

Nutrition-enhancing agriculture and food systems

Collection of contributions received

Discussion No. 91 from 1 to 29 July 2013

*TABLE OF CONTENTS*

[**Introduction to the topic** 4](#_Toc363459987)

[**Contributions received** 6](#_Toc363459988)

[1. Elisabeth Asiimwe, agriculture extension student, Uganda 6](#_Toc363459989)

[2. Ryan Nehring, Cornell University, IFPRI, UNDP-IPC, United States of America 6](#_Toc363459990)

[3. Maria Antip, International Fertilizer Industry Association (IFA), France 7](#_Toc363459991)

[4. Pankaj Kumar, Concern Worldwide, Ethiopia 8](#_Toc363459992)

[5. Eileen Omosa, University of Alberta, Canada 8](#_Toc363459993)

[6. Robert A Best, West Indian Projects, Trinidad and Tobago 9](#_Toc363459994)

[7. Prabur Dutta, India 10](#_Toc363459995)

[8. Lisa Kitinoja, The Postharvest Education Foundation, USA 10](#_Toc363459996)

[9. Subhash Mehta, Devarao Shivaram Trust, India 11](#_Toc363459997)

[10. Pratiksha Shrestha, Jagdamba Foods, Nepal 12](#_Toc363459998)

[11. B.P. Gangadhara Swamy, CCF-India, India 13](#_Toc363459999)

[12. Kenneth Senkosi, Forum for Sustainable Agriculture in Africa, Uganda 13](#_Toc363460000)

[13. Lazarus Dawa, Ministry of Health, Papua Nuova Guinea 13](#_Toc363460001)

[14. Kien Nguyen, Van Institute, Viet Nam 14](#_Toc363460002)

[15. Pradip Dey, Indian Society of Soil Salinity and Water Quality, India 14](#_Toc363460003)

[16. Hélène Delisle, Canada 15](#_Toc363460004)

[17. Jody Harris and Leslie Amoroso, facilitators of the discussion 15](#_Toc363460005)

[18. Subhash Mehta, Devarao Shivaram Trust, India 16](#_Toc363460006)

[19. Peter Steele, independent consultant, Italy 17](#_Toc363460007)

[20. Subhash Mehta, Devarao Shivaram Trust, India 19](#_Toc363460008)

[21. Pradip Kumar Nath, National Institute of Rural Development, India 23](#_Toc363460009)

[22. Gerhard Flachowsky, Federal Research Institute for Animal Health, Germany 24](#_Toc363460010)

[23. Fannie de Boer, Wageningen Universtity and Research Centre, Netherlands 26](#_Toc363460011)

[24. Tobias Lasner and Gesise Beherens, Thünen-Institut für Seefischerei - AG Fischereiökonomie, Germany 27](#_Toc363460012)

[25. Terri Ballard, FAO, Italy 27](#_Toc363460013)

[26. Feedback by Jody Harris and Leslie Amoroso, facilitators 28](#_Toc363460014)

[27. Cristina Grandi, IFOAM Food Security Campaigner, Italy 29](#_Toc363460015)

[28. Richard Cottlell, World Sugar Organisation, UK 29](#_Toc363460016)

[29. Janice Meerman, FAO, Italy 32](#_Toc363460017)

[30. Ellen Muehlhoff, FAO and Ramani Wijesinha-Bettoni, FAO Consultant, on behalf of the FAO ENACT Team, Italy 33](#_Toc363460018)

[31. Ishwar Babu Bairwa, ISS, Netherlands 36](#_Toc363460019)

[32. Anna Herforth Independent consultant, United States of America 37](#_Toc363460020)

[33. Corinna Hawkes, World Cancer Research Fund International, United Kingdom 37](#_Toc363460021)

[34. Jody Harris and Leslie Amoroso, facilitators of the discussion 38](#_Toc363460022)

[35. Prabir Dutta, Dg Foundation, India 38](#_Toc363460023)

[36. Xavier Meignien, International Institute of Refrigeration, France 39](#_Toc363460024)

[37. Purnachandra Wasti, Department of Food Technology and Quality Control, Nepal 40](#_Toc363460025)

[38. Kuruppacharil V.Peter World Noni Research Foundation, India 42](#_Toc363460026)

[39. Stacia Nordin, NeverEndingFood, Malawi 43](#_Toc363460027)

[40. Luis Lobo, FAO, Chile 43](#_Toc363460028)

[41. C.Palanivelayutham Chokkalingam, India 43](#_Toc363460029)

[42. US Council for International Business, United States of America 44](#_Toc363460030)

[43. The International Diabetes Federation, Belgium 48](#_Toc363460031)

[44. The NCD Alliance, Switzerland 52](#_Toc363460032)

[45. Lalita Bhattacharjee, FAO, Bangladesh 56](#_Toc363460033)

[46. Anna Antwi, GD Resource Centre, Ghana 57](#_Toc363460034)

[47. Etienne du Vachat, Action contre la Faim - ACF (Action Against Hunger), France 58](#_Toc363460035)

[48. Rahul Goswami, Centre for Communication and Development Studies, India 60](#_Toc363460036)

[49. Aaron Buchsbaum, John Snow, Inc - SPRING Project, United States of America 62](#_Toc363460037)

[50. Domitille Kauffmann and Charlotte Dufour, FAO Nutrition Division, Italy 63](#_Toc363460038)

[51. Jody Harris and Leslie Amoroso, facilitators of the discussion 65](#_Toc363460039)

# **Introduction to the topic**

As part of the preparations leading up to the Second International Conference on Nutrition (ICN2), a Preparatory Technical Meeting is to be held at FAO Headquarters from 13 to 15 November 2013. More information is available at: [www.fao.org/ICN2](http://www.fao.org/ICN2).

To feed into and inform this meeting, a series of online discussions are being held on selected thematic areas. This ICN2 online discussion “Nutrition-enhancing agriculture and food systems” builds on earlier FSN Forum debates “[Linking Agriculture, Food Systems, and Nutrition: What’s your perspective?](http://www.fao.org/fsnforum/forum/discussions/linking-agriculture-nutrition)” and “Making agriculture work for nutrition: Prioritizing country-level action, research and support”. It invites you to share evidence and exchange views on how to improve policies, programmes and interventions for making agriculture and food systems more responsive to nutrition. Policy and programme options as well as institutional arrangements for improving diets and raising levels of nutrition, particularly of the poorest and most nutritionally vulnerable, as well as ways to improve monitoring and evaluation of their impact and cost-effectiveness will be sought.

Improving nutrition must begin with food and agriculture. This is because the poor and most nutritionally vulnerable depend in large part upon agriculture for their livelihoods. Notwithstanding the importance of the role of agriculture in producing food and generating income, employment and livelihoods, it is the food system as a whole i.e. the post-production sector beyond agriculture including processing, storage, trade, marketing and consumption that nowadays contributes significantly more to the eradication of malnutrition.

“Nutrition-enhancing” are approaches that address the underlying determinants or basic causes of malnutrition. Nutrition-enhancing agriculture and food systems are those that effectively and explicitly incorporate nutrition objectives, concerns and considerations, improve diets and raise levels of food and nutrition security. Actions may include making more nutritious food more accessible to everyone or to specific targeted groups, supporting smallholders and boosting women’s incomes, ensuring clean water and sanitation, education and employment, health care, support for resilience and empowering women in a deliberate attempt to explicitly improve diets and raise levels of nutrition.

Food-based approaches recognize the central role of food, agriculture and diets in improving nutrition. Agriculture and food-based strategies focus on food as the primary tool for improving the quality of the diet and for addressing and preventing malnutrition and nutritional deficiencies. The approach stresses the multiple benefits derived from enjoying a variety of foods, recognizing the nutritional value of food for good nutrition, and the importance and social significance of the agricultural and food sector for supporting rural livelihoods. The multiple social, economic and health benefits associated with successful food-based approaches that lead to year-round availability, access to and consumption of nutritionally adequate amounts and varieties of foods are clear. The nutritional well-being and health of individuals is promoted, incomes and livelihoods supported, and community and national wealth created and protected.

The causal pathway from the food system to nutritional outcomes may be direct - as influenced by the availability and accessibility of diverse, nutritious foods and thus the ability of consumers to choose healthy diets, as well as indirect – mediated through incomes, prices, knowledge and other factors. Interventions that consider and affect food systems as a whole can potentially achieve more widespread nutritional outcomes than single uncoordinated actions.

We invite you to comment on the [background papers and materials for the ICN2 made available for this discussion](http://www.fao.org/food/nutritional-policies-strategies/icn2/core-background-papers/en/). In addition your comments on the expert papers that have been prepared in response to FAO’s Call for Experts that are [available at this link](http://www.fao.org/food/nutritional-policies-strategies/icn2/expert-papers/en/) as well as your responses to the following questions would be welcome:

* Policy issues: What policies can make agriculture and food systems more nutrition-enhancing? What are the knowledge gaps in policies associated with nutrition-enhancing agriculture and food systems?
* Programme issues: What do nutrition-enhancing agriculture and food systems look like? What have been the success stories and lessons learned from programmes at country level? How can we monitor the impact of such programmes on food consumption and nutrition?
* Partnerships: How can we work across sectors and build strong linkages between food and agriculture, social protection, employment, health, education and other key sectors? How can we create sustainable partnerships? how can we build effective governance for nutrition?

While we encourage you to provide comments on any or all of the above at any stage of the discussion, we propose focus is given in the first week to discussing the first set of questions.

The outcome of this online discussion will be used to enrich the discussions at the preparatory technical meeting on 13-15 November 2013 and thereby feed into and inform the main high level ICN2 event in 2014.

We thank you in advance for your time and for sharing your knowledge and experiences with us.

We look forward to your contributions.

**The facilitators:**

Jody Harris, Senior Research Analyst, Poverty Health and Nutrition Division, IFPRI.

Leslie Amoroso, Programme Officer and member of the ICN2 Secretariat, FAO, Rome, Italy

find out more about the facilitators [*here*](http://www.fao.org/fsnforum/bio-jody-and-leslie)

# **Contributions received**

## 1. Elisabeth Asiimwe, agriculture extension student, Uganda

Dear all,

To me, strengthening the partnerships and linkages among all the stakeholders named is more important than anything else because if each sector is to work independently, the the beneficiaries get more confused because at times different sectors convey contradicting messages.

For example in my country, the vehicle for dissemination of agricultural information(the extension system) uses a business lens in promoting enterprises and innovations. In fact it has 10 enterprise it considers of high value and promotes them through training on production, input supply and establishing links along the value chains. For sure, this is good probably because they think that higher income can improve access to foods through the markets. However, I imagine the resource poor farmers who may not be able to commercialise agriculture because of a number of limiting factors. How about the rural woman in some societies of Africa who has no control over cash crops, yet according to literature she is the driver to food and nutrition security? I think that promoting nutrient-rich foods such as biofortified foods- OFSP, iron-rich beans and vegetables which the woman has control over may be one of the policy level solutions to malnutrition.

If also researchers in all the related sectors could do their work jointly to identify the nutritional needs of a given population, this could guide informed decisions and appropriate interventions which would help curb down the problem of malnutrition. We have seen /heard M.O.U's between the different sectors to work together only on paper, but these in most cases do not reach the grass root levels...

## 2. Ryan Nehring, Cornell University, IFPRI, UNDP-IPC, United States of America

Dear all,

The creation of a decentralized food system through institutional markets and procurement incorporates local control, participation and increased access to nutritional and culturally-appropriate food. Brazil's Food Acquisition Program (Programa de Aquisição de Alimentos - PAA) is a case in which the federal government funds the procurement of food from family farmers based on numerous modalities at different scales.

More recently, this experience has expanded to a pilot programme in five African countries under cooperation of the FAO Brasil, WFP, the Brazilian Cooperation Agency (ABC) and African governments (Malawi, Senegal, Niger, Mozambique and Ethiopia - <http://paa-africa.org>). A PAA-style policy strengthens local economies, producer organizations and cooperatives as well as the relationship between different levels of government and civil society.

I encourage you all to look at a study we undertook at the UNDP - International Policy Center for Inclusive Growth that looks at the process of scaling-up the PAA in Northeastern Brazil: <http://www.fao.org/fsnforum/sites/default/files/resources/Nehring_McKay_2013_PAA.pdf>

Thank you,

Ryan Nehring

## 3. Maria Antip, International Fertilizer Industry Association (IFA), France

Dear all,

In order to make agriculture and food systems more nutrition-enhancing, the fertilizer industry proposes a focus and macro and micro nutrient fertilization. Therefore, we ask the members of the FSN to have a look at our newly-released project: [three infographics](http://www.fertilizer.org/ifa/HomePage/SUSTAINABILITY/Nutrition) on crop fertilization to address malnutrition.

These graphics constitute a visual vehicle for the scientific research findings published in the [**Fertilizing Crops to Improve Human Health: A Scientific Review**](http://www.fertilizer.org/ifacontent/download/90302/1324791/version/1/file/2012_ipni_ifa_fchh_final.pdf) publication jointly published by the Fertilizer Industry Association (IFA) and the International Plant Nutrition Institute(IPNI) in late 2012. Both the infographics and the scientific review are part of the fertilizer industry’s efforts to improve food security and nutrition. The fertilizer industry is actively engaged in demonstrating the importance of soil health conservation, nutrient management, sustainable intensification and nutrition. IFA is a strong advocate of developing new post-2015 Sustainable Development Goals that clearly aim at eradicating hunger and malnutrition and promoting sustainable agricultural practices.

Key messages about how macro and micro nutrient fertilization can enhance food systems by increasing:

* Quality: adding fertilizers and micronutrients to soil can increase the content, composition and bioavailability of vitamins and nutrients.
* Quantity: Deficiencies in nutrients reduce crop yields of 40-60%.
* Diversity: Adding macro and micro nutrients through fertilization can positively impact crop texture, flavor and shelf life.
* Safety: Fertilizers diminish human health risks; for example Selenium reduces incidence of heart disease.

[The infographics](http://www.fertilizer.org/ifa/HomePage/SUSTAINABILITY/Nutrition) highlight the significant improvements that can be made to crop productivity, livestock health and people’s nutrition by simply adding micronutrients to regular fertilizer products. For most micronutrients, if the soils are deficient, the same deficiency is found in the crops, the animals and the people. One of the infographics describes some key examples of successful strategies implemented in Europe, Asia and Oceania. In Finland, for example, the government implemented the addition of Selenium to fertilizers in order to help tackle heart disease. Turkey, on the other hand, has been adding Zinc, resulting in increased wheat yields in Central Anatolia.

We stress the fact that micronutrient fertilization is a simple, affordable and sustainable solution to contribute to eradicating deficiencies globally, in particular in the case of zinc, selenium and iodine. This makes it a viable program which can be tailored to regional and national needs and implemented worldwide. Partnerships already exist in many countries but the scale of the work needs further dissemination of these important findings provided in IFA-IPNI’s scientific review.

Macro and micro nutrient fertilization directly addresses one of the five goals of the Zero Hunger Challenge, namely the eradication of stunting. In addition, the growing concerns about macro and micro nutrient deficiencies in food have been addressed by the updated Lancet report on mother and child nutrition, published in June, which highlights the imperative need for better nutrient data at national level in order to devise a global approach targeting hidden hunger hotspots.

Further info and resources can be found my accessing the links below:

* IFA infographics: <http://www.fertilizer.org/ifa/HomePage/SUSTAINABILITY/Nutrition>
* Fertilizing Crops to Improve Human Health: A Scientific Review:  <http://www.fertilizer.org/ifacontent/download/90302/1324791/version/1/file/2012_ipni_ifa_fchh_final.pdf>
* Lancet Report: <http://www.thelancet.com/series/maternal-and-child-nutrition>

## 4. Pankaj Kumar, Concern Worldwide, Ethiopia

This response tries to answer the question: *What policies can make agriculture and food systems more nutrition-enhancing? What are the knowledge gaps in policies associated with nutrition-enhancing agriculture and food systems?*

Food fortification  has been recognized as one of the important strategy for increase the micro-nutrient content of available foods, especially post farm gate level. In the context of Ethiopia, this is essentially important as Food Vitamin and mineral deficiencies, also known as micronutrient malnutrition, represent a severe public health problem in Ethiopia. More than half of children and a quarter of adult women are anaemic.1 Nearly 40% of children are vitamin A deficient.2 As a consequence, the nation’s GDP is depressed by nearly half a billion dollars annually and each year more than 50 thousand children die as a consequence of vitamin A, iron and folic acid deficiencies. These losses limit capacity to meet national objectives for reducing mortality, poverty and malnutrition as well as economic development.

The National Nutrition Program (NNP) presents an opportunity to build on the current portfolio of affordable and effective micronutrient interventions and bring them to full scale. Food fortification can play a key role within the context of comprehensive multiple strategies to reduce micronutrient deficiencies. Wheat flour, edible oil and sugar are three traditionally proven food fortification vehicles with high consumption, wide distribution and centralized processing required by fortification. This report assesses the feasibility of a national fortification program including these three food vehicles.

Based on this, Concern Worldwide with support from the World Bank undertook an assessment of Food Fortification and its potential in Ethiopia ( copy of the report is enclosed). This answered the current level of food fortification initiatives and the knowledge gap. The report was approved by the Government of Ethiopia and the findings from the study were used to influence new National Nutrition Programme (2013-2015). The findings are also being used to develop capacity building strategy for Food Fortification Initiatives. Once implement, this will help the country to reduce micro-nutrient deficiencies in a large scale.

Kind regards,

Pankaj  
Concern Worldwide  
Ethiopia

## 5. Eileen Omosa, University of Alberta, Canada

Hi there,

I have three suggestions interlinking the three levels i.e. policy, programme and partnerships: Nutrition enhancing agriculture starts with the seed we put into the soil; has it been stripped-off some nutritional elements or not. Does the seed demand for monocroping which results in mono-consumption or is the seed friendly to other food crops on the farm? To respond to issues of agricultural production of nutritious food, calls for the media, extension agents, education system, healthcare providers, and policy makers to encourage the continued consumption of `good food' - nutritionally. A good example is the partnerships witnessed in Kenya in the 1980s and 1990s. The new government at that time took up agriculture=nutrition=wellbeing through consumption of locally available and affordable foods as one way to announce its presence to the citizen. With the knowledge that majority of families owned a radio and listened to national news at least three times a day; the practice was that a patriotic or nutrition related song was played on radio at the end of the news broadcast. There was also reference to where anyone in doubt could get detailed information, including schools, hospitals, clinics, extension agents, etc. Similar information was shared to women at pre and post natal clinic visits. It was during that decade, when as a teenager that I acquired my current knowledge on individual agricultural food crops (indigenous and introduced) and their nutritional value, which I practice to date.

Policy and partnerships come in at the level of marketing. Governments and other development agencies need to borrow something on marketing from the private sector, especially the private sector in fast foods. I am not advocating for regulation; that will waste precious time and resources in courts, I am advocating for informed competition: With the widespread use of public and social media, people in both rural and urban areas rely on media messages to reach certain decisions. It is time policy makers and advocates of agriculture for good nutrition  embraced the use of public and social media, otherwise, as I have said before through a different forum, mothers will sell the eggs, bananas and millet that they grow on their farms to purchase bread and a soft drink for their children. WHY, because they have seen and heard in the media that such purchased foods will make their children happy and proud of them; a goal sought after by many parents.

Partnerships: Once we spread the message on the simple cost-benefit linkages in  nutrition-oriented agriculture, good health and wealth/lower medical costs. Once more people get reminded of the role of nutrition in wellbeing, they will start looking for nutrition filled agricultural products, and anyone interested in business will become a supplier with little effort. The best evidence is in the vegetable section of larger grocery stores in Nairobi and other major cities. My near future study is to analyze implications of the urban consumption of indigenous foods to the nutrion-well being of rural households. The folks in cities are in search of nutritious foods, they got to know that the most affordable nutrition is found in indigenous foods, and the private sector has benefited by making such foods available, from rural farms where they are grown. A partnership between private sector in urban settings and rural farm workers.

Thanks and more examples can be found at eileenomosa.com

## 6. Robert A Best, West Indian Projects, Trinidad and Tobago

I think the comments so far have been very interesting.

Several diverse comments.

In the Caribbean there seems, I may be wrong, not to be many food distribution services industry policies and development except in response to rising food prices. Supermarket penetration is increasing and their share of local (and imported) fruit and vegetable sales is increasing. But I sense that there is a role for more purposeful development of public infrastructure in fresh markets that can provide fresh local nutritious foods (tropical roots, fruit, vegetables, unprocessed meats) possibly at lower prices to villages and towns .. as well as road side commuting community. I know of several markets in Jamaica, for example, where the public sector had provided road side rapid-markets where the commuting public can buy local foods as well as fresh fruit and vegetables (especially those which are local).

See the link to the report: “An assessment of the agri-food distribution services industry in CARICOM” <http://www.acp-eu-trade.org/library/files/Best_EN_011106_CRNM_Assessment-of-the-Agri-food-Distribution-Services-Industry-CARICOM.pdf>

**The fast food issue.** We can’t get away from it. In the 1980s the store with the greatest turnover in the world was in Port of Spain Trinidad and Tobago, which at that time had a population of around 1m people. Fried chicken, fries and coke!!! Recently a fast food outlet from Latin America introduced a menu that addressed the interest in consumers for improved nutrition .. grilled meats, fish soup, steamed cassava, boiled/ stewed black beans, steamed sweet corn, fresh salads ..... AND the minister of Food Production stepped in to encourage (public sector insistence) that they purchase locally produced sweet potato chips which is a step in the right direction (I would prefer if they were baked). Policy makers though trade measures, investment incentives, sharing improved nutrition formats to potential investors, consumer education programs and moral suasion can influence the options and choices that consumers make and link the fast food sector more closely with domestic value chains serving value added versions of traditionally healthy foods.

<http://pollotropical.com/><https://www.facebook.com/IslandGrill>

**Local content policy.** The government is one of the largest single procurement of food through its school feeding and institutional procurement programmes. In some countries, like Trinidad and Tobago, this is amplified since the government owns (the physical assets) of the three largest companies and sends most government business there. Also since governments are also major share holders in other entities airlines, natural resource extraction company, together with their own direct purchases, they can important direct purchasing and indirect purchasing influence of the domestic and regional (CARICOM) procurement strategies. Now this already happens in developed countries, but now the Trinidad and Tobago private sector is arguing for a domestic local purchasing strategy and in food they are linking this to good nutrition (fresh as opposed to two year old frozen chicken way past their sell by date, fresh eggs as opposed to dried powdered eggs, local milk, local roots, fruits and vegetable, etc). And development support from the Government to transform local healthy products to meet the needs of modern consumers and distribution formats.

Some ideas for you to throw into the good policies for good nutrition pot ... !!!

## 7. Prabur Dutta, India

Sir,  
When we talk of Agriculture we stress only on foods of plant origin ignoring the foods of animal origin.   
But foods of animal origin are nutritious (milk, eggs, etc). So policy should be taken up that foods of animal origin are being considered important addition in agriculture production system as a policy.  
If we look in average life expectancy found most of the developed countries are not depended on plant foods only. The per capita consumption of milk, egg and meats have a great role to form healthy foods besides income generation of the poor people.

Yours sincerely  
Dr Prabir Dutta  
India

## 8. Lisa Kitinoja, The Postharvest Education Foundation, USA

Dear moderators,

Excellent topic and questions, thank you. I would like to comment on the following:

**Policy issues:**

What **policies** can make agriculture and food systems more nutrition-enhancing?

Many projects and programs (funded by international donors, national governments, charity organizations or businesses during the past 4 decades) seem to have focused mainly on crops that provide calories (staple grains and root crops) rather than nutritious foods such as vegetables, fermented foods, fruits, nuts, dairy products, etc.  Policies that deliberately target or at least include these "other" foods would be very helpful in enhancing nutrition.  Putting an emphasis on reducing food losses/waste can protect limited resources (now spent on producing foods that often go to waste).

What are the **knowledge gaps** in policies associated with nutrition-enhancing agriculture and food systems?

An important knowledge gap is the lack of information on local costs and benefits of producing, handling, processing and marketing these many nutritious types of foods.  Only when agriculture and food systems are profitable for those involved will they be sustainable and likely to move beyond the "trial" or "project" stage.

Dr. Lisa Kitinoja  
The Postharvest Education Foundation  
[www.postharvest.org](http://www.postharvest.org)  
@PostharvestOrg

## 9. Subhash Mehta, Devarao Shivaram Trust, India

**Trees on farms are essential for global production of nutritious food**

My inputs are incorporated in,

Summary of the International Conference on Forests for Food Security and Nutrition, held at FAO headquarters, Rome, Italy, 13–15 May 2013'

• The role of trees on farms in the fight against hunger and malnutrition demands much greater attention and should be integrated with strategies for food and nutrition security.

• Nutritious Food security is grounded in diversity – in terms of biota, landscapes, cultures, diets, integrated agriculture and management. Forests and trees are critical for maintaining that diversity.

• The ecosystem services provided by forests and trees make essential contributions to forest dependent communities and integrated agriculture for, among other things, protecting soil and water, maintaining soil fertility, effects of climate change, providing habitat for wild pollinators and the predators of agricultural pests.

• Forest tree products as part of integrated agriculture of the area have been important components of rural  nutritious food diets for millennia and today provide essential nutrition for millions of people. More than one-third of the world’s people rely on wood fuel for cooking, fodder for cattle and bio mass as a low cost producer of farm inputs.

• Forests and trees on farms and their sustainable management are crucial for ensuring the resilience of low cost nutritious food-production systems in the face of climate change, economic, social and political instability by ensuring access to the poor rural smallholder producer communities. Forest and trees on integrated farms reduces effect of climate change, cost of production, hunger, malnutrition and poverty whilst improving livelihood, net income and purchasing power based on increased sources of income thus contributing to building resilience.

• There are opportunities to use more forest species, especially plants and insects, for the large scale production of nutritious food. However, deforestation and forest degradation risks the loss of many such species.

• The single biggest cause of forest loss is mono cropping in agricultural expansion, but there is potential for both by following the local integrated agricultural system and protecting forests, including through the restoration of degraded forest land, with the greater use of trees in agriculture, and the alignment of policies and institutional frameworks to that end.

• Secure land and forest tenure and ensure equitable access to public resources for women/ local communities and who will encourage sustainable forest and tree based approaches to nutritious food security.

• There is a need to retrieve, document and make available the traditional knowledge of integrated agriculture as applicable to the soil and climatic conditions of each area and to combine it with scientific knowledge to increase the role of forests and trees in food and nutrition security.

• Women often have specialized knowledge of forests and trees in terms of species diversity for the local integrated agriculture, uses for various purposes, and conservation and sustainable management practices, thus ensuring the food and nutrition security of forest-dependent communities.

• Greater collaboration at the local and national levels is needed to improve data collection, documentation, communication, reporting, monitoring & evaluation of the contributions made by non-wood forest products, forest ecosystem services and other forest and tree related aspects on nutritious food security.

• Training and creating local capacity in the women and youth for management of sustainable forest enterprises can help forest-dependent communities, to add value, increase shelf life of the produce, to minimize post harvest losses and gain access to higher prices, thereby improving livelihood, net income and purchasing power and the food and nutrition security of such communities by helping them to capitalize on their traditional knowledge.

• Governments, civil society, indigenous peoples, bilateral and multilateral development assistance agencies, the producer organisations/ company (PC) and other stakeholders are invited to strengthen the contributions of forests and trees on farms to food and nutrition security through a number of feasible actions, listed in the full summary.

As used in this summary, the term “trees outside forests” encompasses agroforestry systems, other trees on farms, and trees in non-forested rural landscapes.

## 10. Pratiksha Shrestha, Jagdamba Foods, Nepal

Dear all,

For nutrition enhancing agriculture systems, we should not forget about safe food distribution chain. ie. from farmers to consumers. Preventing all kind of biological, chemical and physical hazards would only deliver the intended food in the system.

Thanks and regards

Pratiksha Shrestha

## 11. B.P. Gangadhara Swamy, CCF-India, India

Dear Sir/Madam,  
   
Please find my contribution for the current topic  
   
1. Special packages for poor farmers who grows minor millets, vegetables and fruits.  Free supply of seeds and fertilizers and ensuring buy back system.  
2. When government is supplying free seeds of any food crop to farmers, let it be mixed with minor millets, leafy vegetable seeds, oil crop seeds in it. Then farmers will grow it and will harvest different crops, which are nutritional and it will get them extra incomes.  
3. Some of countries like India are supplying grains at low prices to poor people. Instead of supplying whole grains, let the government introduce both whole grain and also the flour containing cereals, pulses and oil crops. People will make nutritious bread, chapatti, any food recipe out of that, which is nutritious.  
4. Women are the custodians of food practices, let the government involve women in all policy making decisions.  
5. Develop area wise agriculture plans to ensure to demand and supply of nutrient food crops within the area, to minimize the costs of production and transport.  
6. Develop the good storage and value addition activities to ensure the food supply throughout the year.  
7. Bring very strict laws to stop food wastage at hotels, during functions and ceremonies.  
8. Fix the food quantities at hotels, in most of the hotels they supply huge quantities of food, which cannot eaten by single person to get more money from him. Hence strict laws should be brought to minimize these food wastage.  
   
With Regards  
B.P.GANGADHARA SWAMY

## 12. Kenneth Senkosi, Forum for Sustainable Agriculture in Africa, Uganda

For nutrition enhancing agriculture and food systems to become a reality, there is need for technology transfer agents, commercial farms without grower schemes to institutionalize the practice of enterprise diversification within their operational plans. As farmers become market oriented, someone needs to constantly remind them about the economic benefits of having all nutrients required by their bodies being sourced on farm. This way agriculture will gradually lead to nutritional security.

Thanks,

Kenneth Senkosi

## 13. Lazarus Dawa, Ministry of Health, Papua Nuova Guinea

Dear All,

My contribution to discussion on policy arena on nutrition enhancing agriculture and food system is given here.

From my experience, efforts towards improving good nutrition outcome and improving the food system are still disintegrated, there is missing link and lack of collaboration between the agencies responsible.  The health sector are primarily focusing on interventions to improve nutrition outcome, while the agriculture and livestock sector work on achieving food security.  These two agencies are focal point for achieving positive results in nutrition and food system, however if policies are not compatible to each other then it makes it a harder task to reduce malnutrition and hunger.  Linking and integration of policies are the best option on solving policy issues related reaching a harmonized framework on tackling food and nutrition problems.

## 14. Kien Nguyen, Van Institute, Viet Nam

Dear Sirs/Madams,

In my opinion, needs of nutrition of humankind from agriculture and food systems is no change, even if it is higher than before. But the way that men want to get nutrition and energy is changed. It are foods and agricultural products that must be convenience for usage, storage and  transportation. Meaningful, agriculture and food system must be fresh, clean and safe in first. Next, agriculture and food system must meet to criteria of environments and green as well as standards of quality and goods management under the globalization. Then we could focus on some fields that could help to improve nutrient values from products of agriculture and foods.

1. Indigenous knowledge to  nutrient values of various agricultural products;

This is the simplest way to improve nutrition to poor communities and food shortage;

1. Advanced scientific knowledge for agriculture and food systems;

This will help commodities of agriculture and foods is easy for procession, usage, storage and transportation. Whole men, including producers, processors, distributors and consumers will be benefits and profits from these.

1. Policies and mechanism;

To have climate and corridors, policy and mechanism should be developed and implemented to encourage indigenous and advanced scientific knowledge could meet  each others and promote processing industry develop faster than.

1. Global/ regional standards;

The difference of standards will prevent against move of nutrition flows in products of agriculture and foods between nationals and continents.

Best regards,

KIEN

## 15. Pradip Dey, Indian Society of Soil Salinity and Water Quality, India

Dear All,

Good day!

Of the five nutrients (carbohydrate, protein, fat, vitamins and minerals), the first three are usually highlighted and there is nothing wrong to that considering their prime importance towards energy and body building aspect. However, we also need to consider on other two: vitamins and minerals. Many of child and maternal problems are associated with this two.  Reports on micronutrient malnutrition is increasing day by day. The issue is more severe amongst poor populace. Food fortiﬁcation may help considerably in solving this problem. Also public awareness programmes need to be initiated on a large scale.

With warm regards,

Sincerely,

Pradip Dey

## 16. Hélène Delisle, Canada

This is going to be brief. I only wish to highlight a few aspects that may already be there, but that I feel are particularly important:

1. More nutrition-sensitive agriculture and food systems requires that at least the agriculture and health sectors be connected and work together. This is already difficult enough, let’s start with these two. Actually, nutrition is at the interface of both sectors. More easily said than done, and it is more difficult at country level than at field level. Strategies to achieve this cooperation should be outlined. At this time, food security is the responsibility of agriculture and nutrition, of the health sector. Even in the health sector there is a cleavage: malnutrition (undernutrition) is handled by maternal and child health division, whereas very little is done relative to ‘overnutrition’: nutrition is so far poorly integrated into NCD programs of the health sectors. This is based on several years of experience in Africa. It may be different elsewhere.
2. Minor crops and local food systems may require more emphasis for nutrition-enhancing and sustainable agriculture and food systems, as well as for sustainable diets.
3. Nutrition concerns and objectives have to be integrated into agriculture, and FAO is doing a great job in this regard. More knowledge and emphasis on food systems should also be integrated into health and medicine endeavors.
4. Much is said and written about policy for programmes and research. I find it quite appalling that so little attention is devoted to competent workforce in nutrition in order to link agriculture, food systems, and health.

## 17. Jody Harris and Leslie Amoroso, facilitators of the discussion

Dear all,

We would like to give an enormous thanks to those who have already contributed to this discussion. It is a rich discussion, covering important topics, with the diversity of views and perspectives from different fields and geographical areas reflecting the variety of options for nutrition-enhancing agriculture and food systems.

Recognizing this diversity, and some of the leading current thinking in the different topic areas, core background papers and materials for the ICN2 have been made available to inform this discussion and several expert papers have been prepared. In the next week, we encourage you to read one or more of these materials (those which reflect your own interests), and consider these when making your comments.

The materials are made available at the following links:

**Core background papers/materials:**  
[http://www.fao.org/food/nutritional-policies-strategies/icn2/core-background-papers/en](http://www.fao.org/food/nutritional-policies-strategies/icn2/core-background-papers/en/)

**Expert papers:**  
<http://www.fao.org/food/nutritional-policies-strategies/icn2/expert-papers/en>

When thinking about these carefully-chosen materials, do keep in mind the three overarching questions around 1) Policy issues; 2) Programme issues and 3) Partnerships articulated in the introduction; your thoughts on these areas are very much welcomed.

Your comments on the discussion materials and on the three key questions are invited, based on your personal experiences, views and work.

Thank you for your time and for sharing your knowledge and experiences with us (even briefly), and we look forward to receiving your contributions.

Jody and Leslie

## 18. Subhash Mehta, Devarao Shivaram Trust, India

I have read with interest the contributions made to the consultation and would like to highlight the fact that a key factor why there was no food crises post-Soviet Union collapse in South Caucuses and Central Asian countries after 1992, as seen in Sub Saharan Africa, was the Dekhon / Homestead farming practiced by each family. These farms provided most of the immediate nutritious food needs of vegetables, meat, milk, eggs, fruits, etc., even when inflation was rife.

The NARES, Regional and International  research orgs/ stakeholders have not and are continuing to follow a top down approach, thus ignoring to meet the AR4D needs of the rural poor smallholder producer community ( 85% of farmers) to reduce costs, hunger, malnutrition, poverty, suicides and the effect of climate change whilst improving farm production of homesteads, quality of on farm produced low cost inputs in terms of improved livelihoods, seeds, compost, bio mass, water and irrigation, cultivation techniques, housing of livestock and their upkeep, net income and purchasing power etc. Many out of the box interventions like the funding  for the setting up of producer orgs/ company (PC) GOI doc attached, staffed by professionals (rural youth trained as general practitioners [GPs]/ MBAs in agriculture to take over all responsibilities, manage risks, leaving their members to on farm activities producing nutritious food for their communities and accessible at farm gate price), creating local human and institutional capacity (knowledge/ know how/ technologies/ ICTs and material sciences to manage water, etc., can contribute significantly to increased productivity of nutritious food by homesteads.

Link to an article about smallholder agriculture contributing to better nutrition, by Steve Wiggins and Sharada Keats, Overseas Development Institute (ODI), UK - commissioned by The Hunger Alliance (March 2013):

<http://www.ajfand.net/Volume13/No3/Reprint-ODI%20Smallholder%20agriculture%e2%80%99s%20contribution%20to%20Nutrition%202013.pdf>

A couple of excerpts:

Public agricultural research needs to focus on smallholder needs, with technical innovations that are sparing in their use of capital, but which emphasise labour and the skilful application to local circumstances: reflecting the relative endowments of smallholders. For very small, part-time farms there is often a call for intermediate technologies that raise yields of food crops without heavy demands for labour or external inputs.

Farmer-to-farmer learning, especially of agro-ecological approaches with considerable local specificity, can be facilitated and promoted by innovative extension services; research on conservation of soil and water need to recognise how and where local innovations function.

Recommendation:

Develop and promote innovations for marginal farms, focusing on higher yields for staples but using few external inputs and where possible saving labour. These will allow these farms to achieve the self-provisioning in staples that is often a primary objective of the farm, as well as potentially allowing some of the land to be switched to more diverse, nutrient-rich fruit, vegetables and small-scale livestock rearing.

Responsibility for this lies with agricultural research systems, although for some researchers taking up this challenge may require setting aside the search for optimal yields. There is scope here for NGOs to foster exchange of experiences from local innovations and NGO research.

## 19. Peter Steele, independent consultant, Italy

**Value of educating school kids**

**Partnerships with schools**

‘Nutrition-enhancing agriculture & food systems’ is a powerful and demanding topic – coming mid-year with the holiday period upon us it’s little wonder perhaps that there have been so few correspondents. Those of us in the northern hemisphere would rather be outside enjoying the sun in the mountains or away for a day at the beach. For all that, there is a deal to be shared and much to be gained from dipping into the portfolio of excellent material already available.

My contribution then pitches in favour of ‘partnerships’ and, apart from that of parent to sibling, just about the most profound platform of all human learning is that of teacher to student. This thing about ‘Give me the child and I’ll give you the man’ (which, according to my brief search on Google, is generally attributed to the Catholic Jesuits Order which, in turn, took it from the teachings of St Francis Xavier).

The point being then is that those strong linkages between food and agriculture and all that this means for encouraging the development of community well-being, strong social responsibilities, understanding of how to eat good foods, lead healthy lives, etc. comes from teaching people when they are at their most responsive phase of development; young, receptive, outward looking and keen to learn and to position themselves in the world around them.

**Value of education**

Sure, children learn from the moment they are born – and depend upon a handful of people in the family (and the wider community) who have the time, interest and, importantly, the education to make a difference. Teachers are typically at the forefront of change. To some extent this is already covered – both directly and obliquely in the Core Background papers provided for the debate. This assumes that people have sufficient time to explore this bibliography of information and contacts. Mine was a quick over-view but I draw the attention of the debate to the paper by [Judiann McNulty ‘Challenges & Issues of Nutrition Education’ published by FAO in 2013](http://www.fao.org/docrep/017/i3234e/i3234e.pdf). It extends an earlier FAO concept note on nutrition with additional information provided by a review of recently published information.

Read the summary and collect the bibliography for further reference but, in essence, the author highlights the advantages of investing in the education of school kids, the value of school gardens as a practical means of making change and, equally important, the messages that the kids take home to the parents for choice of foods, understanding of nutrition, and the way in which changes can be encouraged from generation to generation.

Reflect back on a life-time spent in the ‘development industries’ and you’ll see the logic of this kind of investment; it’s commonsense really, but how often is the local school struggling for ideas and resources with over-worked staff and an under-funded institutional structure. There is only so much that you can do. An easy starting-point, however, is access to material published by others.

**Ethiopian experience**

Working in support of a food security project in Ethiopia a short-time back we provided technical inputs, ideas and small funds to estimated 90,000 rural people living around Mekelle Town and in the Northern Shoa, respectively, in the north and centre of the country. Where possible school gardens featured as a means of encouraging change to local diets that are based largely upon livestock products, wild and cultivated green plants and bread made from the Ethiopian staple teff (which looks like what it is – grass seed).  Whole grain teff is a particularly valuable food - high in protein, carbohydrates and fibre. It also has a good amino acid profile including all eight essential amino acids, which means protein content is high quality. Teff is rich in calcium and iron. There is no sugar content. But what you don’t get locally are interesting foods – you imagine eating the local fermented bread – injera two or three times a day (if you’re fortunate). Teff production and preparation as food is also demanding of land, people and fuel (with all those down-stream ramifications for access to resources, smoke-filled kitchens, etc.).

Establish a vegetable garden and grow a range of temperate and semi-temperate food crops – leafy (cabbages, lettuces, Swiss chard, etc.), roots (potatoes, turnips, carrots, etc.), fleshy (tomatoes, peppers, etc.) and legumes (beans, peas, etc.) and you can transform the dietary landscape. Much of what can be grown does not need to be eaten cooked. Walking the hills of a late evening and making our way back to the Land Cruiser after a 10 km circuit, people would thrust handfuls of burnt grain and bunches of carrots at you and, with a smile, say ‘ to sustain you on the road’. The pleasure was mutual – givers giving from relatively limited resources and takers enjoying the rewards of snack foods, but also seeing those new ideas that had become reality over a few years.

**Value of information**

This is the school kids transferring their ideas home. However, modifying the curriculum in the school to provide for this change can be more demanding. Judiann McNulty’s bibliography lists texts that show you how to approach this challenge; of which a couple of references are worth highlighting. In Ethiopia we used:

FAO. (2005). Setting up and running a school garden: manual for teachers, parents & communities. ISBN 978-92s-5-105408-6. FAO, Rome, Italy.  (Check out part 6 ‘What shall we grow to eat – improving nutrition’; information like this is gold dust.)

FAO. (2005). Nutrition education in primary schools: planning guide for curriculum development. Vol. 1 ‘Reader’ & vol. 2. ‘Activities’.  FAO, Rome. Italy. (Comes with five rather complicated wall charts and language is challenging, but that’s where teachers come in handy.)

We also used:

FAO, (2001). Improved nutrition through home gardening: training package for preparing field workers in Africa’. FAO, Rome, Italy (And there is a similar version targeting ‘… field workers in SE Asia’.)

You can source and download these documents free-of-charge at <http://www.fao.org/publications>. Type the title into the search engine provided.

**Summary**

**Today’s school kids represent the next generation in your community; it makes sense to invest in their education by providing an understanding of good eating practices based upon choice of crops and livestock. There is a deal of readily available information with which to help you make the changes required.**

**Value of trees to nutrition**

The point made by your Indian correspondent [Subhash Mehta](http://www.fao.org/fsnforum/forum/contributions/re-nutrition-enhancing-agriculture-and-food-systems-7) is relevant where, as he says focus upon investment in women and young people in the community helps provide for sustainability with all the implications therein for livelihoods, employment, etc. leading to improved security for both food nutrition and food security. The Ethiopian communities with whom we supported vegetable gardening were living in high desolate hill country – bleak and cold in the winter rains – and devoid of tree cover. Remnants of the indigenous forests that once covered the north-central country remain around the rural churches and similar orthodox institutions (and form the basis for seed harvesting, nurseries, etc.) but elsewhere rural communities fall back on livestock manure as fuel – further impoverishing already poor soils – whilst waiting for their homestead eucalyptus plantations to start producing.

**The messages are simply and easy to understand (but far more difficult to implement) that trees are essential for human life.**

**Value of humour**

And a brief aside highlighting the downside of the debate, but one that can only bring a dubious smile to readers; the contribution made by [Robert Best of Trinidad & Tobago](http://www.fao.org/fsnforum/forum/contributions/re-nutrition-enhancing-agriculture-and-food-systems-4). Whether this 30 year old record for consumption of fried chicken, fries and Coke in Port of Spain is really true or not – it is the image that this projects in the mind’s eye.

Perhaps this a nutritional phase that all countries have to explore (and endure) as they develop? Mexico has recently over-taken the US as the ‘world’s fattest country’ (again, according to my Google search) with those international fast food companies and their national ‘look-a-likes’ targeting the enthusiastic Hispanic consumer across the American continent.

**Happy eating everyone.**

**Peter Steele**  
**Agricultural Engineer**  
**Rome**

## 20. Subhash Mehta, Devarao Shivaram Trust, India

**SAFE Nutritious Food & Sustainable Agriculture**

A summary of arguments by Stabinsky, D. and Lim L.C., ‘Ecological agriculture, climate resilience and a roadmap to get there’, is a consistent focus on sustainability (as versus a politically correct or convenient concept of sustainability) prepared for the third session of the Open Working Group on Sustainable Development Goals held from Wednesday, 22, to Friday, 24 May 2013 at the UN headquarters in New York. The formulation of SDGs was one of the major agreed actions carried forward from the June 2012 UN Conference on Sustainable Development.

The sessions addressed the following clusters of issues:

Food security and nutrition, sustainable agriculture; and drought, desertification, land degradation and water and sanitation.

Programme of Work for 2013-2014 adopted will facilitate the formulation of the SDGs coverring:

* Investment in agriculture
* Focus on smallholder producer communities' access to nutritious food
* Incentives and subsidies agrgated to finance setting up producer orgs
* Research locally adapted successful integrated agri knowledge
* Partnerships to create local human and institutional capacity

The background documents for this is at: <http://www.twnside.org.sg/title/end/pdf/end14.pdf>

**Important elements for consideration: Food Security and Nutrition, and Sustainable Agriculture**

**1. Increase investment in sustainable agriculture**

Sustainable agriculture practices contribute to food security and climate resilience. Governments should specifically reorient agriculture policies and significantly increase funding to support biodiverse, sustainable agriculture, as recommended by the International Assessment on Agricultural Knowledge, Science and Technology for Development (IAASTD). In The Future We Want, which is the outcome document of the Rio+20 Conference, paragraphs 110-113 emphasize the importance of sustainable agriculture and the need for increased investment in sustainable agricultural practices. Particularly, in paragraph 111, the need to “maintain natural ecological processes that support food production systems” is recognized, which is a nod towards agro-ec ological principles.

* Conduct in-depth assessments of agricultural conditions and policies at the national level, to identify both barriers to a transition to sustainable agriculture and gaps in policy, and ensure policy coherence such that sustainable agriculture is promoted and facilitated.
* Focus national agriculture policy frameworks urgently and immediately on sustainable agriculture. In particular, increase emphasis on the conservation and use of agricultural biodiversity, building healthy soils, and developing and sharing water harvesting and other water management techniques.
* Devote a large share of the national agricultural budget to promoting sustainable agriculture. The support should include mechanisms (both traditional extension and more far-reaching farmer-to-farmer networking methods) to train farmers in the best options for sustainable agriculture techniques, the development of ecological infrastructure including water supply, improvement of soil fertility, and the provision of credit and marketing.
* Directly fund adoption of agroecological practices that reduce vulnerability and increase resilience, such as soil-fertility-enriching and climate-resilient practices (e.g., use of compost to enhance soil health, water storage and soil quality).

**2. Focus on smallholder farmers and their practices**

Agriculture is the most important sector in many developing countries and is central to the survival of hundreds of millions of people. Most agricultural production in these countries involves small land holdings, mainly producing for self-consumption. Women are the key agricultural producers and providers. Hence agriculture is critical for food and livelihood security, and for the approximately 500 million smallholder households, totaling 1.5 billion people, and living on smallholdings of two hectares of land or less. Smallholdings account for 85 percent of the world’s farms.

The role and needs of rural communities are recognized and rural development emphasized in paragraph 109 of The Future We Want, including the need for enhanced access by small producers to credit, markets, secure land tenure and other services. Paragraph 109 also stresses the importance of traditional sustainable agricultural practices, including traditional seed supply systems, including for many indigenous peoples and local communities. This is important in light of the threats that undermine and marginalize such systems and the increasing takeover of the seed supply by a few large multinational corporations.

* Ensure enhanced access by small producers, women, indigenous peoples and people living in vulnerable situations to credit and other financial services, markets, secure land tenure, health care, social services, education, training, knowledge and appropriate and affordable technologies.
* Support conservation and use of local knowledge and seeds, as well as support peasant seed systems and community seed banks. In addition, prioritize participatory and formal plant breeding efforts to adapt seeds for future environments, particularly increased temperatures.
* Improve social safety nets to enable farmers and the rural poor to cope with external shocks climate-related disasters. This includes implementing a range of policies that support the economic viability of smallholder agriculture and thus reduce their vulnerability, for example, improving access to credit for smallholders; and building and reinforcing basic infrastructure, such as water supplies and rural roads that can facilitate access to markets. Special attention and specific support should be given to women smallholder farmers.
* Strengthen small-scale farmers’, women’s, indigenous and community-based organizations to, among other objectives: access productive resources, participate in agricultural decision-making and share sustainable agriculture approaches.

**3.   Dismantle perverse incentives and subsidies that promote unsustainable agriculture**

Current agriculture policies are geared to promoting conventional agriculture practices that are unsustainable. Perverse incentives, including those perpetuated under the international trade regime governed by the World Trade Organization and bilateral free trade agreements, entrench this unsustainable system. Agricultural incentives and subsidies therefore need to be redirected away from destructive monocultures and harmful inputs, towards sustainable agriculture practices of the small-farm sector. These need to be phased out in a fair and equitable manner, taking into account the impact on small farmers in developing countries.

* Avoid and phase out perverse incentives and subsidies that promote or encourage the use of chemical pesticides, synthetic fertilizers and fuel, or that encourage land degradation, while ensuring that impacts on small farmers are addressed in a fair and equitable manner.
* Reduce the use of synthetic fertilizers by removing tax and pricing policies that contribute to their overuse.
* Shift subsidy priorities such that the initial costs and risks of farmers’ transition efforts to implement sustainable farming practices are borne by public funds.
* At the international level, modify key market distortions that act as a disincentive to the transition to sustainable agricultural practices in developing countries. These include the significant subsidization of agricultural production in developed countries and their export to developing countries. As long as these conditions prevail, it is difficult to imagine how developing-country producers can implement a paradigm shift towards sustainable agriculture.

**4.   Implement a research and knowledge-sharing agenda towards sustainable agriculture**

Paragraph 114 of The Future We Want resolves to enhance agricultural research, extension services, training and education to improve productivity and sustainability. National and global agricultural research agendas have been however dominated by conventional agriculture approaches and the promise of new technologies. Sustainable agriculture has been sidelined, yet it has thrived and has proven successful despite the lack of public support. Research and development efforts must be refocused towards sustainable agriculture, while at the same time strengthening existing farmer knowledge and innovation. Moreover, current agriculture research is dominated by the private sector, which focuses on crops and technologies from which they stand to profit most. This perpetuates industrial, input-dependent agriculture, rather than solutions for the challenges facing developing-country farmers.

* Place sustainable agriculture at the forefront of the international and national agriculture research agendas; this means providing public resources for sustainable agriculture interventions.
* Address current intellectual property systems that act as drivers towards corporate consolidation and corporate dominance of agriculture research, including the issues of patents on living organisms and seeds, as well as plant variety protection consistent with the strict standards of UPOV 1991, which may also impinge on farmers’ rights and affect smallholder agriculture.
* Generously fund efforts to conserve crop diversity, both in situ and ex situ.
* Support research on sustainable agriculture approaches that mitigate greenhouse gas emissions from agriculture, such as practices that reduce or eliminate the use of synthetic nitrogen fertilizers.
* Identify research priorities in a participatory manner, enabling farmers to play a central role in defining strategic priorities for agricultural research; and increase networking and knowledge sharing between farmers and researchers.
* Reorient research and extension systems at the national level to support farmer-to-farmer agroecological innovation; increase the capacities of farmer and community organizations to innovate; and strengthen networks and alliances to support, document, and share lessons and best practices.
* Ensure farmers have access to information about sustainable agriculture practices, through both formal and informal means, including extension services, farmers’ organizations, climate farmer-to-farmer field schools and cross-visits.

**5.         Build supportive global partnerships**

A range of international institutions can make positive contributions by supporting and enabling the adoption of sustainable agriculture. These institutions should support the range of efforts to be undertaken at national and regional levels, and cooperate and coordinate efforts to mobilize necessary resources at the international level. Public financing and transfer of appropriate technologies by developed countries are needed not only for the adoption of sustainable agriculture but also to put in place the required infrastructure, communications and other enabling conditions. Furthermore, trade commitments made at the multilateral and bilateral levels must provide developing countries enough policy space to enable support for the agriculture sector, expansion of local food production, and effective instruments to provide for local and household food security, farmers’ livelihoods and rural development needs. This is needed before farmers in developing countries can start investing in sustainable agriculture. A universal, rules-based, open, non-discriminatory and equitable multilateral trading system that will promote agricultural and rural development in developing countries and contribute to world food security is reaffirmed in paragraph 118 of The Future We Want.

* Ensure sustainable, predictable and significant public funding for sustainable agriculture, rather than speculative and volatile market-derived funding. International agencies must play an active role in mobilizing public resources.
* Increase the scale of the work to promote sustainable agriculture practices by the Rome-based UN agencies: FAO, WFP, IFAD. This should include technical support to enable countries to transition to and prioritize sustainable agriculture, and appropriate policy advice that supports its implementation.
* Encourage CGIAR centres to leverage research and research partnerships, and the funding thereof, which focus on sustainable agriculture, agricultural biodiversity and small farmers in developing countries.
* Ensure the conservation and sustainable use of agricultural biodiversity and related traditional knowledge systems, including through the relevant work on agricultural biodiversity carried out by the FAO and the Convention on Biological Diversity.
* Revive the work of the UN for a global framework for corporate accountability, including the reinstatement of obligations under the aborted UN Code of Conduct on Transnational Corporations.
* Implement the outcomes/decisions of the Committee on World Food Security (CFS), as the governing body for food, agriculture and rural development policy and related financial issues at the global level, including the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security and the outcomes of the ongoing discussions on Responsible Agricultural Investment. (The important work and inclusive nature of the CFS is reaffirmed in paragraph 115 of The Future We Want.)
* Eliminate export subsidies in agriculture (in line with WTO Hong Kong Declaration 2005) and substantially and effectively reduce agricultural support and subsidies in developed countries (in line with WTO Doha Declaration 2001) so that distortions in global agricultural trade will be reduced and developing countries’ farmers will have a more level playing field.
* Prioritise developing countries’ goals of food security and protection of farmers’ livelihoods in free trade agreements (FTAs). The percentage of goods to be subjected to tariff elimination by developing countries should be adjusted if necessary to accommodate the need to exclude sensitive agricultural products from tariff elimination. Ensure that the FTAs provide enough policy space to allow sufficiently high tariffs on agricultural imports that enable the fulfilment of the principles of food security, farmers’ livelihoods and rural development, and to allow countries to rebuild and strengthen their agriculture sector.
* Ensure that commodity markets operate in an adequately regulated manner that avoids excessive volatility and speculative activities and serves the real needs of both producers and consumers. Address the root causes of excessive food price volatility, including its structural causes, and manage the risks linked to high and excessively volatile prices and their consequences for global food security and nutrition, as well as for smallholder farmers and poor urban dwellers (as emphasized in paragraph 116 of The Future We Want).

## 21. Pradip Kumar Nath, National Institute of Rural Development, India

Dear all,

Can you please take note of the day of Disaster of the much hyped MID-Day meal in India. The death toll till now is 20. Innocent life of children in school are lost in the CHHAPRA Dister in BIHAR after having the Mid-day meal. [[*news on India Today, ed.*](http://indiatoday.intoday.in/story/students-die-after-having-mid-day-meal-in-bihar-school/1/291633.html)]

Preliminary reports speak about keeping the cereals and pulses in fertiliser packets as the cause of food poisoning.

This is one of the most important programmes and the largest of it's kind in the world for mitigating the problem of Food and Nutrition security amongst the school children.

The crux of the issue is bad governance.

This is the story of many countries.

It is neither the non-availability nor the lack of purchasing power many a times - but bad governance (absence of Rule of law) which is the prime cause of many a soft nations of their inability to address the issue of food insecurity or malnutrition.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

No doubt agriculture again has been dictated by the market forces and the technology driven agriculture has resulted in wrong prioritisation of allocation of land for different economic activities and within the agricultural land utilization the priority has been a move towards more commercialization of agricultural land resulting in cash crop (not food items).

Again within the agricultural land utilization, there has been increased tendency for homogenizing the crop variety with least resistance to any eventual agricultural disaster (agri-disasteer).

With least support from both market and the sovereign authority there has been a move from large variety of food items from different nutrients enriched flora & fauna to a few number and variety of food items at the disposal of the rural and indigenous community.

Change in food habits of the so called undeveloped society has been one of the notorious off-shoot of the much-hyped process of development and the process of western world's civilizing the savages.

This wrong development paradigm is at the root of many evils manifested in Food & Nutrition insecurity.

Whenever we are talking about agriculture & food systems we need to understand what is our modus operandi of ensuring food and nutrition security to the burgeoning population on a sustainable basis.

Is it necessarily agriculture alone or we need to think beyond (an out of box approach) to ensure this to the masses in the coming days.

Pradip Kumar Nath, ADJUNCT FACULTY  
Centre for Agrarian Studies & Disadter Mitigation (CAS & DM),  
National Institute of Rural Development(NIRD),  
Huyderabad, INDIA

## 22. Gerhard Flachowsky, Federal Research Institute for Animal Health, Germany

Dear Colleagues,

Your discussion about "Nutrition-enhanced agriculture and food systems" is very lively and the moderators should be happy about such a resonance and interesting inputs. On the other side, it is nearly impossible to follow all discussion and to read all background papers for the online discussion. I agree that the problems of smallholders, the situation of women/children and to overcome hunger, malnutrition and deficiencies in amino acids, minerals and vitamins and consequently health and education have the highest priority presently.

But for my impression, some clear strategy for a long term and sustainable overcoming of the present situation is missing. For example, I miss some important subjects/topics (also political actions) with possible consequences for a sustainable nutrition in developing countries, such as:

* Balance between **People** (Nutrition; Sociology etc) – **Planet** (Resources, Environment etc) and **Profit** (so-called 3P-concept) for global food security. At the moment, the system seems to be globally (not only in developing countries) imbalanced in the direction to make **Profit** at the costs of **People** and the **Planet.** It seems to be difficult to guarantee a sustainable food security under such conditions.
* What are the consequences of so-called “**Free Trade Regions**” for local food producer in developing countries and global food security under consideration of the 3P-concept?
* How do you assess the so-called land grabbing (pieces of sirloin are taken by other countries or foreign companies for a certain time or for ever) and its long-term consequences for sustainable food security in some developing countries (also under consideration of the 3P-concept)?
* Plant breeding, also under consideration of present situation (e.g. growing population; limited non-renewable resources such as arable land, water, fuel, some minerals; possible climate changes) is the starting point for the whole food chain (base for animal and human nutrition). Therefore, we need a long term programme of plant breeding for a sustainable food and feed production to meet the increased demand for growing population. The programme should be supported by public organisation, possibly by public-private partnerships. Maybe the FAO could take the leadership for such a programme, supported by other organisations (incl. NGOs).

In consequence, a strategy with short, middle and long term objectives for “Nutrition-enhanced agriculture and food systems” should be developed. I allow me to mention some objectives of such a programme:

1. Short term (5 – 10 years):

Development of a sustainable agriculture (education, support of smallholders etc.)

Overcome of water and food energy/nutrient deficiencies in developing countries

Improvement of situation of smallholders and women/children in developing countries

Stop of land grabbing

Minimize of possible disadvantages of global trade and “Free Trade Regions” for development of agriculture in developing countries

Improvement of the balance between People-Planet and Profit

1. Middle term (10 – 20 years):

Further conversion of short term objectives

Improvement of sustainability and efficiency of food production

1. Long term (20 – 50 years):

Conversion of concepts of plant breeding (plants with high and stable yields, resistant against biotic and abiotic stressors, low need for non renewable resources - water, arable land, fuel etc. -, better utilization of unlimited resources - such as sunlight/energy, N2; CO2, genetic pool etc.- )

Stabilisation of the short and middle term objectives

Best regards and much success in improving of nutrition

Gerhard Flachowsky

Prof. Dr. G. Flachowsky  
Visiting Senior Scientist  
Institute of Animal Nutrition  
Friedrich-Loeffler-Institute (FLI)  
Federal Research Institute for Animal Health  
Bundesallee 50  
38116 Braunschweig  
Germany

## 23. Fannie de Boer, Wageningen Universtity and Research Centre, Netherlands

The Centre for Development Innovation Wageningen UR is pleased to announce the organisation of the International Course on Agriculture Nutrition Linkages, to be held in Addis Ababa, Ethiopia from 18 - 29 November 2013. This urgent topic should definitely be addressed to battle malnutrition. We hope you will share the announcement below with your members on your website. In case of any questions, do not hesitate to contact me.

Kind regards,

Fannie de Boer MPH; MHE  
Sr. Nutritionist/Course Director Training programme Food and Nutrition Security  
Centre for Development Innovation, Wageningen UR

**New International Course on Agriculture Nutrition Linkages**

The Centre for Development Innovation Wageningen UR is pleased to announce the organisation of the International Course on Agriculture Nutrition Linkages, to be held in Addis Ababa, Ethiopia from 18 - 29 November 2013.

Malnutrition occurring early in life has life-long negative impacts on productivity and the income generating potential of the population. For longer times, malnutrition, although seen as a multi-sectorial issue, has been mainly addressed from the health sectors. Since recently, increased attention arises for ‘nutrition-sensitive’ approaches including nutrition sensitive agriculture. Linking  the disciplinary fields of agriculture and nutrition is a promising new field for enhanced efforts to combatting malnutrition.

As a participant in this course you will gain increased insights into how the fields of agriculture, agricultural development, food production and food security can contribute to reduced malnutrition in population groups. The course will provide practical tools to increase the nutritional benefits of agricultural programmes and to reduce their potential negative impacts on nutrition. The course has a clear agricultural economic approach and addresses agricultural development along food value chains.

Do you feel you lack skills and knowledge on linking  agriculture and nutrition? Consult the website<<http://www.wageningenur.nl/en/show/CDIcourse_Agriculture_nutrition_linkages.htm>> of the Centre for Development Innovation for more information about the application procedure and costs. Please forward this email to other parties who might be interested in the course.

## 24. Tobias Lasner and Gesise Beherens, Thünen-Institut für Seefischerei - AG Fischereiökonomie, Germany

Dear all,

thank you for your invitation to take part in the discussion.  Please, have in mind that aquaculture is one of the most important food production systems in our times.

While the global demand of fish increases, the fish supply from fisheries stagnates. Since the 1970s global aquaculture production is growing and today it is a fundamental part of the supply of fish to the world´s population. However, an increase of the aquaculture production is often accompanied by environmental problems based on current production methods: sedimentation, change in bio-geochemistry, pathogen trans­mission, inter-breeding with wild organisms, introduction of alien species, and indirect ecosystem pressures such as high energy costs are critical points of current aquaculture production methods. The intensification of aquaculture in recent decades has led to increased interference in ecosystems and a greater need for resources such as energy and food. So today aquaculture faces great challenges to meet the global demand for aquatic products in the future while minimizing the environmental impact. One possibility to overcome these challenges can be seen in an ecological modernization of the aquaculture sector. In consequence, it’s important to develop concepts for an environmentally, economically and social sustainable aquaculture development.

Kind regards

Gesine Behrens  
Thünen-Institut für Seefischerei - AG Fischereiökonomie  
Palmaille 9  
22767 Hamburg (Germany)

## 25. Terri Ballard, FAO, Italy

There has been a lot of discussion on-line and in workshops over the past few years about appropriate metrics for measuring the impact of nutrition-enhancing agriculture on nutrition.  Two recent systematic reviews have concluded that the evidence is not yet available to say that agricultural interventions reduce child malnutrition, and that better methodology is needed, including the use of randomized controlled trials ( Ruel MT, Alderman H and the Maternal and Child Nutrition Study Group. Nutrition-sensitive interventions and programmes: how can they help to accelerate progress in improving maternal and child nutrition? Lancet 2013. published online June 6. <http://www.thelancet.com/journals/lancet/article/PIIS0140-6736%2813%2960843-0/abstract>

In my opinion, if we continue to expect individual agricultural projects of often limited coverage and short life spans to evaluate their impact on reducing child malnutrition, we will never understand the true contribution of agriculture towards improving nutrition overall, and will still be searching for convincing evidence that these approaches are better than the “magic bullet” medical approaches to malnutrition.

I would like to suggest that we are looking at the wrong set of impact indicators. By focusing on reduction in child malnutrition through the use of anthropometric measurement, we are setting ourselves up for failure.  As stated by Per Pinstrup-Anderson in his comment published in the recent Lancet Series, pathways through which food systems can affect nutrition are well known (Per Pinstrup-Anderson. Nutrition-sensitive food systems: from rhetoric to action. Lancet 2013. published online June 6. doi:10.1016/S0140-6736(13)61053-3).  While these pathways, such as homestead production, livelihood enhancement, women’s empowerment, improved market access of healthy foods, infrastructure, etc., can have a considerable impact on nutrition, it is not appropriate to hold agriculture-nutrition interventions accountable for reducing stunting or other multi-causal nutrition outcomes. A better way may be to  measure the contribution that different interventions make at different points along the food system on improving diets and reducing nutritional problems.  This is done through the selection of appropriate outcome indicators that are relevant to the projects being evaluated and then putting the evidence together in a way that focuses on the larger picture – improvement of nutrition of the population.

There is a vast literature on large scale effectiveness evaluations in the health field that could serve as a model for understanding how and how much nutrition-enhancing agriculture achieves towards improving nutrition. (Bryce J, Victora CG; Ten methodological lessons from the multi-country evaluation of integrated Management of Childhood Illness. Health Policy Plan. 2005 Dec;20 Suppl 1:i94-i105. Victora CG, Black RE, Boerma JT, Bryce J. Measuring impact in the Millennium Development Goal era and beyond: a new approach to large-scale effectiveness evaluations. Lancet 2011; 377: 85-95.)

## 26. Feedback by Jody Harris and Leslie Amoroso, facilitators

Dear all,

Many thanks indeed for all of your contributions so far. In this post, we hope to summarize some common themes and key ideas that have emerged from the discussion up to now, and also to focus the dialogue around the [core background](http://www.fao.org/food/nutritional-policies-strategies/icn2/core-background-papers/en/) and [expert](http://www.fao.org/food/nutritional-policies-strategies/icn2/expert-papers/en/) papers, which represent some of the most current thinking in our topic area. We would like to remind you that the outcome of this online discussion will be used to enrich the discussions at the Second International Conference on Nutrition (ICN2) Preparatory Technical Meeting on 13-15 November 2013 and thereby feed into and inform the main high-level [ICN2 event](http://www.fao.org/food/nutritional-policies-strategies/icn2/en/) in 2014.

**Emerging themes**

Within our core interest areas of policies, programmes and partnerships, contributions have focused on solutions encompassing the behavioral (such as the role of marketing and demand creation); the technical (such as fertilizer or fortification initiatives, and food safety); and the institutional (such as centralized procurements, harmonization between ministries, or development of capacity). We have already commented on the diversity of views and perspectives from different fields, reflecting the variety of options for nutrition-enhancing agriculture and food systems. This diversity is both the opportunity and the challenge of the agriculture-food systems-nutrition field; there is so much that can be done, but so much that needs to be done!

**Key ideas**

There have been several recurring ideas running through the contributions so far. A key idea is certainly diversification- of the diet, of agricultural production, and within ecosystems supporting agriculture- and this is echoed in much of the background and expert literature for this online discussion. Sustainability, and the scale of agriculture, has been mentioned in various posts; some see smallholder agriculture as the only way to ensure food and nutrition security in an environment of volatile markets, while others commented on the role of market links in making programmes scalable and sustainable. A key idea that has come out of contributions so far is that of the continuum of nutrition from under- to over-nutrition, as well as micronutrient deficiencies, and the importance of considering the consequences at both ends of this continuum of the rapid changes happening in our food systems. Finally, the important question of whether the impact of nutrition-enhancing agriculture and food systems interventions should be measured using anthropometry indicators or other relevant intermediate outcomes along the impact pathway, such as diets, was raised.

**Next steps**

The themes and ideas above are important and are reflected in the background and expert literature for this online discussion; they remain some of the most important issues within the field of nutrition-enhancing agriculture and food systems, and we would welcome your views on the contributions. Again, we encourage you to read one or more of the [core background](http://www.fao.org/food/nutritional-policies-strategies/icn2/core-background-papers/en/) and [expert](http://www.fao.org/food/nutritional-policies-strategies/icn2/expert-papers/en/) materials (those which reflect your own interests), and consider these when responding to the three sets of questions on policy, programmes and partnerships.

Many thanks indeed for sharing your thoughts and views,

Jody and Leslie

## 27. Cristina Grandi, IFOAM Food Security Campaigner, Italy

Dear all,

I would like to contribute to this interesting discussion referring the article “**Health for acre: meeting the nutrition challenge through organic farming**” , written by Dr. Vaibhav Singh and published by the Bija magazine (pag. 6) [http://www.navdanya.org/attachments/bija58\_27-5-2011[1].pdf](http://www.navdanya.org/attachments/bija58_27-5-2011%5b1%5d.pdf)

The article states that since providing nutrition and nourishment are the main aims of agriculture, nutrition per acre is a more accurate measure of productivity than yield of a commodity in a monoculture.

Dr. Singh worked with the data of the 12 studies in India to assess the nutritive value per acre of farmland. These studies show that organic mixed cropping produces more nutrition per acre farmland than conventional monocropping, and that the overall profitability in mixed cropping is higher than in mono-cropping.

According with research organic mixed cropping, on an average,  produce more proteins (providing all the essential amino acids) , as well as, vitamins, minerals and micronutrients than those produced by conventional mono cropping.

Cristina Grandi  
IFOAM Food Security Campaigner

## 28. Richard Cottlell, World Sugar Organisation, UK

**Contribution to FAO on-line discussion forum from World Sugar Research Organisation**

WSRO is a not-for-profit scientific research and information organization transparently funded by the sugar industry. WSRO is committed to upholding the fundamental principles of science and to relying solely on objective science in its programmes.

The nature of sound science is to promote or challenge hypotheses with evidence.  An unsatisfactory hypothesis is one that does not reflect the evidence, and thus should be questioned, and ultimately discarded, as unhelpful and misleading. As a scientific organization, WSRO is rightly involved with the testing of hypotheses, whatever their origin.

For more information: [www.wsro.org](http://www.wsro.org/)

The following comments are offered as a contribution to the discussions and do not necessarily represent the position of WSRO or its members.

**Background**

The current discussion on the links between agriculture and nutrition has produced a number of different themes and emphases.

It is difficult to address undernutrition, malnutrition and overnutrition when they occur in isolation, let alone in combination.  This is especially true, since the causes of obesity and malnutrition are widely acknowledged to be multifactorial in nature.  A reduction in the intake of sugars and nutritively-sweetened beverages has been frequently referred to in attempts to address obesity (see a number of the background papers to this discussion).  However, one of the expert papers in this discussion (Nicklas and O’Neil) seriously questions the evidence behind policies which specifically target one food, food group or nutrient.  The FAO approach to nutrition sensitive development promotes ‘interventions that promote dietary diversity’, ‘enjoying a variety of foods’ and for ‘people to consider their total diet’ (see background paper by Thompson and Amoroso) - an approach which has been endorsed elsewhere (Nicklas and O’Neil, 2013; Freeland-Graves and Nitze, 2013). A moderate intake of sugar, within the context of a balanced and varied diet, with adequate physical activity, is in keeping with such an approach, encouraging consumption of certain foods (e.g. cereals, sharp tasting fruits etc.), improving diet diversity and helping to meet micronutrient requirements.  Sugar also functions in providing texture, colour, flavour and acts as a natural preservative and substrate for fermentation.

In the light of this discussion, it is also worth mentioning the contributions that sugar can make to addressing food security and nutritional adequacy which are frequently overlooked.  In this context, sugar production, and beet and cane cultivation, is vital to economic growth in many countries, contributing on a large scale to rural development, industrial and agricultural employment, and support of the rural population. Sugar may also play a role in attempting to ensure adequate energy and can act as a vehicle for micronutrients which may be subject to deficiency in developing countries.

1.    **The agriculture and often the whole economy of many developing countries may depend on one or a few commodities destined principally for export, including sugar.** In 2011, raw sugar was produced in approximately 120 countries.  Many of these countries are in the developing world, where sugar production remains a key contributor to growth of the rural economy.

Sources: <http://www.fao.org/docrep/018/i3107e/i3107e03.pdf>); <ftp://ftp.fao.org/docrep/fao/004/y3557e/y3557e.pdf>

**The case of India**

·         Around 5 million hectares of land are under sugarcane cultivation in India.

·         Sugarcane is grown by 6 million cane farmers.  These farmers, their familial dependents, and labourers (~half a million skilled and unskilled workers) are dependent directly and indirectly on this agricultural crop.

·         Prevalence of underweight children in India is among the highest in the world, with dire consequences for mobility, mortality, productivity and economic growth.  25% of the world’s undernourished population are located in India.

·         Sugar is valued as an inexpensive source of energy and has been distributed to the low income families at a subsidized price through the public distribution system.

·          Almost half of the sugar mills in India (~230) are cooperatives, many providing additional infrastructure to the industry such as education and healthcare.

2.    **Sugar can help to combat micronutrient deficiency and is an essential ingredient in oral rehydration solutions (ORS).**Post-harvest fortification of foods has been successfully employed in addressing micronutrient deficiency, but requires a relatively developed food processing industry for successful implementation. Sugar has been successfully fortified with vitamin A and iron, and has been cited in FAO documents as an alternative vehicle for iodization.  Currently, sugar plays a significant role in fortification in Central and Latin American countries as well as in Africa.  In the developed world, many sugar-containing foods are important sources of micronutrients (e.g. fortified cereals and dairy products).  In addition, the use of sugars and glucose together with salt, are used in oral rehydration solutions to prevent dehydration and in the treatment of acute diarrhoea.

Sources: <http://www.fao.org/docrep/w2840e/w2840e03.htm>; <http://www.who.int/maternal_child_adolescent/documents/fch_cah_06_1/en/>

**The case of Zambia**

·         Sugar for domestic consumption in Zambian has been mandatorily fortified with vitamin A since 1998. At least 50% of the Zambian population has regular access to fortified sugar (NFNC, 2007, 2008).

Source: <http://www.nfnc.org.zm/index.php?option=com_content&view=article&id=110:sugar-fortification-&catid=57:micronutrient-control-programmes&Itemid=95>

3.    **Sugarcane and sugarbeet crops are sustainable agricultural crops.** There is general agreement that food production systems need to become more sustainable, in order to improve food security in the long term and alleviate pressures on production arising from population and income growth.  However, there is little agreement on how this should be achieved (FAO Conference 2013; Tilman et al. 2002), in particular, how to incorporate nutritional objectives within a broader framework of sustainability and biodiversity (Lang 2010).

In this context, sugarcane has an extraordinary capacity for growth; its cultivation can be undertaken with the minimum consumption of chemical products and therefore be highly compatible with the environment and soil conservation. Sugar beet is an important break crop which increases biodiversity and provides direct benefits to agricultural land. Growing beet and adding co-products from beet processing lead to improved soil conservation, enhanced fertility and reduced soil compaction. Process energy optimisation and agricultural yield increases have provided additional benefits in reducing greenhouse emissions and increasing land efficiency.

Sources:

<http://www.fao.org/docrep/005/x4988e/x4988e01.htm>

<http://www.fao.org/docrep/005/x4988e/x4988e00.htm>

<http://www.comitesucre.org/userfiles/The%20EU%20Beet%20and%20Sugar%20Sector%20A%20Model%20of%20Environmental%20Sustainability%20_FINAL.pdf>

**Conclusions**

While short term approaches are needed in order to reduce the number of people currently suffering dietary shortages of macronutrients or micronutrients, some long term sustainable solutions should also be initiated to meet the greater need for staple foods anticipated in the future. Causes of both under and over nutrition are multifactorial and may be best addressed with an understanding of the local issues.  A ‘one-size fits all’ solution may help in addressing some issues, but not others

Additional references not supplied within the text

FAO (2013) The state of food and agriculture. Food and Agriculture Organization Rome.

FAO Conference paper C 2013/2 Add.1 (2013). Food and Agriculture Organization Rome.

Freeland-Graves JH, Nitzke S (2012) Position of the academy of nutrition and dietetics: total diet approach to healthy eating. J Acad Nutr Diet 113:307-317

Lang T (2010) in “Sustainable diets and biodiversity: directions and solutions for policy, research and action”. Proceedings of an international symposium “Biodiveristy and sustainable diets united against hunger” 3–5 November 2010

Food and Agriculture Organization, Rome.

Nicklas TA, O’Neil CE (2013) Prevalence of Obesity: A public health problem poorly understood.  Expert paper produced for the ICN2. ([http://www.fao.org/fileadmin/user\_upload/agn/pdf/PrevalenceofObesity\_FIN...](http://www.fao.org/fileadmin/user_upload/agn/pdf/PrevalenceofObesity_FINAL.pdf))

Tilman D, Kassman KG, Matson PA et al. (2002) Agriculture sustainability and intensive production practices. Nature 418:671-677.

Thompson B, Amoroso L (2011) FAO’s Approach to Nutrition-Sensitive Agricultural Development. ([http://www.fao.org/fileadmin/user\_upload/agn/pdf/FAO\_Approach\_to\_Nutriti...](http://www.fao.org/fileadmin/user_upload/agn/pdf/FAO_Approach_to_Nutrition_sensitive_agricultural_development.pdf))

## 29. Janice Meerman, FAO, Italy

Dear all,

The moderators ask: What policies can make agriculture and food systems more nutrition-enhancing?

In response, I would like to pose another, more nuanced question: What incentives can be created for formulating such policies in the first place, not to mention then moving them forward from rhetoric to reality?

Despite the recent explosion in research and writing regarding nutrition sensitive agriculture, this issue remains largely undiscussed. Lawrence Haddad sums up the situation in a pithy [blog post](http://www.developmenthorizons.com/2012/12/what-do-we-want-nutrition-sensitive_19.html) written late last year titled: What do we want? Nutrition sensitive agriculture! How do we incentivize it? No clue.

Haddad comments: “It is important to know what to tell policymakers when they ask "what can I do?" But I would argue it is more important to (1) know how to get more of them asking the question in the first place and then (2) understand the incentives and barriers to getting any subsequent policies implemented across sectors.”

Recent work on enabling environments may help shed light on the 1st question (e.g. the 2013 Lancet Nutrition Series, articles 4). Moreover as global momentum for nutrition sensitive agriculture increases, opportunities for taking action at country level are growing. [CAADP’s Nutrition Capacity Development Initiative](http://www.fao.org/food/fns/workshops/caadp-nutrition/en/), facilitated by FAO and hosted by NEPAD and the AU Commission, provides a current example.

Question 2 may prove even tougher to answer than question 1. Unlike nutrition, the incentives that drive food and agriculture systems are primarily profit-oriented.  As such, nutrition sensitive agriculture initiatives will succeed best when their outcomes are framed as compatible with market signals reflecting the behavior of producers, wholesalers and other members of the agricultural value chain. To do this, advocates for nutrition enhancing agriculture must work harder on preaching outside the choir regarding win-wins which provide economically compatible nutrition sensitive incentives to stakeholders in agriculture. By definition, these “win wins” are already considered important inputs for nutrition sensitive agriculture and hold value for the sector more generally. For example:

* Agricultural research and other production-related productivity improvements: These reduce the unit-costs of production which, in turn, cause incomes of farmers to increase and food prices to decrease, both of which have positive nutrition and economic growth effects. The Green Revolution is a case in point. Farmer incomes increased while wheat and rice prices dropped significantly.
* Labor saving technological change: Changes in food production technology that reduce demands on women’s time have been shown to improve nutrition by increasing  time available for child care, food preparation, accessing clean drinking water, etc. They also improve the well-being of women.  In turn, labor saving technological change in activities traditionally performed by women outside the food production system leaves more time available for food system activities. These include food production per se, but also better and more food processing as well as increased income generation through formal and informal food-system based employment.
* Crop diversification: Efforts to increase diversity in food production result in lower production risks and better nutrition. Crop diversification also contributes to ecosystem health, and in some cases is good business as demand for both horticulture and animal source foods is rising.

Each of these examples demonstrates how the addition of nutrition sensitivity as a policy goal need not reduce economic efficiency.  However, it is also important for advocates to admit that in some cases win-wins are not possible. In these situations one approach is to argue that while trade-offs may come at the expense of lower economic growth, they are likely to be highly compatible with pro-poor development goals such as empowerment, gender equality and social welfare. These human development goals are now cited routinely in much of the discourse on economic growth as well as included in national development, agricultural, and rural development plans. As such, if advocates play their cards right, a political incentive can be created in situations where an economic one cannot.

This contribution draws on “Overview of Nutrition Sensitive Food Systems: Policy Options and Knowledge Gaps”. The latter was prepared by the author of this post,  based on material provided by Per Pinstrup-Andersen for this online forum and the  ICN2 Technical Preparatory Meeting on nutrition enhancing agriculture to be held in November 2013.

## 30. Ellen Muehlhoff, FAO and Ramani Wijesinha-Bettoni, FAO Consultant, on behalf of the FAO ENACT Team, Italy

Dear Moderators,

We would like to comment on the core paper “**Challenges and issues in nutrition education**” by Judiann McNulty (http://www.fao.org/docrep/017/i3234e/i3234e.pdf). These comments are also relevant to the question **Partnerships:** **How can we work across sectors and build strong linkages between food and agriculture, social protection, employment, health, education and other key sectors?**, and to the expert paper **Case Study of Participatory Agriculture and Nutrition Program in Malawi** by Rachel Bezner Kerr et al. (<http://www.fao.org/fileadmin/user_upload/agn/pdf/FAO-expert-meeting-submission-Bezner-Kerr-et-al-ver4-2_FAO_comments_doc.pdf>). The latter demonstrates the essential contribution of nutrition education to an agriculture-nutrition project in Malawi, which has successfully improved under-five nutritional status growth and household food security through the use of farmer-led participatory research, a transformational education approach, agroecological interventions and attention to gender inequality and other social inequalities at the household and community level.

Comment 1: re. **The need for nutrition education** (Chapter 2 of McNulty paper)

The increasing recognition that nutrition education is essential for enhancing agriculture's impact on nutrition is highlighted in this chapter, which summarizes the conclusions of recent review studies that examine the effectiveness of nutrition-enhancing food and nutrition security actions. Many such reviews conclude that nutrition education is an essential component for success. Two of the reviews mentioned in this chapter are the Sixth Report on the World Nutrition Situation (UNSCN, 2010), which concluded that “for all populations, [nutrition] education and social marketing are crucial components of national, municipal and community efforts for sustained improvements in food and nutrition security. These activities are often essential to realizing the potential for nutrition improvement of many agricultural development projects and programmes. They are also important in countries where obesity and NCDs are increasing.”  The 2011 IFPRI-sponsored conference “Leveraging Agriculture for Nutrition”, Ecker et al. (2012) conclude that “addressing the causes of micronutrient malnutrition inevitably requires programs that support dietary diversification by providing education on nutritious, balanced diets. Without this understanding, the nutritional impact of programs that increase people’s economic access to improved nutrition will be strictly limited.”

A few other studies that are not explicitly mentioned in the Chapter (perhaps due to lack of space) and could have been worth citing are the following:

* Girard et al (2011): concluded that agricultural strategies improve intakes of micronutrient-rich foods by women and young children when nutrition education, gender and nutrition objectives were explicitly stated.
* Reviews by Leroy and Frongillo (2007), Berti et al (2003) and Ruel (2001) stress the important role played by both gender considerations and communication and nutrition education activities involving behaviour change in homestead gardening interventions that succeeded in improving diets, nutrient intakes and/or child nutritional status. For example, Ruel (2001) states “A key to success appears to be the inclusion of a strong nutrition education and behavior change intervention. For example, strategies to promote increased production of micronutrient-rich foods are more effective when combined with a nutrition education intervention, which ensures that increased household food supply and income translates into improved dietary quality.”
* The World Bank (2007) review is mentioned, but we would add that it specifically states the following: “Agricultural interventions that include a nutrition education component will increase the likelihood of positive nutritional outcomes. Those who are armed with information and knowledge about the nutritional significance of the foods they produce and eat are able to make better production and consumption decisions”

To the above, we would add that the need for nutrition education has also been strongly reinforced by the concept of the **Right to Food**. Parties to the International Covenant on Economic, Social and Cultural Rights are under an obligation to provide information and education on good diet, food safety, food-borne diseases, food labelling and processing, production and preparation; while in the school curriculum integrating agriculture, food safety, environment, nutrition and health education builds citizens’ capacity to achieve and maintain their own food security. Hence nutrition education is an essential vehicle for establishing food rights (Refs 5 and 6 below).

Comment 2: re. **Professional capacity [in nutrition education]** (Chapter 6 of McNulty paper)

The main issues facing capacity development in nutrition education are given are:  
•       Do governments have the interest, commitment and resources to support professional development in nutrition education?  
•       Will there be sufficient employment opportunities, particularly in the public sector, to attract people into a career as nutrition educators?  
•       Where will academic institutions and other programs find expertise in-country to teach nutrition education or develop training materials for in-service training?

Re. the 3rd issue, we would like to mention that the FAO ENACT project, funded by the German Ministry of Food, Agriculture and Consumer Protection, (the ENACT project is referred to earlier in the chapter) will be helping to fill this gap, at least in six African countries for the time being. Tutors (who are nutrition lecturers/professors at university, a few of whom are already nutrition educators), will receive on-the-job training during the piloting. They have already received training on using the materials and methodology at a pre-piloting workshop held in Uganda in April this year, while piloting students who successfully complete the course will themselves be able to carry out nutrition education. A minimum of 60 students will be trained in the piloting phase alone. Training materials for in-service training is also included in the ENACT project, where a training-of-trainers course named the EAT course, which covers the processes of formative enquiry (E), Adaptation (A) and tutor training (T), is being developed. The challenge remains to find a suitable regional partner for hosting the EAT course, in order to ensure its sustainability.

Some news for the forum: Piloting of the ENACT module is nearing completion in Makerere University Uganda, the first of the partners to pilot the material. The feedback received from students thus far via the Facebook page they have set up has been very positive and enthusiastic.. For example, one of the students posted: “The ENACT units are very interesting, I have actually realized the need for intensive nutrition education, the cultural practices. Gender factors, ignorance…etc. are actually in existence, we’ve done the outside activities and this is REAL. Nutrition education is a very important strategy to address most of these issues.” We would encourage all those interested in nutrition education to visit their Facebook page ([https://www.facebook.com/NutritionEducationStudentsAfricaNesa](https://faohqmail.fao.org/owa/redir.aspx?C=MTdUW9MXrUWE7HjeKBQfgwyeAAvxWtBIDFCODSBF7KoEU8WIBdz7NevElnZTnPYWvIKPhMd5owg.&URL=https%3a%2f%2fwww.facebook.com%2fNutritionEducationStudentsAfricaNesa)) and make a posting!

Best regards,

Ellen Muehlhoff (Senior Officer/Group Leader  
Nutrition Education and Consumer Awareness Group  
Nutrition Division, FAO

&

Ramani Wijesinha-Bettoni (Consultant, FAO), on behalf of the FAO ENACT Team

**References:**

1. Berti P, Krasevec J, Fitzgerald S (2003) A review of the effectiveness of agricultural interventions in improving nutrition outcomes. Public Health Nutrition 7: 599-609
2. Ecker O, Breisinger C, Pauw K. 2012. Growth Is Good, but Is Not Enough to Improve Nutrition. In: Fan S and Pandya-Lorch R, editors. Reshaping Agriculture for Nutrition and Health. Washington, DC: International Food Policy Research Institute. Available at:  www.ifpri.org/sites/default/files/publications/oc69.pdf
3. Girard AW, Self JL, McAuliffe C, Olude O. 2012. The Effects of Household Food Production Strategies on the Health and Nutrition Outcomes of Women and Young Children: A Systematic Review. Paediatr Perinat Epidemiol. 26, Suppl 1:205-22. doi: 10.1111/j.1365-3016.2012.01282.x.Suppl.1, 205-222.
4. Leroy, J.L. and Frongillo, E.A. (2007) Can interventions to promote animal production ameliorate undernutrition? Journal of Nutrition 137, 2311–2316.
5. Ruel MT (2001) Can Food-Based Strategies Help Reduce Vitamin A and Iron Deficiencies? A Review of Recent Evidence. Washington DC: IFPRI.
6. Right to Food Brief No. 6. Education and awareness-raising. Available at <http://www.fao.org/righttofood/kc/downloads/briefs/en/6/03.htm>
7. UN Committee on Economic, Social and Cultural Rights (CESCR), General Comment No. 12: The Right to Adequate Food (Art. 11 of the Covenant), 12 May 1999, available at: [http://www.unhcr.org/refworld/docid/4538838c11.html](http://www.unhcr.org/refworld/docid/4538838c11.html%20)
8. UNSCN. 2010. Progress in Nutrition: 6th Report on the World Nutrition Situation. Geneva: United Nations Standing Committee on Nutrition.
9. World Bank 2007: From Agriculture to Nutrition: Pathways, Synergies and Outcomes. The International Bank for Reconstruction and Development / The World BankAvailable at <http://siteresources.worldbank.org/INTARD/825826-1111134598204/21608903/January2008Final.pdf>

## 31. Ishwar Babu Bairwa, ISS, Netherlands

Dear Sir/Madam,

I have been associated with this forum since 2010. It is my first contribution to forum. I am a agri-development professional and two years back I completed my second master from ISS, the hague, the Netherlands.  My contribution is based on my field experience in hot desert area, it is regarding enhancing nutrition for vulnerable community who live in harsh , horrible context in rural hot desert areas that lies in western Rajasthan of India. Lives and livelihood of these people are uncongenial since  average rainfall of this region is approximately 150 MM while average rainfall of India is 1200 MM. The ground water is almost not suitable drinking for human being as well as livestock as the water is highly saline. Likewise, temperature is an  extermly hot because there is no vegetation cover area in the rural and effect of climate changes.

The source of perusing livelihood for disadvantaged people is  to grow millet and Moth (pulse crop) in rainy season and rearing livestock particularly Goat. In arid climatic zone where Goat and millet in crop has recommended by various research institution. Subsequently, most of women and children are anemic due to lack of  availability of nutritious food to the community. To provide nutritious food to women, children as well as men , there is an urgent need to develop a robust policy at national level and local level. Through this mail, I would suggest key course of action to mitigate malnutrition status in hot desert are as below:

1. Millet is main agriculture crop for the area. hence, central government and local government must plan to do more research on developing desert resistant varieties. Secondly , the research institute should develop nutritive varieties for existing main crops so that available food diet would be nutritious.

2. National policy maker should keep in mind that there is  to get drinking water is a great concern for the community. In order to get irrigation water, domestic use of water  There is a key solution that is construction of Tanka   which must have capacity  of 60000 liter water. The water should only collected in natural rainy days at individual household level. Furthermore,  BAIF ( is a national NGO) has attempted and tested the model. BAIF's model is the WADI model, is successful model in desert area. WADI model comprises water tank (60,000 liter capacity), 100 fruit plants at their own infertile or fertile land, improved goat breed and kitchen garden vegetable crops. This model demonstrated that WADI model owner enable to get Rs. 40,000 per annum after 2-3 years of establishment of WADI.  Fresh fruit, vegetable and milk of goat availability leads to reduce malnutrition in hot desert rural region.

For more deatil of WADI model, you may click over - [www.baif.org](http://www.baif.org).

I am looking for your acceptance and comments.

best regards

Ishwar

## 32. Anna Herforth Independent consultant, United States of America

This contribution is to share recent activity on this topic among the 700-member independent [Agriculture-Nutrition Community of Practice (Ag2Nut CoP)](http://knowledge-gateway.org/ag2nut), which encompasses many stakeholders:

Over the last two years, there has been an effort to harmonize existing recommendations on how to improve nutrition through agriculture. The outcome is represented as a set of [Key Recommendations for Improving Nutrition through Agriculture](http://unscn.org/files/Agriculture-Nutrition-CoP/Agriculture-Nutrition_Key_recommendations.pdf): 10 key recommendations for programs, and 5 for policy.

(File available at:  <http://unscn.org/files/Agriculture-Nutrition-CoP/Agriculture-Nutrition_Key_recommendations.pdf> )

This effort was initiated by the formation of the volunteer Agriculture-Nutrition Community of Practice (Ag2Nut CoP) in 2010, now a group of 700 members worldwide.  We noticed that there was a lack of clarity around how agriculture could best improve nutrition, even though it was a growing priority to do so; for example the SUN Movement emphasized the need for nutrition-sensitive development, but had not specified what that would entail for agriculture.  Country governments, such as SUN early risers, were expressing interest in improving nutrition through agriculture, but were unable to benefit from global recommendations on the topic.  In the Ag2Nut CoP, however, we knew that such recommendations existed, as many of the members had worked on writing about the topic for our respective institutions.

In order to take stock of existing recommendations, and to assess their degree of alignment, the FAO supported an extensive review, facilitated by Ag2Nut CoP participation, of available guidance on nutrition-sensitive agriculture.  The report identified over 50 relevant documents recently published by development institutions, and found that many recommendations were being stated in common by almost all institutions.  The implicit consensus on the characteristics of nutrition-sensitive agriculture was made explicit in the [Synthesis of Guiding Principles on Agriculture Programming for Nutrition (FAO 2013)](http://www.fao.org/docrep/017/aq194e/aq194e00.htm), which also benefited from substantive review and contributions by over 70 stakeholders,  in the form of relevant resources, comments, and verification of main conclusions.

A consultation with a broad range of partners (CSOs, NGOs, government staff, donors, UN agencies), in particular through the Ag2Nut Community of Practice, then honed the common messages into a concise set of recommendations (or guiding principles) that represent a broad consensus on how to improve nutrition through agriculture, based on the current global context.  These are the [Key Recommendations](http://unscn.org/files/Agriculture-Nutrition-CoP/Agriculture-Nutrition_Key_recommendations.pdf) referenced above.  Due to the highly collaborative process in their development, many stakeholders, including governments, NGOs, bilaterally funded projects (such as USAID's SPRING project), the UN SCN, and regional processes such as the CAADP, are currently using these recommendations or principles as a helpful way to review programs and policy, and to design nutrition-sensitive programs.

## 33. Corinna Hawkes, World Cancer Research Fund International, United Kingdom

A critical issue for this online discussion forum is that the food system is an under-recognised domain for policy actions to promote higher quality diets for NCD prevention. Food systems are important for a whole host of reasons. Three of the most critical are that:

* Policies implemented to promote healthy diets have repercussions upstream for the actors and activities in the agriculture and food systems. Due attention thus needs to be paid to anticipating/pre-empting perverse response.
* Likewise, agrifood policies have repercussions downstream policies to promote healthy eating – their influence on food availability, affordability and acceptability may reinforce or undermine them.
* There are a range of policy actions that can be implemented with the explicit intention of leveraging agriculture and food systems to improve dietary quality by influencing food availability, affordability and acceptability.

Yet to date, most actions in food systems to improve diet quality have been made in short food supply chains in the context of undernutrition. Interventions have also been limited to discrete parts of the supply chain. Rarely have approaches considered the long, more complex, often globalised, chains relevant to NCD prevention, nor had the objective of ensuring the whole supply chain is operating synergistically to achieve desired goals. This is ignoring the huge potential that levering long chains has to effect improvements for dietary quality and NCD prevention at the level of populations.

The process of levering long chains is going to require “policy coherence” i.e., the systematic promotion of mutually reinforcing policy actions across government departments and agencies creating synergies towards achieving the agreed objectives.

These points are further elaborated in the paper “Leveraging agriculture and food systems for healthier diets and noncommunicable disease prevention: the need for policy coherence” at: <http://www.fao.org/fileadmin/user_upload/agn/pdf/HawkesICN2paper_Jul1.pdf>

## 34. Jody Harris and Leslie Amoroso, facilitators of the discussion

Dear all,

Many thanks to all those of you who have contributed to this discussion so far. This is a lively and rich exchange. In this last week we have received several posts providing comments both on the core background and expert papers, which represent some of the most current thinking in nutrition-enhancing agriculture and food systems. In the remaining few days of this discussion (ending Monday 29 July), we would like to strongly encourage those of you who wish to contribute but haven’t found the time to please do so, even briefly, because all the comments can contribute to further enrich the discussion. Again, we invite you to focus your comments on one or more of the core background and expert papers and on the three key questions on policy, programmes and partnerships based on your experience and views.

Thank you for your time and we look forward to your contributions.

Jody and Leslie

## 35. Prabir Dutta, Dg Foundation, India

Dear Sir,

It is well understood that foods of plant origin as well as animal origin are vital for nutrition enhancing agriculture. Organic agriculture is better. But plant origin agriculture is not sufficient as the plant protein does not contain all the essential amino acids with the exception soyabean. Whereas foods of animal origin can fill up the gap.

Best regards.

Yours sincerely

(Dr)Prabir Dutta

India

## 36. Xavier Meignien, International Institute of Refrigeration, France

[*English version*]

Dear all,

Foods with high nutritional value are often perishable goods (fruit and vegetables, tubers, animal products).

Good food preservation is both a public health issue and an accessibility and availability issue.

**Public health:** It is important to ensure food safety by setting up a reliable quality control system. In addition, this is a question of consumer confidence. These controls should focus on quality parameters (pesticide residues, bacterial or viral infection, parasites ...) and properly applied methods such as temperature control throughout the cold chain.

**Accessibility and availability**: Post-harvest losses from all causes (handling, excessive temperatures ...) diminish availability to consumers. In some cases lack of suitable logistics mean certain products are not found in retail only a few dozen kilometres from production areas. Whichever the case, losses impact prices paid by consumers and those paid to the producer which discourages production.

The stakes are high because, according to a study by the FAO in 2011, post-harvest losses of perishable produce (until final sale to the consumer) represent about a third of production in developing countries (figures vary across regions and product categories).

[the International Institute of Refrigeration (IIR) is an intergovernmental organization;  Web site: [*http://www.iifiir.org*](http://www.iifiir.org) ]

[*French version*]

Bonjour à tous,

Les aliments à haute valeur nutritive sont souvent des produits périssables (fruits et légumes, tubercules, produits d’origine animale).

La bonne conservation de ces produits est à la fois un enjeu de santé publique et un enjeu d’accessibilité et de disponibilité.

**Santé publique** : il importe de veiller à la sécurité sanitaire des aliments, et pour cela de mettre en place un système de contrôle de qualité crédible ; c’est aussi une question de confiance des consommateurs ; ces contrôles doivent porter sur les paramètres de qualité (résidus de pesticides, contamination bactérienne ou virale, parasites…) et sur les moyens mis en œuvre (contrôle des températures tout le long de la chaîne par exemple)

**Accessibilité** **et disponibilité** : les pertes après-récolte, toutes causes confondues (manutention, températures excessives…) réduisent l’accessibilité pour les consommateurs ; dans certains cas, faute de logistique adaptée, certains produits sont introuvables à quelques dizaines de kilomètres des lieux de production ; dans tous les cas, les pertes ont un impact sur le prix payé par les consommateurs et celui payé au producteur, ce qui décourage la production.

L'enjeu est de taille puisque selon une étude de la FAO de 2011, les pertes de produits périssables après récolte (jusqu'à la vente au consommateur final) représentent de l'ordre du tiers de la production dans les pays en développement ( proportion variable selon les régions et les catégories de produits).

[L’Institut International du Froid (IIF) est une organisation intergouvernementale; site web: [*http://www.iifiir.org*](http://www.iifiir.org) ]

## 37. Purnachandra Wasti, Department of Food Technology and Quality Control, Nepal

Dear Moderators ( Jody and Leslie),

What an excellent and timely topic !

I am very much enlightened with all the expert views on the topic from around the world. I hope this effort will help our ideas to cross the  our own boundary and reach the real actors of agriculture.

This is the time in our history, where nutrition has been given so much priority through many initiatives. One of them is recent Scaling Up Nutrition (SUN) Initiatives which has gained a lot of attention from all the stakeholders including the donor community. SUN has equally emphasized on nutrition specific as well as nutrition sensitive interventions. In this context, the topic is very much relevant.

Once again the multi-sectoral  role has been re-emphasized and the role agriculture can play has also been amplified. However, the efforts are still running short to orient the agriculture sector in the direction of fulfilling nutritional goals. The traditional role of agriculture has almost been forgotten in agriculture plans and policies. There are a a lot of efforts in making agriculture more profitable through commercialization, value addition and other market related interventions.

As a result of advocacy efforts at international  level, some of the countries ( as per my experience Nepal, Malawi and Uganda) countries have started adopting the term " food and nutrition security" in agriculture plans, policies and programmes. But in spirit, they have even deviated traditional "food security". The donors like World  Bank and other are more interested in making agriculture more profitable not more nutrition-sensitive.

In addition, the following are some of the lackings in the developing countries especially in Asia and Africa:

1. The agricculture professionals are not well oriented on the importance of agriculture in solving the problem of malnutrition.

2. The agriculture extension system is not well- trained to deliver the knowledge and skill on making agriculture more nutrition sensitive.

3. The agriculture extension and health delivery system work separately, which completely overlooks the role of agriculture extension workers in sustainable solution of malnutrition.

4. The  whole agriculture system has inadequate knowledge base on how to make the agricultural programmes and projects more nutrition friendly.

5. The governments and the international actors for nutrition ( in most cases UN-UNICEF) has partnership with the health system, which has very less reach to agriculture system.

What can be done to make the agriculture and food system more nutrition sensitive ? Here are some points, these are not evidence supported arguments, but these are the experience based readings :

At Policy Level :

1. Governments should have a broader food and nutrition policy , where agriculture can be a part of the whole policy framework.

2. Wide participation of various stakeholders in the process of formulating policies.

3. International agencies including UN, should facilitate the process, build capacity and support but not create dependency.

4. The donors like world bank should also support projects with agricultural diversification not only for profitability but also for better nutritional outcomes

5. The industry should be encouraged and promoted for producing more nutritious products rather than empty calorie, fashioned junk foods.

At Implementation level :

6. Orientation, training of the agriculture cadres from top to the grassroots on programming for nutrition sensitive agriculture.

7. Training of farmers, themselves on making agriculture more nutritious by using innovative techniques such as rotational cropping, combinaiton of agriculutre and livestock, inter-cropping( beans in banana plantation, soybeans and beans with maize etc.)

8. The farmers should be educated not only the marketability of the particular crop but also the nutritional importance of it.

9. Nutrition education should be intensified through all the possible channels- schools, mass media etc. so that the demand for nutritionally important agriculture produce will be increased.

10. Nutrition Education is very  important ( as highlighted by FAO Colleagues)  for all the projects, even the agricultural projects with the objectives of income generation.

11. Capacity building of agriculture extension workers not only on better farming but also on post harvest handling,  processing and storage.

12. Academic institutions should offer courses education which promotes sustainable food and agriculture based interventions.

For partnership:

13. A greater partnership at least among agriculture, health and academia, if possible, education, local development.

14. Involvement of NGOs and CBOs in policy as well as other implementation level dialogues.

15. Private sector has an important role to play through social corporate responsibility by making their business more profitable and creating more employment and at the same time making it more nutrition friendly.

16.The children are the future of the nation. Involving children at schools as a change agents for nutrition sensitive agriculture will be very effective in adopting new agricultural and other food related practices.

These are not the exhaustive list but some triggering ideas, which can be helpful in keeping agriculture on track so that it not only provides livelihoods for millions poor farmers, makes agriculture more profitable, creates more employment, earns foreign exchange, at the same time if planned a little bit carefully helps solve the problem of malnutrition.

Now or never. Time has come, let's act now at our level and remind the policy makers of the conventional role of agriculture, make it a little bit of nutritious. No problem agriculture can earn more money, let's educate the farmers to spend wisely for the nutrition of the family.

Once again, I would like to thank the moderators and wish all the success in raising this issue to a greater height.

All the best,

Yours,

Purnachandra Wasti

Senior Food Research Officer

Department of Food Technology and Quality Control

Kathmandu, Nepal.

## 38. Kuruppacharil V.Peter World Noni Research Foundation, India

A nutrition garden as designed at Kerala Agricultural University envisages growing of vegetables, fruits and spices to meet the nutritional requirement of a family of five people.

Vegetables consist of leafy, pulses, fruits and several underexploited and underutilized plants. Fruits consist of locally adapted crops like guava, aonla, pineapple, gooseberry, Surinam cherry. Leaf vegetables are amaranth, Ceylon spinach, beat leaf, chekkurmanis, amaranth, basella, basil and leaves of many tubers. Pulses are cowpea, pea, beans and several underutilized but locally adapted crops.

The nutrition garden is managed by family labour. Manures are composts from family wastes. Techniques like drip fertigation, mulching, integrated pest disease management and value addition of raw products into dehydrated fruits and vegetables are the distinct advantages of a nutrition garden.

More details are available in the booklet NUTRITION GARDEN published by Directorate of Extension, Kerala Agricultural University.

Dr K V Peter

## 39. Stacia Nordin, NeverEndingFood, Malawi

Where have we gone wrong to think that nutrients don't come from Agriculture and that Agriculture doesn't depend on healthy soil, water, air, plants and animals for healthy people?

## 40. Luis Lobo, FAO, Chile

I would like to share with you a specific case of how the nutritional issue facilitates the positioning of the family farming in a context of achieving food security and nutrition.

The situation in Ecuador in the field of public procurement linked to family farming (FF) is very interesting, opening a window of opportunity to support the reengineering of the School Feeding Program (SFP) toward a more comprehensive and mostly linking school feeding with local procurement from the FF.

Context and characterization of this window of opportunity:

* + The school feeding program (SFP) is managed by the Ministry of Education. This program is characterized by highly centralized and concentrated in big suppliers, most multinational companies, whose design and implementation criteria are mainly: cost efficiency, coverage and logistics issues. This has led to the exclusion of the small farmers.
  + The government of Ecuador has new evidences about the School Feeding Program, based on the latest nutrition survey conducted in the country by the Ministry of Health. This survey shows reduction of the values of undernourishment rates but new challenges are emerging as obesity in children school age, so that the problem of malnutrition is present and have a new face, which calls into question the quality of the current menus of the SFP, where de FF has a advantages comparatives
  + The government has positioned the issue of FF in Ecuador with a constitutional framework that drives it; so the concept of sovereignty, that is recognize in de constitution of the country, is linked to support small framers.

In this context and thanks, as you can see, of the nutrition issue, the situation is advancing to design and implementation of the Food Supply Program (PSP) articulate with the SFP, with the support of the Presidency of the Republic and under the tutelage of Ministry of Agriculture (MAGAP) and the support of Ministry of Education, more decentralized and aimed at FF.

In most countries of LAC, sustainability and success of these policies depends mostly of achieving the consolidation and transformation of the political will in institutional frameworks that allow SFP – FF policies to survive political and economic cycles [e.g. A national Law in Brazil mandates that at least 30% of food supply for SFPs must be from FF] and develop process to enhance its efficiency and quality of coordination in territory. The case of Ecuador shows that this can be done wherever there is social consensus about the problem and its solutions and these are supported by political leadership.

## 41. C.Palanivelayutham Chokkalingam, India

Success story

Moringa (Drum stick) Moringa oleifera cultivation and consumption of various

Parts of this crop like leaves and pods, enhances the nutritional status of human being. The following nutrients are present in this crop.

* Moringa leaves are having 40% of protein with all the nine essential amino acids.
* The amount of Beta carotene , vitamin C and vitamin E found in moringa exceed those amounts commonly found in other plant parts.
* Beta carotene (Pro vitamin A) moringa leaves contain beta carotene than carrots about 3 to 5 times are more. Vit.A is the most important vitamin for immune protection against heart disease and keep harmfull lipoprotein containing chloestrol from damaging heart.
* Vitamin C Just one ounce of Moringa leaves contains the daily recommended amountof Vitamin C.
* Vitamin E is a potent anti oxidant that helps prevent premature ageing and degenerative disease including heart disease, arthritis, diabetes and cancer.
* Vitamin B1 is the vital for production of energy in each cells and it plays essential role in the development of carbohydrates.
* Vitamin B2 (Ribo flavin) also present in moringa leaves.

Based on the above reasons In South parts of Tamil Nadu in India, Farmers are interesting in cultivation of this crop. In Tuticorin DT. Of Tamil Nadu state in India the Teri land (Red soil with moderate water holding capacity) farmers raising this crop to the extent of more than 2000 ha.

In this crop cultivation recent trend is instead of growing perennial Moringa

these farmers are preferred new varieties of Annual moringa varieties like PKM1 PKM2,which are having 18 months life period. The propagation of this crop by seeds , these seeds were sown in polythene bags and after 20 to 25 days the seedlings were transplanted in main field.

Farmers are using Drip irrigation with fertigation to get high yield from this crop.The productivity of this crop up to 7.5 tonnes/Ha. and 1250 kgs of leaves are gathered from this crop per tree per year.

In south Indian food esp. in Tamil Nadu state the leaves, and pods are widely used for culinary purpose. The moringa pods are now exported to other state. Now these farmers trying to make powder from these leaves of this crop, which has enormous export value and help full for reducing malnutrition.

Sustainability of growing of this crop only based on the nutritive value and food system followed by these people.

## 42. US Council for International Business, United States of America

US Council for International Business response for the FAO’s Global Forum on Food Security and

Nutrition Discussion on Nutrition-Enhancing Agriculture and Food Systems

We would like to thank the FAO for the opportunity to submit comments to this online discussion. For your background information, USCIB is the American affiliate of the International Chamber of Commerce (ICC), the Business and Industry Advisory Committee (BIAC) to the OECD, and the International Organisation of Employers (IOE). As such, we work closely with intergovernmental bodies, including the OECD, WTO, ILO, UN bodies and vis-à-vis foreign business communities and their governments. In addition, we would like to highlight that USCIB is a membership based organization which operates under bylaws that provide the framework under which we consult with our own stakeholders. Our processes are transparent. We provide views and inputs which are built through a consultative process and reflect a consensus among our large membership. We therefore hope that the

FAO reads this submission within this context.

The questions below are extremely broad and encompass themes which are complex. Although an online consultation will solicit some input, we would like to suggest that the **FAO create a more targeted approach to engaging with stakeholders, including the private sector.** We recommend a formal consultation with stakeholders, including the private sector, to have a more robust and complete discussion on these important issues related to nutrition.

Prior to responding to the questions below in more detail, USCIB would like to underscore the following:

* An effective nutrition policy must be developed using evidence-based science;
* The private sector can play an important role in achieving a more nutrition-enhancing food system by innovating and investing in the food and agricultural sector;
* Food systems should place emphasis on food safety, quality and assurance, with regard to the product itself ;
* Preservation of natural resources to continue to grow food is necessary for nutrition;
* Empowering women and girls is important; and
* Effective and efficient nutrition policies require coordination across government ministries working with the private sector and civil society.

**Policy issues: What policies can make agriculture and food systems more nutrition-enhancing? What are the knowledge gaps in policies associated with nutrition-enhancing agriculture and food systems?**

With regards to these aforementioned questions, we would like to highlight the International Life Sciences Institute (ILSI) related work on building an effective nutrition policy. ILSI is a nonprofit, worldwide organization whose mission is to provide science that improves public health and well-being to states. To build an effective nutrition policy there should be a high probability for the effectiveness of nutrition-related interventions with low probability for unintended consequences. To achieve this balance, it is important to have an adequate level of scientific evidence.

The data essential for developing and implementing effective nutrition strategies include: knowledge of what a population is eating, knowledge of nutritional and health status of the population and key subpopulations, behavioral changes important to successful implementation and program evaluation of outcomes.

While having the correct data is crucial, it is equally important to have the right institutional arrangements in place to best support coordination and implementation of effective nutrition strategies. Effective and efficient nutrition policies require coordination across government ministries working with the private sector and civil society.

The private sector can play an important role in achieving a more nutrition-enhancing food system by innovating and investing in the food and agricultural sector. In addition though, meeting the growing challenges of the future, such as constrained resources, greater demand, and of course health-related challenges, will require policies that promote innovation and efficiency across the supply chain, from production to distribution and consumption.

With regards to distribution and consumption, it is particularly important to reduce waste and post-harvest losses, and lower costs of storage, transportation, and processing which can reduce costs and help to make foods more available. These actions would help to improve food access and food products.

USCIB believes that the private sector know-how in the areas of innovation, science and technology, as well as good production and management practices, can be increasingly harnessed through effective partnerships with research institutions, farmers, policy-makers, and civil society. The private sector plays a critical role in further strengthening markets, economic growth and livelihoods. While private sector involvement is key, there is also a need for government collaboration particularly in helping to ensure greater policy coherence such as reducing barriers to trade.

**Programme issues: What do nutrition-enhancing agriculture and food systems look like? What have been the success stories and lessons learned from programmes at country level? How can we monitor the impact of such programmes on food consumption and nutrition?**

To answer the questions above, we would like to highlight the following areas that need to be further addressed to provide an adequate response:

Food, Diversity, Safety and Quality Assurance

It is important to understand what the population is eating. Essential nutrients for humans are provided across the diverse pattern of foods which means that diversity is essential for good nutrition. Therefore, promotion of good nutrition is not a simple matter of emphasizing approaches that “one size fits all.”

Additionally, due to ecological, economic, cultural or special physiological needs, human diets may require specific interventions that complement the nutrient gaps that may occur. Therefore, it is desirable to have nutrition interventions such as biofortification, food fortification, products formulated to satisfy nutritional requirements of specific groups of the population and food supplements.

Equally important is to ensure a population has access to food products that are safe. Food systems should place an emphasis on food safety, quality and assurance, with regard to the product itself. Likewise, food companies should provide the necessary information to ensure foods are delivered and prepared in a safe manner.

Nutrition Education

Nutrition education is another important area to address. It is important to provide the necessary facts which are focused on evidence-based science so consumers can make the appropriate decisions for their families. For this reason, we believe that international (evidence-based) standards such as CODEX, provide consumers with the right information/environment to make choices. Subjective standards are not helpful to the consumer.

Sustainable Agricultural Production

Preservation of natural resources to continue to grow food is necessary for nutrition. USCIB urges the FAO to promote food systems that protect natural resources especially since there are continuing challenges that the agriculture industry must face such as population increases, climate change, and water availability. As such, USCIB would like to highlight the importance of careful end-to-end management throughout the whole supply chain – from soil quality, water preservation, productivity/yields, to building climate change resilience, fortification, R&D, and post-harvest losses.

In this area, private sector plays an important role in research and development, technologies, innovation, and supply chain management. This includes working with smallholder farmers who are key players in helping to ensure a more sustainable, productive, and equitable agricultural development. Nestlé’s Rural Development Framework is an example of how the private sector invests in the development of farmers and their livelihood. In fact, nutrition is identified as one of the priorities. [http://www.nestle.com/asset- library/documents/investors/2013%20events/2013%2006%2017%20-%20rural%20development%20conf%20call.pdf](http://www.nestle.com/asset-%20library/documents/investors/2013%20events/2013%2006%2017%20-%20rural%20development%20conf%20call.pdf)

In addition, we would like to also include an example of how one company places strong emphasis on environmental conservation and performance. Coca Cola’s Sustainable Agriculture Guiding Principles set expectations for ingredient suppliers to address sustainability challenges specific to agriculture, including areas such as workplace and human rights, environment, and farm management systems. [http://assets.coca-colacompany.com/3e/b9/a13dd0a04750b2226f5904e94c8f/coca-cola-sustainable- agricultural-guiding-principles-april-2013-pdf.pdf](http://assets.coca-colacompany.com/3e/b9/a13dd0a04750b2226f5904e94c8f/coca-cola-sustainable-%20agricultural-guiding-principles-april-2013-pdf.pdf)

Empowering Women and Girls

Another crucial issue includes ensuring the empowerment of women and girls both economically and socially. These members of society have an important role in the decisions made at the household level with regards to food and nutrition. Therefore, we believe that it is important to promote policies that help women become farmers, traders and business owners. Equally important is that these members of society are educated and properly informed to make healthy choices for their households. The private sector can play a crucial role in empowering women and girls. Nestlé’s Action Plan on Women in the Cocoa Supply Chain reflects the company’s commitment to addressing this important issue.

[http://www.nestlecocoaplan.com/wp-content/uploads/2013/05/action-plan-women-in-cocoa-supply- chain1.pdf](http://www.nestlecocoaplan.com/wp-content/uploads/2013/05/action-plan-women-in-cocoa-supply-%20chain1.pdf)

**Partnerships: How can we work across sectors and build strong linkages between food and agriculture, social protection, employment, health, education and other key sectors? How can we create sustainable partnerships? How can we build effective governance for nutrition?**

With regards to partnerships, the areas that the FAO questions refer to are very broad. We recommend that the FAO be more precise in outlining what type of partnerships and linkages it is interested in. Prioritizing the areas in which FAO is interested in creating partnerships with various stakeholders would be a more effective manner to obtain input.

In light of the question, however, USCIB would like to highlight the work that the food and beverage industry has engaged with the WHO’s 2004 Global Strategy on Diet, Physical Activity and Health (Global Strategy) and most recently the WHO Global Action Plan on NCDs (2013-2020) and the monitoring framework. Cooperation between governments and the food and beverage industry is necessary to the adoption of a multi-sector approach to addressing nutrition challenges. For example, many food and beverage companies have already partnered with the WHO, its regional offices, Member States and the wider public health community to deliver positive outcomes with regards to diet, physical activity and health. Some of the steps include:

* Reformulating existing products and developing innovations that offer healthier options for populations;
* Providing populations with clearer information about the nutritional composition of foods and beverages;
* Adopting voluntary measures on the marketing and advertising of food and beverages particularly to children and
* Promoting greater physical activity, sports and healthier lifestyles.

For more information about how the food and beverage industry has worked with the WHO, please refer to https://www.ifballiance.org/ and to a 3rd party report by Accenture <https://www.ifballiance.org/sites/default/files/AccentureMonitoringReport2012FINALDecember2012.pdf>

On the question of governance, we would recommend that the FAO clarify what is meant by that term. For example, we would like a clarification on who or whom would be governed? And on what legal basis would those entities be governed?

## 43. The International Diabetes Federation, Belgium

The International Diabetes Federation (IDF) is the unique global voice of the diabetes community. IDF’s strength lies in the capacity of our 220 national Member Associations – who connect global advocacy to local reality and deliver vital diabetes prevention, treatment and care in over 170 countries worldwide. As a founding federation of the NCD Alliance, IDF fully supports and reinforces all comments made in the NCD Alliance response. In these comments, IDF provides the diabetes perspective on nutrition-enhancing food systems.

The world is facing a diabetes crisis. The numbers are bleak and are becoming worse: more than 371 million people are living with diabetes today, a number that is expected to rise to 552 million in less than 20 years . While previously considered a disease of the rich, evidence shows diabetes disproportionately impacts the poor and vulnerable. Today nearly two-thirds of people with diabetes live in low- and middle-income countries.

Diabetes and nutrition are closely linked; overweight and obesity are among the leading risk factors for diabetes, and undernutrition in early life has been shown to increase risk for diabetes later in life. Nutrition is a cornerstone in the fight against diabetes and obesity, and population nutrition is a function of the food system. The global food system supplies the world with food necessary to sustain life, but it is also responsible for an influx of highly processed foods full of saturated fats, sugars and salt, contributing to the global rise in diabetes and other noncommunicable diseases (NCDs).

We welcome the opportunity to contribute to the preparations for the Second International Conference on Nutrition (ICN2) and this discussion on Nutrition-sensitive agriculture. In particular, IDF acknowledges, welcomes and supports the Expert Paper contributed by Hawkes et.al.: “Leveraging agriculture and food systems for healthier diets and noncommunicable disease prevention: The need for policy coherence”.

**Key Messages**

* Globalisation of the food system has enabled availability, affordability and acceptability of unhealthy eating patterns. This makes a significant negative contribution to diabetes and its metabolic and behavioural risk factors, including overweight and obesity.
* Today we face a triple burden of malnutrition: undernutrition, micronutrient deficiency and overnutrition/overconsumption, often in the same country, community or household.
* Both under- and over-nutrition are contributing to the spiralling rise of diabetes and other NCDs.
* Maternal undernutrition increases the risk of the child developing obesity and type 2 diabetes later in life. Overweight and obesity, including childhood obesity, promote insulin resistance and are major drivers of the global type 2 diabetes epidemic
* Nutrition-enhancing agriculture and food systems provide part of the solution to malnutrition in all its forms, including poor quality diets associated with diabetes. Improvements should include actions at the local level, notably to promote the production and market movement of plant-based foods.
* IDF strongly supports the call by Hawkes et. al. that food and agriculture systems operate through “policy coherence”, and that policies for NCD prevention “directly interface with agriculture and foods systems…”
* Nutrition policies for the prevention and control of diabetes must aim to increase fruit and vegetable consumption and decrease consumption of highly-processed foods which are high in salt, sugar, and saturated/trans fats. To achieve this, food and agricultural systems need to supply foods and
* types of products grown, produced, marketed and sold – which can only be achieved through collaborative, forward-thinking policy initiatives at all levels from local to international.
* Diabetes and NCDs are multisectoral issues, which require multisectoral solutions, including policies on nutrition and agriculture. Active involvement of civil society will be a fundamental element of creating and sustaining nutrition-enhancing agricultural systems.
* More attention and efforts are needed from civil society and others to encourage policy coherence between agriculture policy and policies aimed at the nutritional risk factors for overweight/obesity and diabetes.

**Policy issues: What policies can make agriculture and food systems more nutrition-enhancing? What are the knowledge gaps in policies associated with nutrition-enhancing agriculture and food systems?**

Unhealthy Diet and Diabetes

Unhealthy diet and excessive energy intake are key risk factors for type 2 diabetes and obesity. While nutritional deficiencies have largely been eradicated in high-income countries, obesity and diabetes are now affecting a significant portion of the population in these countries. At the same time low- and middle-income countries are facing a double burden of disease, with infectious disease and malnutrition present alongside diseases related to overnutrition and unhealthy diet, such as diabetes.

Increasingly, healthy foods are inaccessible in terms of price, location, or other barriers. Dietary quality is an independent risk factor for diabetes and NCDs with diets that are high in fat, sugar and salt increasing the risk of these diseases. Diets around the world are insufficient in fruit and vegetable intake, which WHO estimates to cause 1.7 million deaths each year[[1]](#footnote-1). Low-cost foods that are high in fats, sugars, and salt are dominating many markets; readily available and affordable; these products encourage unhealthy choices. Situations where financial resources are limited and the food supply is insecure support a market for these inexpensive yet unhealthy foods.

Policies for diabetes and nutrition-enhancing food systems

Nutrition policies for the prevention and control of diabetes must aim to increase fruit and vegetable consumption and decrease consumption of highly-processed foods which are high in salt, sugar, and saturated/trans fats. To achieve this, food and agricultural systems need to supply foods and beverages consistent with these goals, which in many countries would require a dramatic change in the types of products grown, produced, marketed and sold. IDF supports these systematic changes which would require collaborative, forward-thinking policy initiatives at all levels – from local to international.

Nutrition-enhancing agriculture and food systems are one part of the solution to malnutrition in all its forms, including poor quality diets associated with diabetes and other NCDs. IDF strongly supports the call by Hawkes et al that food and agriculture systems operate through “policy coherence”, and that policies for NCD prevention “directly interface with agriculture and foods systems…”

In this approach, as Hawkes et al describe, “agriculture and food systems are linked with policies to promote healthy diets through the food supply chain”. “Short” food supply chains can be used to make healthier foods more available, affordable and acceptable, such as through farm-to-school programmes and local production for local markets in rural and small island communities. “Long” food supply chains influence food availability, affordability and acceptability at the global level, and offer the greatest potential for change.

Policies which make fruits and vegetables more available, affordable and acceptable have a particularly high potential impact on diabetes risk factors, as well policies which influence substitutions between different types of fat and meat. Such policies would combine ‘environmental’ approaches to healthy food availability and affordability, and educational strategies designed to facilitate the acceptability of healthy food choices and other healthy lifestyle behaviours.

right to adequate diets for all, and reforming agricultural and food policies, including taxation, in order to reshape food systems to promote sustainable diets. As part of creating nutrition-sensitive agri-food systems, policies are also needed to discourage high-calorie, nutrient-poor foods, such as fiscal policies and policies to significantly reduce the marketing of these foods to infants, young-children, adolescents and their caregivers.

**Programme issues: What do nutrition-enhancing agriculture and food systems look like? What have been the success stories and lessons learned from programmes at country level? How can we monitor the impact of such programmes on food consumption and nutrition?**

Policy coherence in approaching nutrition-enhancing agriculture and food systems can ensure that decreasing undernutrition does not increase the risk for overnutrition. Today we face a triple burden of malnutrition: undernutrition, micronutrient deficiency and overnutrition/overconsumption, often times in the same country, community or household. Increasing energy intake in food-insecure populations, communities and individuals is not sufficient – food systems must provide adequate nutrients and an overall healthy diet in order to correct the triple burden of malnutrition and prevent diet-related diseases. This should include actions at the local level, notably to promote the production and market movement of plant- based foods.

Strong government policies are essential if food systems are to reduce unhealthy diets as a risk factor for diabetes and other NCDs, as well as reducing hunger and undernutrition. While the role of government in tackling hunger and undernutrition is widely recognised, it remains the case that most governments assume that ‘individual responsibility’ takes precedence once food becomes abundant. Meanwhile, many processes in the marketplace encourage populations to make unhealthy choices, with affordable healthy choices limited for lower income populations. The policy options outlined in the 2004 Global Strategy on Diet and Nutrition, the 2011 UN Political Declaration on NCDs, and the WHO Global Action Plan for NCDs 2013-2020 provide a guide and political mandate for countries to take action on the triple burden of malnutrition.

Nutrition-enhancing food systems must include a focus on women and the rural poor. The importance of empowering women as critical agents for enhancing nutritional status cannot be underestimated. There is a particular need to improve access to credit and other financial services for small producers, women, indigenous peoples and people living in vulnerable situations.

Current initiatives do not adequately balance the need for immediate interventions with those aimed at achieving long-term impact. Nor have interventions balanced efforts on undernutrition with the need to improve diet quality more broadly. A single focus on undernutrition – the approach most common to date – is insufficient given the range of nutritional problems affecting every country in the world and the rising prevalence of diabetes and other NCDs linked to overweight/obesity.

Country level efforts in Brazil are demonstrating the feasibility of working on under- and overnutrition together. Efforts made since the 1990s in Brazil to improve nutrition focused on increasing food consumption through income interventions and school meals. Attention was not paid to the excess energy intake nor the nutritional quality of the calories consumed, and the health of Brazilians, even in low-income communities, has become increasingly indicative of an unhealthy diet. Recent actions in Brazil have attempted to reverse this focus on calories, for example by implementing nutrition standards for schools meals. The initiatives in Brazil could be strengthened further by the creation of nutrition-sensitive food and agriculture systems.

**Partnerships: How can we work across sectors and build strong linkages between food and agriculture, social protection, employment, health, education and other key sectors? How can we create sustainable partnerships? How can we build effective governance for nutrition?**

improve nutrition through their business models and employment practice; civil society organizations need to help citizens to drive transparency and accountability; and the scientific community needs to keep us focused on evidence about what works.” -- Anna Taylor, Alan Dangour, and Srinath Reddy, Lancet Series on Maternal and Child Nutrition, 2013

Diabetes and NCDs are multisectoral issues, which require multisectoral solutions, including agriculture. As these diseases wind up in the health system, they are fuelled by rapid urbanization, globalization, economic development, and a global food system which does not protect human nor environmental health. IDF agrees with Hawkes et al that “[p]olicy is an essential component of this multisectoral approach.”

Civil society mobilisation is crucial to creating and sustaining nutrition-enhancing agricultural systems. To date, global civil society engagement around nutrition has largely focused on undernutrition. A stronger social movement around nutrition-enhancing agricultural systems – as part of the solution to all forms of nutrition – is needed to bridge gaps and cut across the health and development agendas. In particular, more attention and efforts are needed from civil society to encourage policy coherence between agriculture policy and policies aimed at the nutritional risk factors of overweight/obesity and diabetes.

The sheer scale and complexity of diabetes means that no single actor or sector can solve the epidemic alone. We will only be able to turn the tide when other sectors being to play a leading role in the prevention of diabetes and other NCDs – including agriculture, finance, education, and trade.

i Lock K, Pomerleau J, Causer L, Altmann DR, McKee M. The global burden of disease attributable to low consumption of fruit and vegetables: implications for the global strategy on diet. Bull World Health Organ 2005; 83: 100–8.

## 44. The NCD Alliance, Switzerland

*The NCD Alliance (NCDA) was founded by four international NGO federations representing the four major non-communicable diseases (NCDs) – cancer, cardiovascular disease, chronic respiratory diseases, and diabetes – uniting a network of 1,000 member associations and a further 1,000 civil society organisations in more than 170 countries. NCDA echoes and fully supports the comments made by the International Diabetes Federation.*

NCDs are the leading cause of morbidity and mortality, accounting for two out of three deaths and half of all disability worldwide. 80% of NCD deaths are occurring in low- and middle-income countries (LMICs), exacting a heavy and growing toll on both physical and mental health and economic security. NCDs are related to both under- and overnutrition. Maternal undernutrition increases the risk of an infant developing obesity and NCDs later in life[[2]](#footnote-2). And overweight and obesity, including childhood obesity, are major drivers of the global NCD epidemic. At the UN High Level Meeting on NCDs in September 2011, UN Member States affirmed that NCDs are leading threats to social and economic development in the 21st century, and nutrition and agriculture as key issues in their prevention and control[[3]](#footnote-3).

Nutrition is a cornerstone in the fight against NCDs, and population nutrition is a function of the food system. The global food system supplies the world with food necessary to sustain life, but it is also responsible for an influx of highly processed foods full of saturated fats, sugars and salt, contributing to the global rise in NCD prevalence.

We welcome the opportunity to contribute to the preparations for the Second International Conferences on Nutrition (ICN2) and this discussion on Nutrition-sensitive agriculture. **In particular, NCDA acknowledges, welcomes and supports the Expert Paper contributed by Hawkes et.al. *“Leveraging agriculture and food systems for healthier diets and noncommunicable disease prevention: The need for policy coherence”.***

**Key Messages**

* Today we face a triple burden of malnutrition: undernutrition, micronutrient deficiency and overnutrition/overconsumption, often times in the same country, community or household.
* NCDs are related to both under- and overnutrition. Maternal undernutrition increases the risk of an infant developing obesity and NCDs later in life. And overweight and obesity, including childhood obesity, are major drivers of the global NCD epidemic.
* Globally, just under one billion people are undernourished, while two billion people are overweight or obese. 65% of the world‘s population live in a country where overweight and obesity kills more people than underweight. In 2011, an estimated 43 million children under 5 years old were overweight, with the majority living in low and middle income countries.
* Globalisation in the food system has enabled the great availability, affordability and acceptability of unhealthy eating patterns. This makes a significant and negative contribution to NCDs and their metabolic and behavioural risk factors, including overweight/obesity, and elevated levels of blood pressure and cholesterol.
* Nutrition-enhancing agriculture and food systems are one part of the solution to malnutrition in all its forms, including poor quality diets associated with NCDs.
* NCDA strongly supports the call by Hawkes et. al. that food and agriculture systems operate through “policy coherence”, and that policies for NCD prevention “directly interface with agriculture and foods systems…”
* Policies with particularly high potential impact on NCD risk factors are those that influence substitutions between different types of fat and meat, and make fruits and vegetables more available, affordable and acceptable.
* Policies are also needed to discourage high-calorie, nutrient-poor foods, such as fiscal policies, taxation, and policies to significantly reduce the marketing of these foods to infants, young-children, adolescents and their caregivers.
* NCDs are multisectoral issues, which require multisectoral solutions, including nutrition and agriculture. Civil society mobilisation will be crucial to creating and sustaining nutrition-enhancing agricultural systems.
* More attention and efforts are needed from civil society and others to create policy coherence between agriculture policy and policies aimed at the nutritional risk factors for overweight/obesity and NCDs.

**Policy issues: What policies can make agriculture and food systems more nutrition-enhancing? What are the knowledge gaps in policies associated with nutrition-enhancing agriculture and food systems?**

Unhealthy diet and excessive energy intake is one of the key risk factors for NCDs and obesity. Nutritional deficiencies have been largely eradicated in high-income countries, but obesity and NCDs are now affecting a significant portion of the population in these countries. Meanwhile low- and middle-income countries are facing a “double burden” of disease, with infectious disease and malnutrition present alongside diseases related to overnutrition and unhealthy diet.

The triple burden of malnutrition is closely tied to food security. Many countries are undergoing dramatic nutritional and epidemiological transitions, and the global food system is simultaneously unable to provide enough food for some, while providing too much food for others. Micronutrient deficiency, stunting, underweight, and overweight and obesity are all symptoms of the same underlying problems: poverty, inequalities and a dysfunctional food system that is unable to meet people’s health and nutrition needs.

Increasingly, healthful foods are inaccessible in terms of price, location, or other barriers. Dietary quality is an independent risk factor for NCDs, with diets that are high in fat, sugar and salt increasing the risk of these diseases. Diets around the world are insufficient in fruit and vegetable intake, which WHO estimates to cause 1.7 million deaths each year[[4]](#footnote-4). Low-cost foods that are high in fats, sugars, and salt are dominating many markets; readily available and affordable, these products encourage unhealthy choices. Situations where financial resources are limited and the food supply is insecure support a market for these inexpensive yet unhealthy foods.

Nutrition policies for the prevention and control of NCDs aim to increase fruit and vegetable consumption and decrease consumption of highly-processed foods which are high in salt, sugar, and saturated/trans fats. To achieve this, food and agricultural systems need to supply foods and beverages consistent with these goals, which in many countries would require a dramatic change in the types of products grown, produced, marketed and sold. These systematic changes would require collaborative, forward-thinking policy initiatives at all levels – from local to international.

Nutrition-enhancing agriculture and food systems are one part of the solution to malnutrition in all its forms, including poor quality diets associated with NCDs. NCDA strongly supports the call by Hawkes et al that food and agriculture systems operate through “policy coherence”, and that policies for NCD prevention “directly interface with agriculture and foods systems…”

In this approach, “agriculture and food systems are linked with policies to promote healthy diets through the food supply chain”. ‘Short’ food supply chains can be used to make healthier foods more available, affordable and acceptable, such as through farm-to-school programmes and local production for local markets in rural and small island communities. “Long” food supply chains influence food availability, affordability and acceptability at the global level, and offer the greatest potential for change.

Policies with particularly high potential impact on NCD risk factors are those that influence substitutions between different types of fat and meat, and make fruits and vegetables more available, affordable and acceptable. These policies would combine ‘environmental’ approaches to healthy food availability and affordability, and educational strategies designed to facilitate the acceptability of healthy food choices and other healthy lifestyle behaviours.

As part of creating nutrition-sensitive agri-food systems, policies are also needed to discourage high-calorie, nutrient-poor foods, such as fiscal policies, taxation, and policies to significantly reduce the marketing of these foods to infants, young-children, adolescents and their caregivers.

**Programme issues: What do nutrition-enhancing agriculture and food systems look like? What have been the success stories and lessons learned from programmes at country level? How can we monitor the impact of such programmes on food consumption and nutrition?**

Today we face a triple burden of malnutrition: undernutrition, micronutrient deficiency and overnutrition/overconsumption, often times in the same country, community or household. Nutrition- enhancing agriculture and food systems use “policy coherence” to ensure that decreasing undernutrition does not increase the risk for overnutrition. Increasing energy intake in among food-insecure populations, communities and individuals is not sufficient; the food system must provide adequate nutrients and an overall healthy diet in order to correct the triple burden of malnutrition. This should include actions at the local level, notably to promote the production and market movement of plant-based foods.

Government policies are essential if food systems are to reduce unhealthy diets as a risk factor for NCDs, as well as reducing hunger and undernutition. While the role of government in tackling hunger and undernutrition is widely recognised, it remains the case that most governments assume that ‘individual responsibility’ takes precedence once food becomes abundant. However, there are many processes in the marketplace encouraging populations to make unhealthy choices, and choices are limited for poorer populations. The policy options outlined in the 2004 Global Strategy on Diet and Nutrition, the 2011 UN Political Declaration on NCDs, the WHO Global Action Plan for NCDs 2013-2020 provide a guide and political mandate for countries to take action in this area.

Nutrition-enhancing food systems include a focus on women and the rural poor. In particular there is a need to improve access to credit and other financial services for small producers, women, indigenous peoples and people living in vulnerable situations. The importance of empowering rural women as critical agents for enhancing nutritional status cannot be underestimated.

Current initiatives have not adequately balanced the need for interventions which work immediately and those for the longer-term, nor those that have a single focus on undernutrition with those that affect diet quality more broadly, including diet-related NCDs. A single focus on under-nutrition – the approach most common to date – is insufficient to address either the range of nutritional problems affecting every country in the world or the oncoming tsunami of diabetes, cardiovascular disease, cancers, asthma and other NCDS linked to overweight/obesity.

However, some examples exist on a country level which demonstrates the feasibility of an agenda which encompasses both under- and overnutrition. Brazil is one such emerging example. Efforts made since the 1990s in Brazil to improve nutrition focused on increasing food consumption through income interventions and school meals. Attention was not paid to the excess energy intake nor the nutritional quality of the calories consumed, and the health of Brazilians, even in low-income communities, has become increasingly indicative of an unhealthy diet. Recent actions in Brazil have attempted to reverse this focus on calories, for example by implementing nutrition standards for schools meals.

As the example of Brazil illustrates, schools can serve as an important venue for influencing nutritional status of children. However, interventions in schools should not be limited to meal programmes. A ‘whole school approach’ where nutrition is integrated through the school is needed, including but not limited to nutrition education in the curriculum, meal programmes and schools gardens.

**Partnerships: How can we work across sectors and build strong linkages between food and agriculture, social protection, employment, health, education and other key sectors? How can we create sustainable partnerships? How can we build effective governance for nutrition?**

*“Everyone is part of the solution. Governments need to lead; businesses need to identify how to improve nutrition through their business models and employment practice; civil society organizations need to help citizens to drive transparency and accountability; and the scientific community needs to keep us focused on evidence about what works.”* -- Anna Taylor, Alan Dangour, and Srinath Reddy, Lancet Series on Maternal and Child Nutrition, 2013

NCDs, agriculture and nutrition are multisectoral issues, which require multisectoral solutions including agriculture, health finance, education, trade and others. While NCDs wind up in the health system, they are fuelled by rapid urbanization, globalization, economic development, and a global food system which has not protected human nor environmental health. NCDA agrees with Hawkes et al that “[p]olicy is an essential component of this multisectoral approach.”

Civil society mobilisation will be crucial to creating and sustaining nutrition-enhancing agricultural systems. To date, global civil society engagement around nutrition has largely focused on undernutrition. A stronger

‘social movement’ around nutrition-enhancing agricultural systems as part of the solution to all forms of nutrition is needed to bridge gaps and cut across the health and development agenda. In particular, more attention and efforts are needed from civil society to create policy coherence between agriculture policy and policies aimed at the nutritional risk factors for overweight/obesity and NCDs.

## 45. Lalita Bhattacharjee, FAO, Bangladesh

Integrated home gardening, and farming systems for nutrition – Example from the South of Bangladesh

In Bangladesh, integrated home gardens fall within the national concept of “Ekti Badi, Ekti Khamar” meaning one household, one farm.” In rural areas, 75% of households reportedly have a home garden. A range of 25 fruit crops, 29 vegetables, and 12 spices can be cultivated, even in small home gardens of less than 50 square-metres. Income from the home gardens is usually controlled by women and is more likely to be used for better diets, education, health care and others directly benefitting women and children. Estimates from the national Food Security and Nutritional Surveillance Project 2011-12, show that 56% of households have only home gardens, 62% have backyard poultry but 42% of households with homestead gardens also have backyard poultry. The same source also estimates that homestead gardening with backyard poultry g decreased from 41% in February-May of 2010-11 to 35% in February-May of 2011-12. The current situation shows that integrated home gardening needs enhanced resilience to land degradation, water scarcity, bio-security (especially avian flu), and climate change, particularly in high risk areas, such as in the Southern region in Bangladesh.

Around a tenth of gardens in selected villages of the Southern districts were destroyed completely by soil salinity, and seeds could not germinate. Amidst this situation, about half of the households implemented coping practices using organic compost and a little over a third planted crops in pits leached with water. Mulching with rice straw, coconut coir and other locally available organic materials were used to increase water retention of the soil and develop compost. Greater resilience was found in salinity among vegetable crops which include Indian spinach (pui shak), sweet gourd, okra and kang kong (kolmi shak) which are good sources of micronutrients. Kang kong was noted to be the most saline resistant crop but this is relatively new to Southern Bangladesh. It is essential that strategies and input resources have specific nutrition considerations integrated into agriculture extension while promoting integrated home gardening, particularly in flood affected areas. Households with larger plots of land are also seen to be moving from rice cultivation to shrimp cultivation which is more remunerative and this has affected the day labour opportunities for poor households. Households with better knowledge and means to adopt salinity coping practices were mostly the better off ones.

Kind regards,

Lalita

## 46. Anna Antwi, GD Resource Centre, Ghana

Nutrition-enhancing agriculture and food systems

I acknowledge the contribution of diverse persons from the group to the topic. I’m contributing to the various sections mentioned that will enhance food based approaches to better nutrition as:

**Policy issues:** A national comprehensive Food and Nutrition Policy comprising all relevant sectors addressing all levels and with emphasis on food based systems is needed at the country level. The development, coordination and lead institution should be linked to the Presidency to give the policy a national look and to encourage multi-sectoral approach, also as a national priority. If possible the Ministry of Food and Agriculture (Forestry and Fisheries – depending on the country) are encouraged to have their own policy direction that consist of :

• **Production and Consumption:** of improved crop varieties with high nutritive value (like Quality Protein Maize, iron rich beans, high vitamin A Orange Flesh Sweet Potato, etc). These bio-fortified food crops could be promoted especially in poor areas of high deficiencies. Households could be encouraged to go in other agricultural productions to meet dietary needs of the family (like animal production like snails, small ruminants, fishery, poultry, piggery, grass-cutter, some types of insects etc; fruits and vegetables). Even some forestry products (like mushrooms) could be domesticated to enhance consumption. The Ministry of Food and Agriculture could work closely with Food Research Institutions including the Universities to breed high yield and disease resistant nutritive stocks/ varieties, and for increased shelf life and storage. To ensure all year round availability, households could be encouraged to process and preserve some food (both crops and animals). The approach may be in a form of campaign to bring all on board.

• **Promotion of Right to Food:** government should respect, protect and fulfil (promote and provide) the Right to Food by ensuring that all people can enjoy this right. Consequently, all other rights must be enjoyed by every single one such as right to water, employment, health, access to natural resources for production, education and others. Good governance at the lower level with citizen participation in programs is also essential.

• **Nutrition education:** Extension and health workers could work together especially at the community level to educate rural and farm families particularly adolescent girls, women of reproductive age and household care givers on importance of nutrition. This extension education could be coupled with mass and social education on consumption of food groups and dietary diversity, with good source of water, hygiene and sanitation.

• **Social protection:** for the poor and vulnerable in society such as School Feeding Program for school children in primary schools; food ratios and/ or stipends for People living with HIV/AIDs, children under five years and the aged.

• **Utilization:** Local foods could be encouraged and promoted.

• **The knowledge gaps:** are the nutritive value of local vrs exotic foods, food safety and quality, food handling, agrochemical uses, food preparation and storage etc

**Program issues:** The policy (as stated above) could be implemented through education and simple messages on the different food groups targeting specific areas with nutrition challenges. Adopting aggressive marketing and advertising through social media, radio, TV and mobile vans in the communities to enhance food based nutrition will go a long way to bring all on board. In Ghana, there is this program on food groups as: Glo (fruits and vegetables – vitamins and minerals), Grow (Protein foods) and Go (energy giving foods). The message is simple and loved by even children. It must however be translated into various languages and promoted in all spheres of the country.

**Partnerships:** The Head of State’s leadership in food based approach is indispensable in holding the policy and program together and therefore it is highly recommended that the coordination and harmonization of the program be housed in the Presidency. National Planning office could support in the development of programs. At the conception phase of the program, all relevant Ministries, Departments and Agencies involved in Nutrition related programs should be consulted and involved in the initial planning stage.

Anna Antwi

GD Resource Centre

(also Food Security Advisor to Foreign Affairs, Trade and Development Canada – formerly CIDA)

## 47. Etienne du Vachat, Action contre la Faim - ACF (Action Against Hunger), France

Making national agriculture policy frameworks more sensitive to nutrition

In 2011, Action Contre la Faim (ACF) has published a technical manual on how to maximize the nutritional impacts of programmes and interventions in the field of agriculture, food security and livelihoods (available bit.ly/12XOncg).

In fact, various tools exist that are very useful to make agriculture more sensitive to nutrition at programme and project level. As underlined previously in this discussion, many existing guidelines and recommendations have been the basis of the “Synthesis of Guiding Principles on Agriculture Programming for Nutrition”, recently published by FAO.

The programme level matters, but agriculture policies are a prerequisite for programmes to deliver. In order to transform investments in agriculture that have a potential for nutrition into actually nutrition-sensitive investments at a large scale, the national agriculture policy frameworks need to integrate nutrition as a priority. If agricultural policies are able to provide the right kind of priority and incentives for nutrition, they will foster and support the multiplication of many individual and collective nutrition-sensitive initiatives.

This is why ACF is analysing the nutrition sensitivity of agricultural policy framework in different countries. We are also willing to assess to what extent the promising international agenda on nutrition-sensitive agriculture currently translates into policies and practices at country level.

There is a double challenge to be taken up at country level: integrating agriculture as a key sector in national mutli-sectoral undernutrition reduction strategies while also mainstreaming nutritional concerns, objectives and actions into sectoral agriculture policies, to increase their sensitivity to nutrition.

We have found that there is actually a lag between what is increasingly being promoted at the international level and the responses of actors in the field. Even in countries that have ambitious multisectoral strategies against undernutrition, the agriculture sector has not necessarily dedicated a high priority to nutrition.

Most of the constraints to a higher prioritization of nutrition by the agriculture sector are highly interrelated, including:

- weak knowledge and evidence base

- absence of adequate information and monitoring systems for nutrition in the agriculture sector

- difficulties in making cross-sectoral coordination mechanisms around nutrition work

These constraints need to be addressed jointly, to transform the vicious circle of low consideration and underinvestment into a virtuous circle.

To make agriculture more sensitive to nutrition at country level, the right set of incentives should be developed and embedded at different levels, from the highest policy framework to the day-to-day activities of extension workers in the field. These incentives should aim at overcoming most of the constraints to a higher prioritization of nutrition by agriculture, by compensating for the lack of common language between agriculture and nutrition, the low level of knowledge on nutrition from the agriculture side and the weak accountability of the agriculture sector vis-à-vis nutrition. This last point is particularly important: the agriculture sector has for long been evaluated on the basis of its contribution to income generation and economic growth, not on the basis of its contribution to better nutrition.

Providing the right incentives to the agriculture sector is therefore a great challenge ahead. This should include:

Making explicit what is agriculture contribution to better nutrition: at the field level, the pathways between agriculture and nutrition are not so well-known. What role can play the agriculture sector for nutrition should be made more explicit. The agriculture sector and the nutrition community should work together to identify what contribution the agriculture sector could bring to the fight against undernutrition in the country, depending on the context-specific determinants of undernutrition and characteristics of the agriculture and food systems. (Though agriculture is only one part of the wider food system, it is a major component, especially in the rural areas of low and middle income countries, where lives the majority of the population affected by under-nutrition.)

Incorporating nutrition and food consumption indicators into information and monitoring systems: agriculture information systems rarely include nutritional and food consumption related indicators (such as the Household Diet Diversity Score for instance) into their methodologies and surveys. However, information is a key to adequate decision making. Therefore, it is required to establish better information and monitoring systems linking agriculture and nutrition data. Such systems will support building and improving cross-sectoral analysis and dialogue around nutrition. This should include plans to monitor and mitigate the potentially negative consequences on nutrition that may arise from large scale intensive agricultural investments.

Strengthening policy coordination around nutrition: existing multisectoral coordination mechanisms around nutrition, when they exist, are often primarily related to the health sector, especially at the national level. There is thus an institutional challenge to increasing the participation of the agriculture sector to such coordination body, to facilitate cross-sectoral dialogue around nutrition. Better coordination between agriculture and other sectors around nutrition are needed and must be supported to build effective governance for nutrition at country level.

Ensuring nutrition training opportunities are available: the knowledge and understanding of nutrition is very heterogeneous at the level of agriculture ministries. Furthermore there is a lack of both basic and on-the-job training on nutrition available for agriculturalists and extension service staffs. There is a need for training on both general nutrition knowledge and specifically on the links between agriculture and nutrition. The training efforts should focus in particular on extension agents, whose role makes it possible to spread messages on nutrition to farmers and communities, but should also include civil servants from Ministries of Agriculture at central level.

Dedicating more funding for the implementation of nutrition-sensitive agriculture programmes: the low level of funding available for nutrition-sensitive programmes unfortunately reflects the level of priority dedicated to nutrition within the agriculture sector. More funding is therefore needed for agriculture programmes and interventions that will in particular take on board the following issues (only marginally integrated into 'traditional' rural development programmes):

- set up targeting tools to ensure the most vulnerable communities will benefit from agricultural investments

- dedicate a specific attention to the role of women in agriculture (in particular through increased access to land, inputs and income) while making sure nutrition gains are maximized for both mothers and children (through introduction of timesaving technologies, childcare nurseries when appropriate, and nutritional education and awareness-raising)

At the international level as well, more efforts should be put in building stronger consensus on agriculture and nutrition. The recently established “Global Panel on Agriculture and Food Systems for Nutrition” could be a vehicle for this, if it associates enough countries and civil society organisations to its work. Nutrition should also be made a high priority in international agriculture forums, particularly the CFS (Committee on World Food Security), as the most inclusive international policy forum focusing on agriculture, food security and hunger reduction. A future HLPE report on the challenges of making food systems and agricultural policies work better for nutrition would represent a good opportunity for this.

## 48. Rahul Goswami, Centre for Communication and Development Studies, India

Dear FSN members,

I thank the Forum stewards for devoting space and time to this important matter, and for accommodating a variety of views on it.

The topic briefing said: "Notwithstanding the importance of the role of agriculture in producing food and generating income, employment and livelihoods, it is the food system as a whole i.e. the post-production sector beyond agriculture including processing, storage, trade, marketing and consumption that nowadays contributes significantly more to the eradication of malnutrition."

This is undoubtedly true, and what we see in country after country are populations urban and rural within which households make decisions (as consumers) for food in rapidly changing socio-cultural environments that are unfortunately disconnected from the myriad worlds of small food producers. There is, particularly in cities with populations of over half a million, considerable ignorance about food production. Such disconnectedness and ignorance is in far too many cases the hidden currency of the food systems referred to in the paragraph above. While the expectation may be - using the rubrics of governance and corporate responsibility - for food retailers to make the food chain transparent and trustworthy, doing so gets in the way of profitability and so is left undone. What becomes of nutrition (malnutrition as much as misapplied nutrition) in such scenarios, which are the norm in an urbanised planet?

Next, the topic briefing has said: "Nutrition-enhancing agriculture and food systems are those that effectively and explicitly incorporate nutrition objectives, concerns and considerations, improve diets and raise levels of food and nutrition security. Actions may include making more nutritious food more accessible to everyone or to specific targeted groups, supporting smallholders and boosting women’s incomes, ensuring clean water and sanitation, education and employment, health care, support for resilience and empowering women in a deliberate attempt to explicitly improve diets and raise levels of nutrition.

As this is a wide shelf, upon which nutrition is placed as one subject, and that is why I suggest the effective and explicit incorporation of nutrition objectives be diminished proportionately, for to insist on its primacy while attempting to preserve the importance of the 'actions' also mentioned will be confusing. The link between purchasing power of households (whether they are growers or not) and their access to food for example will govern the outcomes of many of these actions, and who is to say which is the more important of these other than the households themselves? What is also missing from this shelf is the the importance of government spending on the social sector, and equally on agricultural research and on food-related subsidies. On these matters there is usually much tension that exists, between the attempts to reduce or neutralise government (that is, public) influence in policy-making and spending, and between a private sector that wants to step in more actively.

The topic briefing continued: "Agriculture and food-based strategies focus on food as the primary tool for improving the quality of the diet and for addressing and preventing malnutrition and nutritional deficiencies. The approach stresses the multiple benefits derived from enjoying a variety of foods, recognising the nutritional value of food for good nutrition, and the importance and social significance of the agricultural and food sector for supporting rural livelihoods."

While the attention given to the diversity in diet and to rural livelihood is encouraging, it needs to be unequivocally said that the majority of traditional farming communities and indigenous peoples have, over generations, developed agricultural systems that are productive and environmentally sustainable, and which deliver 'nutritional value' automatically. These cultivating communities have domesticated thousands of crop species which, until the middle of the 20th century, were grown without agrochemicals. It is no surprise that the reason we espy, more conspicuously in organic retail outlets in Europe for example, a revival in 'ancient' or 'heirloom' cereals and fruit, is the reaction by concerned consumers to the atrophying of traditional agricultural knowledge and practices and the desire to ensure it is not lost altogether. It is small diversified farming systems that offer the most promising models to promoting agricultural and horticultural biodiversity, that conserve natural resources while doing so, that sustain yields sans agro-chemicals, and that are resilient in the face of environmental and economic change without compromising on nutrition and food security.

The topic briefing also added: "The multiple social, economic and health benefits associated with successful food-based approaches that lead to year-round availability, access to and consumption of nutritionally adequate amounts and varieties of foods are clear."

The new and seemingly permanent availability of food and the new idea of access to nutrition (which is not always associated with a typical food basket) that can be delivered, therapeutically through bio-technological methods and by employing genetic modification, needs to be halted. The idea of perennial availability is in conflict with the need to divorce modern industrial agriculture and food retail from its dependence on oil and gas. This is a limit that has long been recognised in the fossil fuels era, and in 1973 D Pimentel provided a breakdown of energy inputs for the production of a hectare of maize (about a third of the energy employed in corn production was fuel). In today's market-determined crop production and food retailing systems, the ratios of dependency have risen much further (see D A Pfeiffer, 'Eating Fossil Fuels: Oil, Food and the Coming Crises in Agriculture', 2006, which had for agriculture in the USA the following: 31% for the manufacture of inorganic fertiliser; 19% for the operation of field machinery; 16% for transportation; and 13% for irrigation).

The topic briefing has further stated: "The causal pathway from the food system to nutritional outcomes may be direct - as influenced by the availability and accessibility of diverse, nutritious foods and thus the ability of consumers to choose healthy diets, as well as indirect – mediated through incomes, prices, knowledge and other factors. Interventions that consider and affect food systems as a whole can potentially achieve more widespread nutritional outcomes than single uncoordinated actions."

There is little that the multi-dimensionally poor can choose from, in reality, and a representative reading of national and sub-national food balance sheets at the household level will prove this sad truth. The current method of providing food involves industrialised systems that are centralised and oriented towards profit (a position central to the recent 2013 June Conference on Agroecology for Sustainable Food Systems in Europe, sub-titled 'A Transformative Agenda', and organised by the European Network of Scientists for Social and Environmental Responsibility (ENSSER) and several like-minded partners). Such a method is also averse to regulation, let alone social needs. In such a linear approach, the assumption are made (because the current macro-economics of 'growth' permit it) of an unlimited supply of energy and raw materials (neither of which there is), and of an environment which can ceaselessly absorb pollution and waste (it cannot). This is the background against which new actors claim to be addressing priorities to strengthen nutrition and banish malnutrition.

Better nutrition emerges when communities repossess their cultural and ideological spaces to develop productive systems that minimise external inputs, pollution and waste by becoming circular in nature, by returning to principles that reflect the natural world - which is based on cycles, and in which the ‘waste’ from one species is food for another, or is converted into a useful form by natural processes.

Thank you and regards, Rahul Goswami

## 49. Aaron Buchsbaum, John Snow, Inc - SPRING Project, United States of America

Warm thanks to Jody and to Leslie for facilitating this excellent conversation, and to the many contributors sharing critical ag-nut efforts from around the world.

As a USAID-funded global nutrition project, SPRING (Strengthening Partnerships, Research, and Innovation in Nutrition Globally) recently undertook a program-wide review of agriculture-nutrition programming under the US Government’s Feed the Future global food security strategy. This ‘Landscape Analysis’  reviewed 160+ project documents, and included stakeholder interviews and selected case studies across the 19 Feed the Future countries active in Africa (12), SE Asia (4), and Latin America and the Caribbean (3). We hope to publish the full report soon, but in the interim please see our website for the [Landscape Analysis](http://www.spring-nutrition.org/Landscape_Analysis) presentation.

We reviewed with pleasure Mr. Wasti’s points (7/26) around ‘orienting’ agricultural experts to the importance of nutrition. His comments on proper approaches to nutrition education in integrated programming are likewise well taken. These were among the same points that appeared to us during the Landscape Analysis process in a variety of ways, and merit further attention.

Keeping with Mr. Wasti’s idea of ‘orientation’, we can at the same time begin to respond to the facilitators call for experience around ‘programme issues’, which certainly include the need to bring agricultural experts and nutrition experts together under a shared vision. While there is literature in the management sciences regarding program integration, there is little research that is targeted towards the development context. Thus one of SPRING’s focal points going forward, is the development and dissemination of agriculture-nutrition operations research, looking specifically at **how projects themselves are meeting the agriculture-nutrition integration challenge at both field and institutional levels**.

The need for further evidence, instruction, and best-practice guidance in agriculture-nutrition integration became clear during our five [Agriculture and Nutrition Global Learning Exchange Events](http://www.spring-nutrition.org/events) (AgN-GLEEs), which brought to light the disconnect between an understanding of what needs to  be done, versus how to effectively do it. Based on the learning needs identified during these events, we would like to highlight two particular points we’ve included in our Landscape Analysis global report (in process) that relate to the programme portion of the FSN discussion:

**- Target SBCC Activities Along All The Steps Leading From Agriculture To Nutrition**. General ‘nutrition education’ around what to eat and where to find vitamins is not sufficient when trying to effectively link agriculture with nutrition. SBCC strategies and messaging should center on translating the gains from specific agricultural production and related income generation into achievable health and nutrition outcomes. This requires investment in context assessments, including formative research, to identify and address barriers associated with food production, purchase, preparation, intra-household distribution and consumption patterns of all family members. There remain a large array of assumptions that growing nutritious food will necessarily lead to nutrition outcomes - when in fact all the intermediate steps leading from food production to food use (consumption, sale, storage, etc) must be explicitly considered.

- **Empower Women by Building a Supportive Family and Social Environment.** The nutrition community has long focused on women and children; with the push for ag-nut integration, agriculture is becoming increasingly accountable to consider women’s labor, time use, and control of productive assets. Women’s involvement in agriculture can be improved by focusing on the more profitable links of the value chain process (not just production), and their control of on- and off- farm income earned and decision-making power must be supported by social norms, formal laws, and/or behavior change initiatives. Male family members, mothers-in-law and the opinion setters and influencers in the communities and society need to be targeted with messages explaining that sharing resources and joint decision-making with women benefits the whole family and community.

We hope to continue pushing this conversation forward, and are indebted to the FSN for facilitating such a critical discussion going into the ICN2. Please visit our [site](http://www.spring-nutrition.org/) for additional agriculture-nutrition material, presentations from of our AgN-GLEEs, and upcoming webinars that highlight field-based success in ag-nut programming.

Warm Regards,

- The SPRING Agriculture/Nutrition Team

## 50. Domitille Kauffmann and Charlotte Dufour, FAO Nutrition Division, Italy

Thank you very much to the facilitators for a very interesting discussion and for all these rich contributions. It seems that one elements has not been addressed so much in this discussion is **how nutrition-sensitive agriculture can play a key role in addressing food and nutrition security** of populations **affected by protracted crises** and in **strengthening resilience** to shocks. (thus making a link between this FSN Forum discussion and the previous one on food security in protracted crises – you may also be interested by the following paper on Nutrition in Protracted Crises:

<http://www.fao.org/fileadmin/templates/cfs_high_level_forum/documents/Nutrition_ProtractedCrises_DufourEgal.pdf> ).

This is an important issue because the highest rates of malnutrition are reported in highly crisis-affected areas, such as in Sahel and in the Horn of Africa, and severe food and nutrition crises are happening with greater frequency. A “nutrition-sensitive” development agenda (and thus nutrition-sensitive agriculture) must, therefore, take into consideration exposure to food-related shocks and threats and to the issue of resilience.

Both resilience and nutrition have recently benefitted from growing attention and strong political momentum, and there is a growing body of work on resilience programming at a conceptual and operational level. Agriculture is essential to both, and there is increasing interest in the role of agriculture in resilience programming on one hand, and on linkages between nutrition and resilience on the other. But there has been little literature, to date, on the nexus between nutrition, agriculture and resilience. FAO is therefore preparing an issues paper on **linkages between nutrition and resilience, and the role of agriculture in that relationship**.

This paper describes how nutrition and resilience are obviously strongly inter-linked: fighting malnutrition is crucial to resilience-strengthening because well-nourished individuals are healthier, can work harder, and have greater physical reserves. Households that are nutrition secure are better able to withstand external shocks. Moreover, adopting a resilience perspective allows an emphasis on the structural vulnerabilities that underlie malnutrition, the root causes of nutrition and food insecurity, and offers thus an opportunity to strengthen preventive activities. This further implies treating and preventing malnutrition through a combination of short and long-term nutrition actions, including nutrition-sensitive agricultural interventions.

Using the **FAO resilience framework**, which is adapted from the Hyogo Framework for Action (see page 20 of the FAO Resilience Livelihoods programme framework - <http://www.fao.org/docrep/015/i2540e/i2540e00.pdf>), the paper identifies entry points for maximizing nutritional outcomes of food and agriculture interventions designed to improve resilience, and vice versa, improve the “resilience outcomes” of food and agriculture-based interventions.

The following are just some of the entry points and recommendations that are identified, for each of the four pillars of the FAO resilience framework:

**Pillar 1: Enabling the environment**:

* Support linkages and synergies between food and nutrition security policies & strategies and resilience/DRM planning. Food and agriculture interventions contribute to both sets of strategies and can help clarify concrete synergies at the implementation level.
* Enhance linkages between resilience-related coordination structures and food and nutrition security coordination mechanisms (which include nutrition-sensitive agriculture), especially linking development-oriented coordination initiatives such as SUN and REACH to more emergency-related coordination bodies such as Nutrition and Food Security clusters, at national, regional and global levels.
* Develop capacities for resilience planning with a nutrition lens (ensuring resilience planning addresses the underlying causes of malnutrition and includes nutrition-sensitive agriculture as relevant), and nutrition planning with a resilience lens (i.e. looking both at treatment and prevention, and includes nutrition-sensitive agriculture as relevant).
* Strengthen and further develop flexible funding mechanisms adapted to a resilience approach, combining support to short and long-term interventions and linking humanitarian and development activities and multi-sectoral strategies.

**Pillar 2: Watch to safeguard (early warning)**

* Advocate for the use of diet-related coping strategies are early indicators of pending crisis.
* Consider nutritional status (especially stunting) as an indicator of the erosion of people’s resilience and of greater vulnerability, to inform food and nutrition security planning.

**Pillar 3 : Apply disaster risk reduction / prevention and pillar 4: Prepare and respond**

* Use nutrition causal analysis as a planning tool for integrated food and nutrition security programming as part of a preventive approach and emergency response, and for selecting key interventions by livelihoods groups.
* Use nutrition indicators including stunting data to inform targeting strategies for resilience-building and food and agriculture interventions as this helps focus on populations / individuals at risk.
* Make nutrition an explicit objective of resilience programmes and vice versa to guide people to reflect on the linkages and impact that their activities have on nutrition.
* Promote diversification of food intake and livelihoods as key preventive approach for both nutrition and resilience programmes.
* Include nutrition education in all programmes as means of empowering households to use resources optimally for Food and Nutrition Security and thus increase resilience
* Link agriculture to social protection programmes in other sectors designed to protect nutrition

Work on this paper is still ongoing, but it will be available shortly and is intended contribute to discussions for the technical preparation of the ICN2. We will share it with FSN members when ready!

Best regards,

Domitille Kauffmann and Charlotte Dufour, FAO Nutrition Division.

## 51. Jody Harris and Leslie Amoroso, facilitators of the discussion

**Closing note by Jody Harris and Leslie Amoroso, facilitators**

Dear all,

Thank you very much to all who participated in this fascinating, rich and lively exchange.  We are grateful to those who contributed in writing, as well as to those who read and reflected on the contributions of others. The discussion covered important topics related to “nutrition-enhancing agriculture and food systems”, and significant knowledge, ideas, views and experiences were shared from many parts of the world, and from several different fields, sectors and professions. Comments on the core background and expert papers as well as on the key three questions (policy, programmes and partnerships) were received and will be synthesized into a final document. The outcome of this exchange will be used to enrich the discussions at the ICN2 Preparatory Technical Meeting from  13 to 15 November 2013 and thereby feed into and inform the  ICN2 itself which will be held at FAO headquarters from 19 to 21 November 2014.

Emerging themes and key ideas from the most recent posts (from 19 to 29 July) are summarized below; those from previous posts were summarized by the facilitators on July 18th, and can be seen on the online discussion pages.

The need to balance short-term measures to tackle malnutrition with those aimed at achieving long-term impact was raised by participants, along with the key role nutrition-enhancing agriculture has in addressing food and nutrition security of populations affected by protracted crises, and in strengthening the resilience to shocks. Several contributors highlighted Non-Communicable Diseases (NCDs) and the continuum of under-to over-nutrition in their posts, urging us not to focus too narrowly on one part of the equation.  The need to use evidence-based science for effective nutrition policy was recognized, and yet the lack of relevant evidence, is cited as a challenge, as is strengthening inter-sectoral coordination at different levels. In terms of getting programmes and policies enacted, the issues of incentives for effective implementation and of capacity development (human and institutional) were mentioned from various angles. The importance of preserving the environment, as a basis for environmentally sustainable agricultural production, was stressed, as was the need to think about post-harvest and food safety issues along the value chain. Finally, the theme of diversification both of diets and of agriculture was maintained, as was the importance of nutrition education and gender issues. Common ground may be identified between those proposing smallholder agriculture as a sustainable solution, and those proposing more private sector involvement in markets. A rich and varied set of issues, and some important experiences and contributions on each!

We again thank you for your time and for sharing your views and experiences with us, and look forward to continuing the dialogue at ICN2 and beyond...

Jody and Leslie

1. Lock K, Pomerleau J, Causer L, Altmann DR, McKee M. The global burden of disease attributable to low consumption of fruit and vegetables: implications for the global strategy on diet. Bull World Health Organ 2005; 83: 100–8. [↑](#footnote-ref-1)
2. PD Gluckman, MA Hanson, C Cooper, KL Thornburg. Effect of In Utero and Early-Life Conditions on Adult Health and Disease. New England Journal of Medicine. 2008; 359:61-73 [↑](#footnote-ref-2)
3. ii A/66/L.1 Political declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non- communicable Diseases. September 2011 [↑](#footnote-ref-3)
4. Lock K, Pomerleau J, Causer L, Altmann DR, McKee M. The global burden of disease attributable to low consumption of fruit and vegetables: implications for the global strategy on diet. Bull World Health Organ 2005; 83: 100–8. [↑](#footnote-ref-4)