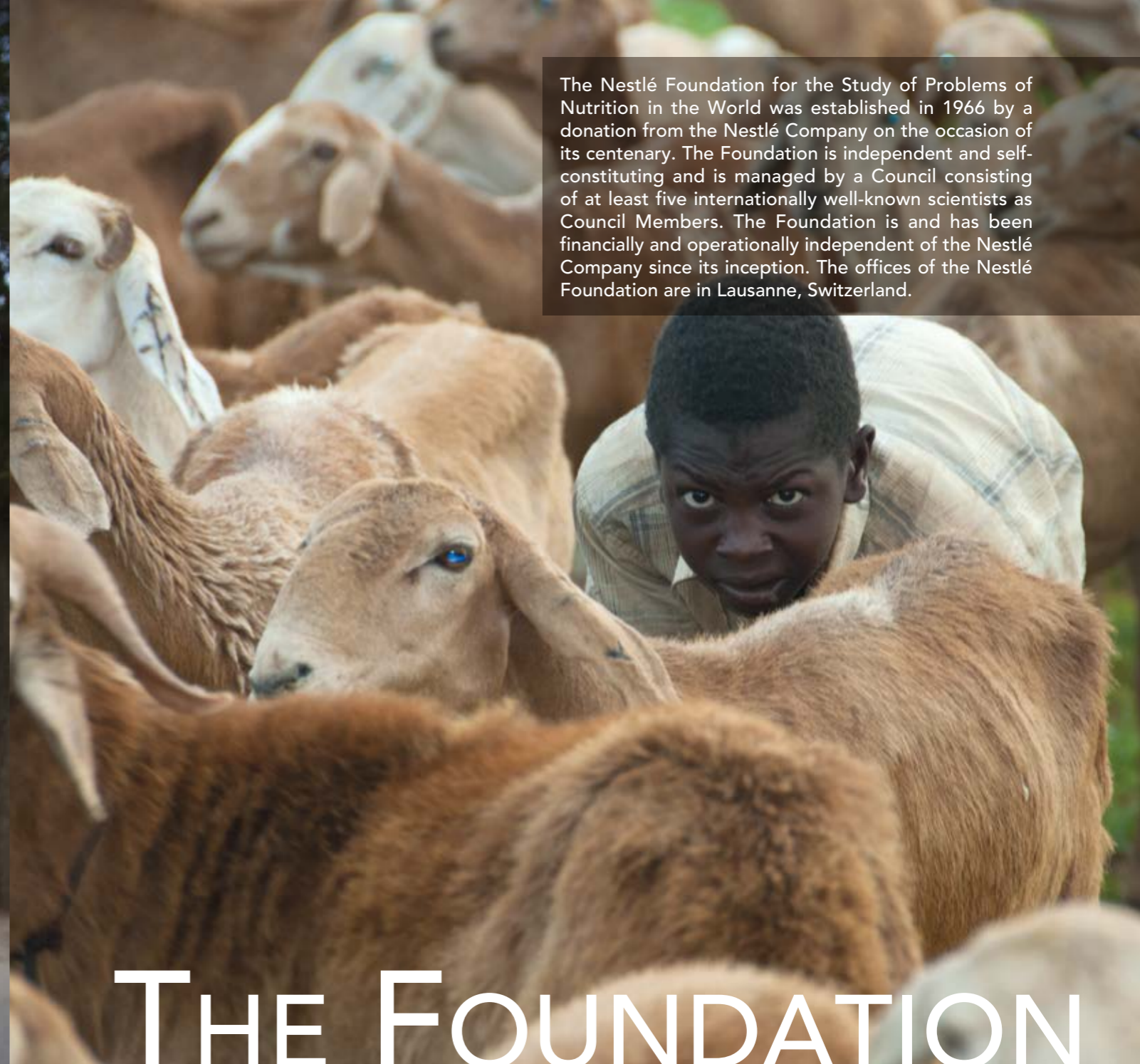
Yang DL, Jiang H, Li M, Qian X. Intervention intention of using mobile phone text messages and the internet as an intervention tool to promote breastfeeding. *Chinese Journal of Maternal and Child Health* 2011;30:4704-6 (in Chinese).

The publications are available free of charge upon request.





The Nestlé Foundation for the Study of Problems of Nutrition in the World was established in 1966 by a donation from the Nestlé Company on the occasion of its centenary. The Foundation is independent and self-constituting and is managed by a Council consisting of at least five internationally well-known scientists as Council Members. The Foundation is and has been financially and operationally independent of the Nestlé Company since its inception. The offices of the Nestlé Foundation are in Lausanne, Switzerland.



THE FOUNDATION

GUIDELINES FOR GRANT APPLICATIONS TO THE NESTLÉ FOUNDATION

PURPOSE

The Nestlé Foundation initiates and supports research in human nutrition with public-health relevance in low-income and lower-middle-income countries according to the World Bank classification (see <http://www.worldbank.org>). The results of the research projects should ideally provide a basis for implementation and action which will lead to sustainable effects in the studied populations as generally applicable to the population at large. They should also enable institution strengthening and capacity building in a sustainable manner in the host

country, and further cooperation and collaboration between institutions in developed and developing countries.

The Foundation expects research proposals to be primarily the initiative of local researchers from the developing countries. However, the Foundation will be inclined to consider favourably those applications made jointly by scientists from developed countries with those from developing countries provided it is clear that the initiative will result in capacity building and human-resource development in the latter and that the bulk of the budget is spent in the developing country.

CURRENT POLICY

Sustainable improvement in human nutrition is one of the major issues in the portfolio of the Foundation. During more than 40 years, basic and applied research in nutrition has been supported by the Foundation in over 50 developing countries. In view of the past activities of the Foundation as well as the world's situation at the turn of the millennium, it was recognized that the public-health relevance of the supported research as well as aspects of sustainability, capacity building and educational issues should have a higher priority. Thus, priority is given to projects which lead to sustainable developments with strong elements of capacity building, and the implementation of the results of a research project should be immediate and sustainable. Highly sophisticated nutrition research of mainly academic interest without public-health relevance has lower priority for support, as do solely laboratory-based studies or animal experimentation.

RESEARCH TOPICS

At present the Foundation's work is primarily concerned with human nutrition research issues dealing with:

- (1) maternal and child nutrition, including breastfeeding and complementary feeding,
- (2) macro- and micronutrient deficiencies and imbalances,
- (3) interactions between infection and nutrition, and
- (4) nutrition education and health promotion.

The precise priorities and goals of the Foundation are modified from time to time to meet emerging public-health and nutritional needs in the developing world.

Studies in other areas of human nutrition research might also be considered, as long as they are dealing with problems of malnutrition in eligible countries (see above). Other areas of research may possibly be considered for support if the applicant can offer specific and convincing evidence and justification for the choice of the research topic.

Funded projects are usually of one- to three-year duration. Projects with a high potential for effective and sustainable improvement of the nutritional status as well as a high capacity-building component will be funded preferentially. The budget of the projects must be appropriate and reasonable and has to be justified in detail.

One of the Foundation's main aims is the transfer of scientific and technological knowledge to target countries. In cases where Foundation-sponsored research projects are realized in collaboration with scientists at universities and research institutes in high-income countries, at least 75% of the budget has to be earmarked for use within the low-income country.

The Foundation does not normally fund:

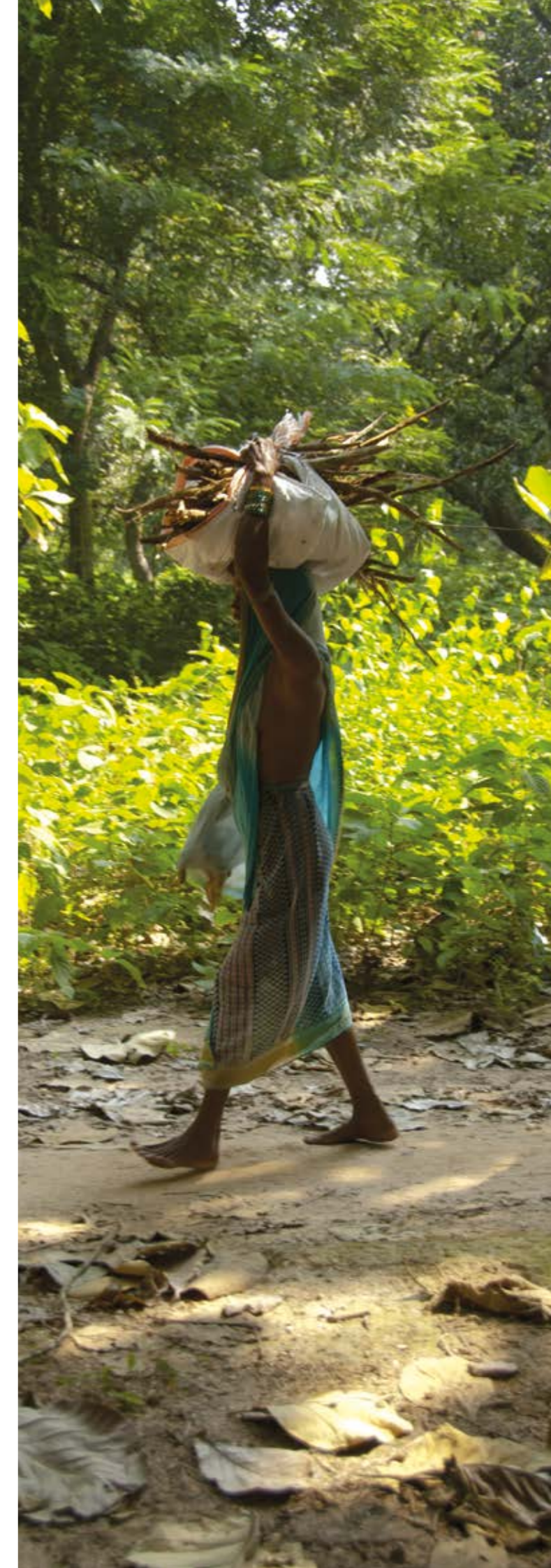
- (1) projects with low public-health relevance
- (2) projects with doubtful sustainability
- (3) projects lacking transfer of scientific, technical and educational knowledge, i.e. lacking a capacity-building component
- (4) large-budget projects, meaning projects that exceed USD 100,000 per year or USD 300,000 over the total duration of a 3-year project
- (5) nutrition surveys or surveillance studies
- (6) research on food policy, food production and food technology except when linked to an intervention with high potential for sustainable improvement of the nutritional status
- (7) in vitro and/or animal experiments.

Although obesity and related diseases are of emerging importance in several low-income countries, the Foundation does not generally support projects in this specific area unless the proposal demonstrates linkages with under-nutrition, and the protocol is innovative and exceptionally well justified.

ELIGIBLE INSTITUTIONS

Eligible institutions are departments or institutes from universities, hospitals, and other institutions of higher education in low- or lower-middle-income countries. Joint applications from more than one institution (especially South-South) are welcomed. Joint applications from more than one institution involving a North-South collaboration may also be considered. For project applications demonstrating North-South collaboration, it is important that the following criteria are fulfilled: (i) the Principal Investigator is from the South and the proposal has relevance to nutritional problems of the South; (ii) the majority of the budget is earmarked for the South; and (iii) demonstration upon completion of the project of institution- and capacity building in a sustainable manner in the South.

The capacity-building component represents a core issue for all applications to the Foundation. This means that every application needs to demonstrate a training and human-resource and capacity-building component for the developing world. Ideally graduate students or young investigators should play a key role and, where possible, be designated as the Principal Investigator (PI), i.e. be the primary grant applicant, or Co-PI. Established researchers can nevertheless apply but need to clearly indicate the capacity-building component and the designated beneficiaries. Established investigators alone are not usually eligible to apply for a grant, except when they address innovative and exceptionally well-justified research questions in developing countries. Such applications need to clearly state the capacity- and human-resource-building components in the host country as well as the long-term sustainability of research in the host institution. Applications from individuals who are non-affiliated researchers and not attached to research or academic institutions can be considered only in very special cases.



TYPES OF AWARDS

The Nestlé Foundation offers different award and grant categories, some of them using a modular approach; for example, the Pilot Grant Program represents the starting grant module for a later Full Grant Research application. The eligibility criteria as well as the research objectives and topics have to be fulfilled no matter what the award category (for further details see www.nestlefoundation.org):

A. Research Grants

Grant type	Description	Budget (in USD)
Training Grant (TG)	The Training Grant (TG) Program supports a small research project such as a MSc or PhD thesis project or another training endeavour.	up to 20,000 in total
Pilot Grant (PG)	The Pilot Grant (PG) Program of the Foundation provides support for pilot research that has a high potential to lead to a subsequent full research project grant. Usually the Foundation does not support nutritional survey research, but often to be able to identify areas of problems for potential intervention one has to collect baseline data. If a pilot study (pre-study or baseline study) will create the needed data for a larger research project, the PG program may assist this. The pilot study and PG usually represent the starting point for a later full research grant application (i.e., a SG or LG) to the Foundation.	up to 20,000 in total
Small Research Grant (SG)	The Small Research Grant (SG) provides support for a small research study. This may represent a continuation of a TG or a PG.	up to 50,000 in total
Large Research Grant (LG)	Full grant application of a complete research proposal according to the guidelines.	up to 100,000 per year to a maximum of 300,000 for 3 years
Re-Entry Grants	To encourage post-graduate students to return to their own countries and to aid them in establishing their careers, the Foundation will support a research programme for eligible candidates. The host institution will need to guarantee a post for the returnee and ensure career development within the host institution. Contribution of support to the eligible candidate from the host institution is essential, while support and collaboration from the overseas institution where the candidate trained is helpful.	up to 50,000 in total

B. Institutional Support

Institutional support involves the support of research or educational projects in specific institutions in low- or lower-middle-income countries which contribute to a focused development of capacity and know-how and human-resource development in the corresponding institution.

HOW TO APPLY

Interested scientists should first submit a letter of intent in which they describe very briefly the kind of project they would like to undertake, including an estimated budget. Instructions for the letter of intent are available on the Foundation website at www.nestlefoundation.org. For a submission of a letter of intent only the downloadable form on our website should be used. If the suggested project is compatible with the Foundation’s current funding policy, applicants will receive an invitation to submit a full grant proposal. The guidelines for the submission of a full grant proposal are also available on our website. Other formats will not be accepted, neither for the letter of intent nor for the full grant applications.

In the letter of intent and in the grant application, detailed, evidence-based information about the public-health relevance of the project as well as its immediate impact and sustainability have to be reported. This part of the application is as important as the scientific section of the application.

Research grant applications are evaluated twice a year by the Foundation’s Council, a group of independent international scientists. The funding of projects is primarily based on the scientific quality, public-health relevance in the short and long term, sustainability, capacity-building component and, last but not least, budget considerations. All grants will be paid in Swiss Francs (CHF) only.

Applications are accepted throughout the year, and the Foundation encourages applicants to submit their proposals early to allow sufficient time for internal as well as external reviews. All submissions should be made electronically by e-mail. Final deadlines for submission are January 10 and May 10 for the Spring and Fall Council Meetings, respectively.

For more information consult www.nestlefoundation.org



The Council of the Foundation consists of five Council Members and Advisors. All Council Members and Advisors are internationally well-known scientists with a specific expertise in different fields of nutrition. The Council is self-constituting and operates independently. The Foundation is directed jointly by the Director and the President of the Foundation.

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The man who is too old to learn was probably always too old to learn

Henry S. Haskins



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PHOTO:

Cover: Fish Market in Omdurman (Khartoum, Sudan) on the banks of the Nile - photograph by Paolo M. Suter

PAGE 2 top: Godfred Egbi, Chief Research Assistant, Noguchi Memorial Institute for Medical Research, Legon, Ghana. **PAGE 2 middle:** Spirulina algae: Prof. Dr. HR Preisig, Botanical Garden & Institute of Systematic Botany, University of Zurich, Switzerland; **PAGE 13:** Worldmapper maps see above © Copyright 2006 SASI Group (University of Sheffield) & Mark Newman (University of Michigan); **PAGE 46 bottom:** photo by SEAMEO RECFON, Jakarta, Indonesia. All other pictures © by Paolo M. Suter

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