

PROCEEDINGS OF THE FSN FORUM DISCUSSION No. 43  
**HOW TO FEED THE WORLD IN 2050?**  
FROM 16 SEPTEMBER TO 19 OCTOBER 2009

Summary available at:  
[http://km.fao.org/fileadmin/user\\_upload/fsn/docs/SUMMARY\\_2050.doc](http://km.fao.org/fileadmin/user_upload/fsn/docs/SUMMARY_2050.doc)

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## **I. GENERAL INFORMATION**

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Duration: from 16.09.09 to 19.10.09

Number of participants: 58

Number of Contributions: 73

## II. INTRODUCTION OF THE TOPIC

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### **“How to feed the World in 2050?” by Hartwig de Haen**

Experts tend to agree that it will be possible to produce enough food to meet the demand of a world population that will have increased to more than 9 billion in 2050. Global demand for food, feed and fibre is expected to grow by 70 percent. However, responses to the question of “How to feed the World in 2050?” must take a multitude of complex challenges into account.

Demand for agricultural produce will put growing pressure on already scarce agricultural resources. While agriculture will have to compete for land and water with sprawling urban settlements, it will also face other challenges: e.g. producing growing volumes of feedstock for conversion into biofuels; contributing to the mitigation of climate change; helping preserve natural habitats, and maintaining a high level of biodiversity. To respond to these demands, farmers – especially the poor – need access to new technologies, which will enable them to achieve higher output with less land and labour input.

Adequate investment in research and development needs to ensure sustained productivity growth. Equally important are good rural infrastructure, institutional reforms, environmental services and sustainable resource management. However, focussing simply on increasing food supplies will not suffice to eradicate hunger and poverty. Policies must also ensure access of the world’s poor and hungry to the food they need for active and healthy lives.

I would invite Forum members, experts and practitioners to express their views on the following questions:

- **Are current investments sufficient to ensure adequate growth of agricultural production, sustainable use of natural resources, efficient market infrastructure, and technical progress?**
- **Will improvements in food availability to meet the global demand growth projected for 2050 help turn the current trend of rising hunger and malnutrition?**
- **Which additional measures might be needed to broaden access to food?**

More specifically:

- Considering that Research and Development (R&D) in agriculture have high economic returns, what needs to be done to revert the stagnation or even decline in public expenditure in R&D and promote technological breakthroughs in developing countries? Would it be a promising strategy to extend access to modern biotechnologies to smallholder farmers?
- Should competition for scarce resources be reduced between food and biofuels? If the answer is yes, through which policies?
- Should policies be implemented to provide incentives for farmers to mitigate climate change by reducing greenhouse gas emissions from agriculture, including livestock? How can the vulnerability to climate change be minimized for rural areas?
- Which specific policies to improve access to food for the poorest should be implemented at national and international levels, including social safety nets, better chances in the labour market, improved and secure access to means of production, to capital and knowledge?

- What should be done to ensure food security in sub-Saharan Africa, the continent facing the highest population growth rates, the worst impacts from climate change and the heaviest burden of HIV/AIDS?

Most experts agree that we know how to fight hunger. Most agree that higher priority must be given to public investment in agriculture and rural areas, which provide the livelihoods of the majority of the world's poor and hungry. It is also clear that good governance, including the realization of the right to food, is an essential ingredient of success. Economic studies have furthermore shown that investments in sustainable hunger reduction generate enormous economic benefits, mainly resulting from lower frequency of disease, better learning at school age and higher productivity. Examples of success can be found in all developing regions, including resource-poor countries in Africa.

The basic question then is:

- **Why are so many governments still reluctant to change priorities and invest in hunger reduction? Do they lack the political will to adopt a long-term strategy towards food security for all?**

Participants at this debate may wish to discuss ways of mobilizing political will at national and international levels. Specifically:

- What should be done to make the eradication of hunger a top priority in national and international policies and budget allocations?
- Are the “Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context of National Food Security” a good framework to remind governments of their obligations?
- Should developed countries agree on joint plans of action?
- Are “quid pro quo” arrangements between developed and developing countries a realistic proposal, in which additional agricultural development assistance is made dependant on the commitments of the recipient developing countries to provide their own incremental domestic resources?

## Background

At the Expert Meeting on “How to Feed the World in 2050” in June participants agreed that it should be possible to produce enough food to meet the demand of a world population that will have increased to more than 9 billion in 2050. The demand for food and feed will increase not only because of a larger world population. The demand will also be higher and more diversified due to changing consumer preferences, especially in the increasingly urbanized developing countries. Specifically, while the world population is expected to grow by 40 percent (from 6.5 to 9.1 billion), global demand for food, feed and fibre is expected to grow by 70 percent.

According to FAO's baseline perspective, developing countries will account for the largest increase in food demand. They should also be able to see the largest increases in agricultural production. For example, global production of cereals (excluding biofuels) is projected to grow from 2.2 billion metric tonnes today to about 3 billion tonnes in 2050. Of this increase, 70 percent is projected to occur in developing countries. Overall, developing countries as a group would nevertheless remain dependent on food imports, namely cereals, dairy products and meat. For example, net imports of cereals are expected to rise from 135 million tonnes today to 300 million tonnes in 2050.

Due to the limited possibilities to expand land and water resources and considering the need to preserve natural resources for multiple non-food uses, the major share of the future production

growth (almost 80 percent) would have to result from increases in yields. 10 to 15 percent could be achieved from higher cropping intensity and 5 to 10 percent from an expansion of land use.

If the FAO perspectives materialize, total food supplies would increase faster than population growth. Average per caput calorie availability would rise from 3500 to 3600 kcal/person/day in the industrial countries and from 2600 to 3000 kcal/person/day in developing countries. As a consequence, increases in food availability and average incomes in developing countries could bring down the prevalence of chronic hunger from 16 percent today to 5 percent in 2050. However, wide discrepancies would remain between countries, with some countries succeeding to reduce the prevalence of hunger below 5 percent and others facing rates of 20 percent and above. Additionally, a growing part of the world population would face the problem of over-nourishment.

The number of chronically undernourished in the world would thus remain at almost 400 million people. To bring it further down will require extra efforts, including targeted measures to improve access to food for the neediest.

### **III. LIST OF CONTRIBUTIONS**

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#### **Contribution by George Kent from the University of Hawaii, USA**

The High-Level Expert Forum will take up the question of “How to Feed the World in 2050.” That is an excellent question, but it should not be confused with the hunger problem.

Globally, there are two major interrelated streams of work on food issues. One focuses on *sustainability*, especially in the face of global population growth, depletion of resources such as land and water, and uncertainties regarding the future such as climate change. The second focuses on *hunger*, which deals mainly with the plight of the poor, now and in the future.

At times people express concern for the current hunger in the world, and then turn their attention to the issue of sustainability. They may be more concerned with their own future food security than with the current food insecurity of others. Both are important, of course, but we should recognize the difference.

It is important to distinguish between food security for the general population and food security for the poor because they require different courses of action. Moreover, there is the fear that the powerful will deal seriously with the sustainability issue only when the dangers for the middle class become inescapably clear, and then they will devise remedies that come at the expense of the poor. There are signs of this in the pattern of rich countries buying up land in poor countries to ensure the food security of the rich.

In “The Politics of Hunger,” published in *Foreign Affairs* in 2008, Paul Collier insisted, “The solution must come from dramatically increasing world food supply.” If that is the answer, what is the question? Promoting large-scale commercial farming and increased use of genetically modified crops, as Collier advocates, would increase the food supply for the middle class, and thus reduce the prices they face, but these remedies would not put money into the hands of the poor to enable them to purchase that food. The world already produces more than enough food for all people with currently available technologies. The problem is that people who have little power are poor, and thus have little claim on the food that is produced.

Collier says, “allowing commercial organizations to replace peasant agriculture would raise global food supply in the medium term.” Certainly, increasing supply and the resulting decrease in price surely would benefit the middle class. That is because few of them are farmers. Collier does not examine the consequences for the displaced peasants and the poor in general.

For the hundreds of millions of subsistence farmers throughout the world, the problem is that the prices they receive are too low. Increasing large-scale commercial farming and the production of genetically modified crops could put them out of business. What is to be done to create new

opportunities for them? Collier speaks dismissively about peasant agriculture, but offers no better employment for those who now work in small-scale agriculture. Collier holds up Brazil's commercial agriculture as a model, but seems not to appreciate the slave-like conditions under which many of its employees toil.

Increases in the prices of globally traded food commodities should not distract us. The underlying global food system is fundamentally flawed. As the Cordoba Declaration of 2008 explained:

Hunger is a structural problem and therefore demands structural changes, with consequences for institutional development and food system governance. Food security for all must be considered as a global public good and it must be made a central focus of global governance as well as of national development, taking into account that often the main problem is not too little food production but the inability of many to have access to food.

It is important to distinguish between the concerns of the poor for getting adequate food in the immediate future and the general population's concerns about their long-term food security. At times, discussions of the current hunger problem slide into addressing the anxieties of the general population, and as a result, the concerns of the poor are pushed aside.

While sustainability focuses on equity between generations, over time, the hunger problem is about equity through space, between different groups or categories of people. These are two different problems. Both need attention. They need to be addressed in different ways. The need to assure long-term food security for the general population should not be confused with the need to quickly reduce the current food insecurity of the poor.

Aloha, George Kent

#### **Contribution by Andrea Markos from the Università La Sapienza, Italy**

I would like to point out one really good reading on the subject:

The Feeding of the Nine Billion: Global Food Security for the 21st Century

Chatham House Report

Alex Evans, January 2009

<http://www.chathamhouse.org.uk/publications/papers/view/-/id/694/>

Best regards,  
Andrea Markos

#### **Contribution by Rene Gommès from FAO, Italy.**

Dear colleagues,

this is just to draw your attention to excellent documents produced in the ambit of the (1st) WFS, for instance

[http://www.fao.org/wfs/index\\_en.htm](http://www.fao.org/wfs/index_en.htm)

<http://www.fao.org/DOCREP/003/X3002F/X3002F00.htm#TOC>

<http://www.fao.org/docrep/003/w2612e/w2612e04a.htm>

most of which were of excellent quality and remain largely valid.

Be so kind and ensure the forum is aware of earlier good work of FAO

Regards  
Rene



### **Contribution by Moleka Mosisi from the University of KwaZulu-Natal, South Africa**

Dear Hartwig de Haen,

Asked at the time the word food security is on the verge of collapse, the question “**How to Feed the World in 2050?**” appears to ignore the current food crisis and unnecessarily postpone to 2050 urgent solutions desperately needed by over 1 billions people who are currently hungry and thousands of children who die every single day because they don't have food. Perhaps the fundamental question that could have been asked is one of the many specific questions of this topic “**What should be done to make the eradication of hunger a top priority in national and international policies and budget allocations?**”

Food Summits and High-Level Expert Forums have come and gone and will come again. Studies have been undertaken, commitments made and goals set but we all agree for example that founders of the Millennium Development Goals were totally wrong as “any goal that is less than eradication [of hunger] represents an implicit acceptance that large numbers of people should be denied their right to adequate food”. Equally, it can be said that any question that seeks to feed the world in the future is an implicit acceptance that feeding the world is not an immediate problem”.

Another worrisome point from this topic is that “If the FAO perspectives [to feed the world in 2050] materialize...the number of chronically undernourished in the world would thus remain at almost 400 million people. To bring it further down will require extra efforts, including targeted measures to improve access to food for the neediest”. In other words, in 2050 the question asked today will still stand.

While the question “**How to Feed the World in 2050?**” may be valid, its timing may not. However, the fundamental question (**What should be done to make the eradication of hunger a top priority in national and international policies and budget allocations?**) has, in my opinion, a simple answer: food security experts and practitioners should press economists and politicians to measure country economic growth and development with the improvement of people's life whereby household food security is the top indicator. Rather than striving and competing on their GDPs, countries will be have household food security, health, shelter and so on as growth measure and indicator.

Best Regards,

Moleka

### **Contribution by Joy Selasi Afenyo from the Roma Tre University, Italy**

Dear Colleagues

I am Joy Selasi Afenyo from Ghana; I have expertise in food security with particular interest in food safety, post- harvest systems and in rural development. I believe the subject up for discussion is a timely one and I would like to make a few inputs with regards to the two questions above.

I firmly believe that one of the most critical instruments to use to broaden physical access to food and to ensure food security in sub-Saharan Africa is to strengthen food safety and post-harvest systems in sub-Saharan Africa.

Close examination reveals that the continuing efforts to focus solely on how to increase production by putting more land under cultivation and by the use of improved seeds, more fertilizer, and pesticides without addressing the challenges of yearly food losses due to spoilage, the lack of capacity to preserve and store food and the need of people for quality and safe food,

have not succeeded in reducing the levels of hunger and malnutrition and have not translated into sustainable amelioration of food insecurity on the continent.

Current estimates of production losses as of 2008 are around 50% for perishable food commodities including fruits, vegetables, roots and tubers and about 30% for food grains including maize, sorghum, millet, rice and cowpeas in West Africa, (Aworh 2008). This extent of post-harvest loss in sub-Saharan Africa significantly affects the physical availability of food and further negatively aggravates our food insecurity situation.

In sub-Saharan Africa, food insecurity is not only about the availability of the food but also about economic access to it. In a good number of cases, people were hungry in the midst of plenty of food in the markets. Food security efforts here must also encompass the broader objective of poverty alleviation because so long as people remain poor, they will most likely remain food insecure and vice versa. This means that small producers of food must be able to take advantage of the markets i.e. small food producers must be enabled to become agro-entrepreneurs to be able to acquire the income necessary to meet additional food needs.

The realization of food security in Africa calls for access to safe and quality food. Especially considering the high incidence of diseases such as HIV/AIDS and malnutrition, people require food that is able to meet their nutritional and health needs not simply “food”.

To meet these challenges, agricultural practice in sub-Saharan Africa must adopt three inter-connected strategies:

1. Strategies to boost the capacities to process, preserve and store primary production in sub-Saharan Africa. This requires an appreciation of the fact and the necessary investments by national governments and development agents.
2. Food safety and hygienic practices along the food chain must be improved. For food trade to foster development and food security, small producers need to be able to supply markets – both local and international, with food that meets basic safety and hygienic standards.
3. Policies. Policies by national governments to make more budgetary allocations to support the above and also to invest in rural infrastructure, water and sanitation systems, rural electrification since these are necessary services and supports to make these programmes work.

If the physical and economic access to food and food security in general must be improved in sub-Saharan Africa, these are some of the areas that require urgent intervention.

Joy Selasi Afenyo  
Master in Human Development and Food Security  
Roma Tre University, Italy

**Contribution by Ardhendu Chatterjee from the Development Research Communication and Services Centre, India**

Dear Friends

Very interesting question, unfortunately I cannot join discussion fully as I will be traveling a lot during next 2 weeks,

We need to focus on reality of the hungry rather than just discuss the concept of hunger. Poor people can feed themselves if their lands are not taken away for cities, factories, mines, large dams or power plants etc.; if the state subsidies do not go mainly to large land owners to buy synthetic agro chemicals and exotic breeds and is used instead for eco restoration and disaster preparedness, if local public distribution systems based on indigenous food grains and

legumes are supported and buyback arrangements used. It will be important also to redesign community forests as real agroforests rather than monocultural timber or pulpwood plantations. Finally incentive should be given to diversified-integrated farming systems and penalty should be levied for polluting and water/energy inefficient farming technologies.

Problem is often IGOs such as UNDP/FAO/UNICEF etc. remain silent when most of the development aid meant for hunger reduction ends up being used by our state agencies for funding Agribusiness Corporations directly or indirectly, and the hungry are always excluded from the discussions on how to help them.

If we really wanted to reduce the number of hungry and malnourished it can be done. We need an honest dialogue and collaborative effort at international, regional, national and local level; and it needs to be a continuous process.

Best wishes and Puja Greetings to Forum members

Ardhendu Chatterjee  
Development Research Communication and Services Centre  
Kolkata

### **Contribution by DSK Rao from GyanTech Information Systems Limited, India**

Dear Members,

The posting is interesting and also equally questionable! My advance apologies for my frank views. The posting starts with 'Experts tend to agree that it will be possible to produce enough food to meet the demand of a world population that will have increased to more than 9 billion in 2050'. I am not sure who these Experts are and why these Experts and their Collective wisdom is not able to address **today's** deficit and Hunger. I am equally doubtful about to what extent the MDG goals of reducing hunger can be achieved by 2015.

The fact stands that the poor hard working farmer is still the source of Food in almost all developing countries. Farm subsidies and unfair pricing policies are some of the main reasons for these poor hard working farmers remaining poor and hungry. On analysis, it is observed that in spite of tall claims on benefits of R&D in the Food Production, the ground reality is that it has not made significant difference.

I am again cautioning on covert ways of promoting GM experiments in the pretext of feeding the hungry. Things need to be viewed on a holistic basis and not on a myopic basis. It is still fresh in our minds the effects of 'Mad Cow Disease' on the meat industry in the west which is mainly attributed to mixing powdered meat from slaughter houses into cattle feed! Please note that there were some 'Experts', who got even awards & recognition for their break through contributions for this a couple of decades back.

The need of the hour is to look at Hunger & Farming in a totally different perspective. Hunger is more to do with denial of food and fundamental rights to marginalized people and poor governance than to do with Food Production. There is a mind set change required to eliminate hunger. To support this view, in India millions of tons of food grains lying with the government warehouses gets infested and get burnt or used as cattle feed when officially 300 million people are starving! These people will continue to starve even if the production triples, as it is to do more with Social Justice & Human Rights which have become non-existent and to millions of oppressed people in this so called 'Civilized' world of the 21st Century. Greed, Falsehood, Cover Ups and unfair cartelization have become order of the day and to that extent that we have a Global Economic Meltdown with all countries having citizens fighting for their daily survival.

High time, we start a debate for an equitable & Inclusive model and not get into rhetoric on things we are not certain.

Regards,  
DSK Rao

**Contribution by Mulia Nurhasan from FAO, Indonesia**

Dear all,

Indeed it is an interesting topic. From what I have known, there are two beliefs on this issue;

One: the people who believe that GMF is the solution to feed the world. To them, we can no longer rely on the conventional way and the rural are not the only people to be fed. The population is increasing rapidly and most of them live in town and cities. Although not farming, these people need to be fed as well and they, in fact have significantly contribute at the world's economy.

Two: the people who believe that we can't rely on the GMF for some reasons; one interesting reason is because GMF only promote main nutrition in the products whilst the plants cultivated conventionally naturally contain more complete nutrients. Barbara Burlingame from FAO presented at COHAB (Cooperation on Health and Biosiversity) Conference in Galway in 2008 that although dietary energy supply can be satisfied without diversity, the micronutrient supply can not. And that many non poor people are unaware of their hidden mal nutrition status (See [http://www.cohabnet.org/cohab2008/documents/Day1BarbaraBurlingameUNFAO\\_001.pdf](http://www.cohabnet.org/cohab2008/documents/Day1BarbaraBurlingameUNFAO_001.pdf) ). The conference also interestingly agreed that biodiversity needs to be taken care in order to maintain the world's health, nutritional needs and climate change.

FAO actually has been working on biodiversity issues quiet a lot. One of it is my own research that was done in Laos PDR on nutrition and biodiversity. The research concludes that the neglected aquatic biodiversity in Laotian rice field provide profound nutrition for the rural Laotian significantly (See <http://www.ub.uit.no/munin/handle/10037/1434> ).

And the more extensive work on this has been integrated into Article 31 of RAMSAR Convention in South Korea last year. More interesting works on proving that organics can feed the world are myriads (Especially on rice), yet like we all know, the road from research to lifestyle could take at least 10-20 years. So till then, it is worth to keep on campaigning the significance of biodiversity in feeding the world more equally.

Warm regards,  
Mulia Nurhasan  
FAO, Indonesia

**Contribution by Balakrishnaraj Neerchal from Span Consultants, India**

Dear Friends,

'How to feed the World in 2050?' is a very pertinent question and goes beyond the MDGs.

The World has moved from the thinking of 'Population as Problem' to 'Population as Solution' 'Population as Resource' 'Population as Power' 'Population as Strength'.

Nonetheless, we need to check on the population growth so to limit the negative impacts put in place. On the other hand, we have to develop our natural resources. There are ample opportunities as the vast majority of lands in India, Australia, Canada and in many other countries are available for agriculture development through appropriate technologies. There is a limit to irrigation potentials but watershed technologies have proven to be time tested

technologies (though more R&D needs to be done on the sector) to develop the rain fed areas. However, if I take the example of Karnataka, India, the coverage of land under watershed is very small. Government is yet juggling an already closed project (World Bank assisted [Sujala Watershed Project](#)). There are no new projects by the government. This shows, that a clear vision, mission and leadership matters, apart from funds and other requirements like project planning and implementation. The Watershed Development Department which developed a sizable manpower for implementation of Sujala Watershed Project lost all of its structures due to the lack of proper long-term plan.

The former Commissioner wanted to replicate the Sujala vision, mission and approaches in the Prime Ministers Special Watershed Package for those six districts where the highest number of farmer's suicide cases were reported. However, his intension was only put up in paper. Departmental legacies, like lack of coordination, lack of direction, red-tapism, etc. have emerged and project implementation was halted, as usual.

Therefore, the issue is not just funds, R&D but also the need to incorporate the social and managerial issues pertaining to project management while designing long-term strategic plans that intend to feed the population of 2050.

With regards,

Balakrishnaraj Neerchal  
SCD & RR Expert  
Span Consultants, Bengaluru

### **Contribution by Rahul Banerjee from India**

Serious thought needs to be given to the way in which overall yields from agriculture are to be increased.

The way so far has been to concentrate on increasing external inputs such as fertilisers, water and pesticides on the more fertile and plain lands. However, a limit has been reached to this kind of agriculture and if subsidies being given for the use of these external inputs were to be removed then this agriculture would collapse altogether.

The way forward should be towards increasing the use of organic inputs prepared on the farm itself to promote the natural capacities of the soil. As most farm land in India is in the upper watersheds with low soil depth, appropriate watershed development, afforestation and dry land farming techniques have to be developed to sustainably increase yields there.

The external input agriculture is also highly carbon negative whereas organic agriculture encompassing soil, water and forest conservation and mulching can be highly carbon positive if properly done.

Finally organic agriculture involves high levels of community participation and equitable distribution of resources and produce and so is socially sustainable in the long run. In fact all equity concerns whether caste, class, ethnic or gender must be foregrounded in the new agricultural development policy that is to be adopted.

Thus before we make huge investments in the form of subsidies and grants in increasing yields in agriculture we must be clear about the kind of agriculture and the social arrangements for its practice that we are to adopt. This is at the moment decided not by democratically elected governments but by the Multinational Corporations that control the trade in agricultural inputs and outputs and also the policies in agriculture. Unless the power of these MNCs is circumscribed, there is little chance of sustainable agricultural policies being adopted.

Rahul Banerjee  
Indore

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### **Contribution by Charlotte Dufour from France**

Thank you very much, Mr. De Haen, for raising these hugely important questions.

I agree with many of the comments posted to date, that the real challenge is **not so much the quantity of production** but one of **distribution and access**.

My response focuses mostly on your question “Why are so many governments still reluctant to change priorities and invest in hunger reduction?”

I can see 2 major challenges, which may partly explain why there is such poor political commitment to “food security for all”, but also, a faint glimmer of hope that this may change (or at least, not get worst).

#### ***Challenges:***

##### **1) Conflict with donor countries’ interests:**

Most **donors** are **agricultural surplus producers and exporters**. Why would they fund competition from abroad by genuinely promoting local production? And it looks so much more efficient / charitable to report numbers of food aid beneficiaries and malnourished children saved through supplementary and therapeutic feeding programmes! It suits Results-Based Monitoring frameworks perfectly and is much easier to report to charitable individuals and tax payers.

##### **2) Conflict with Private Sector interests:**

Donors’ interests are very much tied to the (largely Western) **agri-business industry**, which relies on large-scale farming to make economies of scale and is thus unlikely to promote small-scale and sustainable production.

An example of the influence of the agri-business industry in the food security and nutrition agenda is the **growing fad for “nutri-ceuticals”** and **“Ready to Used Foods”**, which are increasingly used for preventing and treating malnutrition. While they have an important role to play (e.g. for managing severe acute malnutrition), their use is increasingly undermining approaches based on local foods. These products are promoted through Public Private Partnerships involving UN agencies, NGOs, Governments and Private businesses (mostly based in the West). Such partnerships can be very beneficial but since the money usually comes from the private sector, there is a **real risk that the private sector agenda seriously biases the policies and programmes promoted by development stakeholders**. One finds it increasingly difficult to mobilize support for nutrition programmes that are based on local foods.

Thus the **“feeding the world” agenda risks being (or already is) recuperated by stakeholders who have an interest in people remaining dependent on their products**.

#### ***Glimmer of hope: changing consumer preferences***

When not in the field, I live in a small village in rural France. Many families around me are changing their consumption patterns by preferentially **buying organic, locally produced foods**. This is even the case in urban areas, where local organic agriculture producer-consumer organisations are flourishing: households establish a contractual relationship with a local (peri-urban) farmer who supplies them with a weekly basket. The farmer has a steady income and consumers share the risks associated with farming. These changing consumer preferences are **affecting local policies**, as provincial and district authorities begin to **see local sustainable agriculture as an economic and environmental asset**. I believe that these trends also exist in other countries such as the UK, Germany and North America. We have yet to see changes at the national level (e.g. European subsidies still favour large producers) but I hope the **increasing**

**interest in organic foods** (linked to awareness raised by cancer and obesity epidemics) **and growing concerns around climate change** will boost these approaches across the World.

(Let's leave aside the issue of countries –such as China- renting entire strips of land from poorer countries to carry out intensive agriculture; there's a looming economic and environmental disaster, which depresses me too much to bring up...).

One sad truth is that we food security advocates will probably not be out of a job for a while...

All the best, and “la lucha continua siempre...”

Charlotte Dufour

Food Security, Nutrition and Livelihoods Consultant.

### **Contribution by Kevin Gallagher from FAO Sierra Leone**

Dear FSners,

I feel the question of *How to Feed the World in 2050?* is extremely pertinent to today's dilemma of feeding the world. The investments that countries are making today on petroleum-based fertilizers, high traction inputs and export oriented (i.e. transport intensive) crops may not be the best investments for a future world in which energy is more expensive, resources more scarce and populations much higher. The investments we make for food security today will continue to have long lived implications. Chemical fertilizers promoted by the international fertilizer lobby called IFDC (yes, it is a lobby, not a CGIAR centre as many think) or highly toxic pesticides promoted by CropLife International (also a lobby) were both technologies of World War II that we adapted to agriculture. Bombs are still made with nitrogen fertilizers. Pesticides still kill people. What if the international community had asked the question in 1945, *How to Sustainably Feed the World in 2000?*, perhaps the world would have chosen to focus on technology that builds on natural cycles like nitrogen fixation and biological control? I doubt the world will suddenly come to their senses in answering the questions of *How to Feed the World (Sustainably) in 2050?* but there is a slight chance that someone will notice that investing in urea factories that require lots of energy in 2010 may not be the best investment for today or tomorrow.

Dr Colin Tudge's book ***So Shall We Reap*** has already made a strong statement on the question posed as the title of this important workshop

(Please see <http://www.colintudge.com/articles/article12.php>).

Best regards,  
Kevin Gallagher  
FAOR Sierra Leone

### **Contribution by Victor Oswaldo Puac from Guatemala**

Dear Mr de Haen

Thank you very much for providing the opportunity to exchange ideas.

The extent of devastation which can be caused by hunger is indeed impressive. I need not go too far, as Guatemala, my country of origin and where I currently live, is enduring one of the worst hunger situations, bringing along an alarming increase of acute undernutrition.

The appearance of chronic malnutrition is nothing but a reflection of the structure under which the country is being ruled, which has not yielded anything positive.

Therefore dialogue and communication, and national and international solidarity are central to all places facing similar situations to those faced by my country.

On another note, I would like to share these other ideas: From the experience I gained from nearly 25 years of working in the field of Human Development on the subjects of Local Power, Health, Food Security and Nutrition, I find it interesting to bring up some points for discussion.

1) Almost always the specialized national and international organizations, recognize a crisis and assert that what to do is to "deliver food" (of course with good intentions). Hardly any intervention is followed by monitoring and follow-up mechanisms aimed at strengthening the sustainability of these processes.

Often they put in place merely palliative measures which might relief the emergency for a short while but do little to foster a sustainable process in the areas of the affected people.

2) I think that in order to be coherent when discussing "How to Feed the World in 2050?", we need to tackle the topic of Local Power which I believe has not yet been recognizes as being a key tool in advancing sustainability processes and the subsequent increase of ownership by and the empowerment of the food beneficiaries.

There is some experience with these issues in Brazil, Mexico, Chile, some instances in Guatemala and in some other countries, which needs to be analyzed and the lessons learned carefully studied.

Some questions that could be raised on Local Power are: what is Local Power, how does it work in communities, whom does it obey, what is the link between local power and the sustainability of actions?

I do not think that to date the topic has yet been touched on in depth and as long as this is not done we will continue just to extinguish fires.

I think the moment must come where we ask the people how they want to be helped and that it is recognized that programs need to be inclusive and not just limited to "giving". Otherwise our efforts will continue to be inadequate.

3) As we know, the problem to solve hunger is not technology but sufficient political will and determination. But if governments around the world still do not want to acknowledge this (although they know better) we should create world wide mechanisms based on Human Rights to generate sufficient pressure to open new technical and political perspectives in the countries.

Saludos and let us keep discussing

Sincerely,

Victor Oswaldo Puac

### **Original message in Spanish**

Estimado Señor de Haen:

Gracias por la oportunidad de socializar ideas.

Es impresionante los estragos que puede causar el hambre en el Mundo, para no ir muy lejos Guatemala que es mi País y en donde actualmente vivo, estamos atravesando una de las peores situaciones de hambre que están llevando actualmente al incremento de casos de Desnutrición Aguda con porcentajes alarmantes. El aspecto de la Desnutrición Crónica no es



mas que el reflejo de la estructura bajo la cual se maneja al País misma que tampoco ha sido nada positiva. Por lo tanto el dialogo y la comunicación, así como la solidaridad nacional e internacional son fundamentales en todos los lugares en donde también se atraviesa situaciones como la de mi País.

Pasando a otro tema, quería como compartir estas otras ideas: Por la experiencia ganada de casi 25 años de trabajar en el campo del Desarrollo Humano en el tema del Poder Local, la Salud y la Seguridad Alimentaria Nutricional me parece interesante tocar algunos puntos y ponerlos al plenario para su discusión.

1. Casi siempre los organismos nacionales e internacionales especializados en el tema, asumen que la crisis está y lo que hay que hacer es "entregar comida" (por supuesto que con buenas intenciones) pero luego de las intervenciones difícilmente se aseguran los mecanismos de monitoreo y seguimiento orientados a fortalecer procesos sostenibles por los mismos afectados. Entonces muchas veces lo que sucede es nada más una acción "apaga fuegos" que lo que hace es salvar el momento pero no lo que se necesita para lograr un proceso más sostenible en el nivel local en donde viven los afectados.

2. Creo que manteniendo la coherencia del tema "Cómo alimentar al Mundo al 2050" debería ponerse en la mesa el tema del "PODER LOCAL" que me parece todavía no ha sido tocado como herramienta fundamental en los procesos de sostenibilidad de acciones y posterior apropiación y empoderamiento de los beneficiarios de alimentos. Es un tema que seguramente en Países como Brasil, México, Chile y algunas experiencias en Guatemala y otros Países más han generado experiencias que deberían sistematizarse y tomar las lecciones que dichas experiencias nos dejan. Lanzaría algunas preguntas alrededor del tema de PODER LOCAL. Qué es el poder local, cómo funciona el poder local en las comunidades, a que obede el poder local, el poder local y la sostenibilidad de las acciones. No creo que ha la fecha todavía se haya tocado el tema a profundidad y mientras esto no se haga vamos a continuar apagando fuegos en el mundo, creo que debe llegar el momento de PREGUNTARLE A LA GENTE también cómo ellos quieren ser "ayudados" y que los programs sean incluyentes y no solo de "dar" porque de lo contrario nuestros esfuerzos continuarán quedando muy limitados.

3. Como bien lo sabemos los técnicos en el mundo "el problema para resolver el hambre no es de tecnología" existe suficiente es de voluntad y voluntad política. Pero si los gobiernos en el mundo todavía no lo quieren reconocer (aunque lo sepan) deberíamos crear mecanismos en el mundo basados en los Derechos Humanos para generar mecanismos de presión suficientes para que se abran nuevas perspectivas técnicas y políticas en los Países.

Saludos y seguimos en contacto.

Atentamente,

Victor Oswaldo Puac

### **Contribution by Alemu Asfaw from FAO, Sudan**

Dear all,

Can we really feed the world in 2050? Some of our targets are too ambitious and doesn't seem to be achievable. Putting some quantifiable, and measurable indicators and goals looks to be reasonable.

It will also be good to introduce some sort of intermediary indicators and hence classifying the overall goal into decades will further refine the bigger goal? That division can also be done by continent or by providing it spatial dimension. Let's then tone down the goal and target of

pursuing those achievable targets. Let then the whole world be given some tangible tasks at national, regional, and global level.

My technical contribution to the issue:

There is a general agreement that the world has enough food to feed the whole world. However, for various reasons, people cannot access the available food. Some of the reasons may include lack of purchasing power, inaccessible markets, sky rocketing prices, conflict, corruption, other hazards, etc. Hence, the solution of feeding the world cannot come from a dramatic increase in food supply, unless we avoid problem of income distribution and tackle the issue of 'access'!

There is a clear paradigm shift in the current food security thinking. The underlying causes of the current problem are more structural. People can only be starving if there is no clear accountability and governance in the Government, regional and global system. If people do not have access to resources and entitlements in acquiring their food, then the Government should have a proper safety net in place to ensure that people are fed at all times, especially children, the elderly, disabled, lactating mothers, etc. who do not have a choice. If Governments are not holding up with that capacity, the international community and regional organizations should support that kind of effort.

We would then be forced to think 'can we feed the world' without resolving the underlying causes of the problem? Can we eliminate the current dictators by 2050 that are knowingly or unknowingly starving their own people? Can we eliminate resource or non-resource based conflicts by 2050? Can we create transparent governance by 2050? Can we avoid rampant corruption in the developing world? When will be the rule of law to prevail against tyranny and chaos? Can we avoid the current skewed individual and country level income inequalities? When are we going to establish a respected constitution that reflects the real values of the society? When are we going to tolerate 'contextualized democracy' versus a traditional western world democracy? When do we stop sanctions, which always end up starving the majority? Can we ameliorate problem of individual greed of the financial system? When will OPEC and the oil cartel start to think for the majority (of developing countries who relies too much on oil) rather than only hunting for profit? Is the western world ready to tackle the underlying causes of climate change, unfair trading, subsidizing the inefficient agricultural system, etc.? All these issues are interrelated which have a direct or indirect bearing on food access. Aren't we all accountable for these major problems of accountability and governance?

If we cannot resolve these problems, is there a way to make sure that the whole world is fed in 2050?

We should, therefore, conclude by saying that resolving the problem of food hunger leans heavily on resolving the underlying causes of hunger/poverty or overall food insecurity.

In addition to resolving those underlying causes, we should also be assessing the 'business as usual' ongoing activities. Food aid and other humanitarian provisions should somehow be confined to strict emergency situation rather than being used as a political instrument. They should also come when they are needed without contradicting the cultural consumption habits of the society. We should aim at people deciding their own destiny, avoid dependency syndrome, minimize heavy reliance on nature, pool out surplus labour from the agricultural sector and move them to technologically advanced labour intensive activities, invest on governance rather than providing resources for 'strategic alliance reasons', avoid creation of a parallel information system (FS) while building on existing ones, invest on basic public services (health, education, environmental sanitation, etc.) rather than on armaments, etc.

Alemu Asfaw

FAO-Sudan

## **Contribution by Peter Steele from FAO Egypt**

### **Sustainability and sustainable development into the next period**

No discussion on '*food security*' and '*feeding the world*' can be complete without reference to the sustainability of existing biosystems; and essentially this comes down to the exploitation of the 'natural capital' of the planet itself. Herein are some really complex issues which cannot be accommodated within a paragraph or two and targeting 2050 and estimated nine billion people who will be living here when most of the rest of us have been recycled. You don't need to understand the Laws of Thermodynamics - but it helps - when appreciating that even the most highly structured forms produced by nature (you and me included) are eventually broken down into individual elements within the conservation cycles that apply. Our exploitation of the planetary ecological cycles that prevail has enabled us to boost food and materials production to meet increasing demands for '*sustainable development*'. Note, this is different from '*sustainability*' for it introduces the concept of '*quality of life*'. All forms of life can exist on reduced resources - up to a point (and people are no exception), it's just that the nine billion people expected in 40 years time will probably be unable to exist within current exploitation systems. The challenge for agricultural producers and everyone else meantime is to shift to a more benign set of rules where the planet is concerned. Herein are the challenges that will face decision-makers in Copenhagen later in the year, for >95% of those nine billion people will be living in regions, countries and communities that cannot simply copy the production and/or living systems of the <5% of world population living in industrial societies. Not that they will not try to do so.

You reach a stage in geo-planning where the 10 major food crops - all cereals excepting potatoes - need to link firmly to those regions where sufficient systems, resources, expertise and experience exist and which can be further protected and/or developed to provide the cities of the mid-21 century (and the supermarkets in those cities) with sufficient food to ensure social harmony. Read '*Hunger & Markets*' in the World Hunger Series published jointly by WFP and Earthscan and/or the FAO/IFAD/World Bank publication '*Improving Food Security in Arab Countries*' for a more balanced/pragmatic view of feeding people into the next period. A focus upon the Middle East highlights issues of people living in agro-resource-poor and food insecure regions no matter their access to funds (well, half the countries are petro-producers); if no one is selling food then you simply can't buy it and your people will go hungry. This may be a case of the Middle East today and the rest of the world tomorrow, but lessons in food security can be learned.

Food production, trading and markets are best undertaken by the private sector - no matter the considerable arguments that have already cropped up in this debate about the role of the multi-national agro-food and agro-service companies. The technical R&D, commercial dexterity and financial success of these companies have come to dominate international food industries. Newly developing countries/regions are quick to adopt and follow similar models - because they work in practice. Follow developments in the so-called BRIC countries and project into the next period - with 40% of the world's people, 25% of the land area, etc. and you quickly come to realise that the econo-financial power centres of the 19-20 century may be shifting. It's the same with access to unexploited land, soils and/or water resources and, like people and body muscle if you don't use it, you lose it. Geo-planning brings the potential of Africa into focus; and the space and natural resources therein.

All this and no mention of the foreboding challenge of global climate change that is beginning to impact - according to current consensus. Most of us think in short-term cycles (we live such short lives on a planet estimated >4B years old), but that is no excuse for not seeking to explore the longer term issues and opportunities for making a reasonable stab at solutions that may apply. Just consider the challenge for 50% reduction in environmental impact - difficult but probably attainable - when what is really needed may be an 80% (or even 90%) improvement in efficiency when converting resources into food, structures and services that make up our everyday life. Challenges indeed.

Peter Steele

Cairo

### **Contribution by P.K.Thampan from India**

Dear Members,

The discussion on food availability and projected demand trends for 2050 has to consider the dietary preferences of the people in different countries, appropriate farming systems and opportunities for augmenting the purchasing power of the people. In the developing countries people depend mainly on plant produce such as cereals, roots and tubers, vegetables and fruits for food. Cereals satisfy bulk of the food needs of these people though dietary preference shows variation from country to country. But in the developed countries where the preference is for foods of animal origin, large amounts of food grains are fed to cattle to produce beef. For producing one kg of beef, the food grains needed as feed is 8-9 kg. But 8 kg of food grains supply 14 times as many calories and over 3 times as much protein as one kg of beef supplies. The dietary habits of the people of the developed countries thus cause considerable wastage of food grains.

In many countries tree crops support the health and nutrition security of millions of local people. The fruits, nuts, berries, edible leaves etc. obtained from trees are rich in carbohydrates, fats, proteins, minerals and vitamins. They supplement the main or staple food and also satisfy the entire food needs of rural people at times of shortage of the usual food. While coconut serves both as a food and drink in many countries, jack, breadfruit etc. form the major source of carbohydrates in some countries. In Kerala State the average contribution of coconut to the daily per capita calorie intake is 367 kcal. As trees are less susceptible to climatic vicissitudes they are more reliable and consistent in food production than the cereals or other seasonal food crops. Diverse varieties of fruits are available in the tropical and temperate regions as well as in the humid and semi-arid areas. Some of the very common fruits which are valued for taste and nutritional quality are dates, mango, apple, sapota, guava, papaya, durian, litchi, mangosteen, rambutan, pumello, cashew etc. A diet consisting of fruits and nuts can provide the required level of bulk and nutrients for a healthy life.

Now-a-days biotechnology has been highlighted as the key to high and consistent levels of food production. While biotechnology has potential in diverse applications what is in store for the future is less understood. Through genetic engineering it is possible to introduce additional genetic diversity. But this diversity is to lead to on-farm uniformity when the new plant types start replacing the diverse varieties presently available. Indiscriminate application of the technology will alter the genetic make-up of many living things, eventually disrupting the process of life in nature. How the new organisms will behave in nature and to what extent they will be compatible with the naturally occurring life forms are matters of concern for all.

The strategy for food production has to be broad based to cover diverse sources of food. There must be a special drive in all the developing countries to popularize area specific agro-techniques devoted to resource conservation and production of foods appropriate to local conditions and needs. Water conservation strategies and priority for the production of coarse grains are more relevant in dry farming belts than in other areas. In many countries roots and tubers such as cassava, yam etc. are more important staple foods than cereals. By giving importance to the production of these foods in potential areas, locally available resources could be effectively harnessed without allowing them to be dissipated over inappropriate programmes.

In most of the developing countries not only the productivity of cereals is low but the overall growth rate in agriculture also does not keep pace with the growth rate in population. On the other hand, the output of cereals in the developed countries far exceeds the local needs leaving

sizeable surplus for export trade. As all developing countries lie in or near the tropical region, the edaphic and climatic features may not favour as high a productivity in cereals as in the temperate region where the developed countries lie. The investment in agriculture is also comparatively poor in the developing countries where unemployment and underemployment among the agricultural population are rampant. At the present growth rate the global population may reach 8.5-8.7 billion by 2050 with most of the growth taking place in the developing world. These are the major problems to be tackled for ensuring the food and nutrition security of the poor people of the developing world without disrupting the ecological base of farming.

Even with a higher availability of cereals and other foods, the poor people especially among the agricultural population may not be benefited in the absence of adequate income sources at local levels. Diversity in farming, on-farm and off-farm income generating opportunities and supporting infrastructure are essential requirements for strengthening the livelihood security of the poor people. To address this situation food production sector has to be diversified with the objective of enhancing biological productivity from each operational unit by adopting ecologically sustainable farming systems and practices. Biological productivity relates to foods of plant and non-plant origin. In the holdings of small farmers who predominate the active agricultural population of the developing countries an integrated farming system has to be promoted to generate multiple sources of food, income and employment for the dependent families. Arable crops, fruit trees, cattle and other livestock components could be compatible components of the system. Along with this approach, employment oriented rural development projects have to receive emphasis to strengthen rural economy and purchasing power of the people.

Regards,  
P.K.Thampan  
Peekay Tree Crops Development Foundation  
Kochi

#### **Contribution by K V Peter from India**

Carrying capacity of the world in 2050 to sustain the expected 9 billion people, their pets, animals, birds, wild fauna, raw materials for industry, energy requirement etc is to be worked out with logic and actuality. Demographic changes, new life styles, impact of emerging technologies, hegemony of developed countries, cultural revolutions etc are to be viewed in estimating carrying capacity.

There is a limit to productivity of current food crops and also availability of inputs like water, manures, land and labour. By 2050 hardly 5 percent of people will go for farming. Transgenic and nano-products would be common. The whole world will be like the present Tokyo for space to live. Water will be available in Nano form. Marine and aquatic resources will be exploited more. Lunar space and aeroponics will provide land for farming. Air for breathing will be costly as bottled water now.

Twenty years back I cannot imagine that water for drinking is bottled and sold. Emission of carbon dioxide will be managed.

Countries like India and China will become the largest producers and consumers. India will be a developed country by 2050. Africa will be a major producer continent. Sea water will become source for drinking and irrigation. There will also be changes in family structure. Gay rights and co-habitation will become universal. 2050 will witness a new world full of challenges and opportunities. At no point of time the world was deprived of food except during Noah's period. Then also Noah's ship was loaded with food for decades.

K V Peter

#### **Contribution by Violet Mugalavai from Moi University, Kenya**

Dear all,

This is unimaginable. If at 6.5 billion we have not done so well in the developing world, how much more of a nightmare shall it be with 9.1 billion? Political will and workable policies will be required so as to reach the most vulnerable of populations, especially those in difficult areas, the elderly, the landless, the poor, the displaced, the jobless, the orphaned, PLWHAs (*People Living With HIV/AIDS*)-the list is endless.

Those in leadership positions will have to walk and act their sweet talks by putting in place workable contextual structures that can benefit vulnerable groups, especially those who live on less than one dollar/day, with secure livelihoods to enable them to have better purchasing power. This is because the world systems will be more food product oriented, with inevitable food price spikes in a scenario of fast diminishing shared resources.

To avoid wastage of manpower among the poor, community mobilization and concentrated knowledge sharing and dissemination initiatives will be paramount. Small scale infrastructure to keep the vulnerable in each cluster busy using capitals such as social, cultural, and human, which they use best through networks of sharing, connection and communication should be encouraged and recognized amongst other capitals that are financially oriented, which will require better local government management systems so as to reach more needy people. This will enable the vulnerable to feel more useful as they participate in their own development towards food and livelihood security.

The food situation may become more delicate as fragile climate systems threaten bio-diversity. Indigenous knowledge systems, especially of those practices that can be used for adaptation to climate change should be harnessed and documented for use now for now and the future. Gene banks of fast diminishing, easy to grow crops should be domesticated and the ignored nutritious crops brought back into the production sphere more vigorously. High-yielding, fast-maturing plants and animals and bulk plants will be very essential for feeding the 9 billion. Flexible food habits will be a welcome initiative for communities to borrow from each others' global food experiences and expand their food basket. Desperation among the poor may also lead to further exploration of food and natural resources and requires government intervention through extension education.

Steps and plans of action towards climate change mitigation will be necessary to enable people to change their systems of production to fit into the present. Simple affordable technological innovations will be required for use among the vulnerable. Communities will need to be capacitated more aggressively with knowledge, skills, and infrastructure for agricultural development. More sustainable use of available water resources through use/reuse of rain and grey water, and better watershed management systems are paramount, together with organic enrichment of soils.

Urban agriculture cannot be ignored in feeding the world in 2050, and on the other hand, there will hardly be an urban-rural hedge. The world is fast being urbanized and building systems and architecture will have to shift so as to enable maximum implementation of creative innovations. Food should be successfully produced from just anywhere, including any rooms in a house that are not in maximum use. There should also be no idle rural or urban land and policies should be implemented to that effect.

Good governance of available resources, ownership of projects by communities, simple, immediate and adaptable plans of action, will be paramount so as to enable continuity and sustainability of any food production value chain. For the poor, community development small scale cluster models may be the way forward.

Dr. Violet K. Mugalavai, (PhD).  
Senior Lecturer, Head of Dept,  
School of Agriculture & Biotechnology, Moi University,  
Kenya

#### **Contribution by Yogendra Nath Das from T.M.Bhagalpur University, India**

Dear members of FSN

What I feel and try to suggest in the context of India that so many efforts have been taken to ameliorate the condition of agriculture which is the main source to provide food for the nation but due to large interference by the political strategic point and non-availability of the fund to invest in the cultivation by the marginal and other farmers the desired result do not come which may be helpful for feeding the nation. Now, it is high time to think over it seriously and provide necessary financial support to the farmers having new technology and equipments and introduce second green revolution will certainly give good result. One thing is also important that population control methods or project would also be expedited to achieve the goal.

Prof.(Dr.) Yogendra Nath Das,  
Dept. of Economics,  
T.M.Bhagalpur University,  
Bhagalpur, Bihar,  
India

**Contribution by Cavin Mugarura from the International Food Policy Research Institute, USA**

Hello all,

Innovative use of information and communication technologies (ICT) will play a critical role in efforts to feed the world. Several sectors such as Education and Health are making gains through use of inexpensive open source software tools. The Agriculture sector is lagging behind, due to a myriad of factors. The earlier communication linkages are developed between scientists, extension workers, farmer organizations, farmers, and the market, the easier it will become to feed the world by 2050.

Regards

Cavin Mugaura

**Contribution by Virendra Kumar from India**

Dear Friends,

The views & the background note expressed on the subject " How to Feed the World in 2050 "are highly convincing.

My views/ observations are given below:

1) The current investment by the Government is not sufficient to meet the growing demand of food. To give the example of India's Budget of 2009-10, the combined expenditure on Agriculture & allied activities includes Rural Development, Special Area Programmes, Irrigation, Flood Control and Small Industries. The share of combined expenditure in 2009-10 is 16.09 % against 22.24 % in 2008-09. Given the financial meltdown and global recession, it was hoped that 2009-10 budget will come up with higher allocation.

2) Some additional measures to increase food production are listed below:

- Bringing new technologies to the farmers thru information and communication technology (ICT) & other modes of communication.
- Diversifying agriculture by adopting farming systems approach.
- Evolving cropping systems to enrich soil fertility.
- Emphasis for better ground water utilisation.
- Higher investments in irrigation & irrigation delivery systems.
- Crop & livestock insurance to be streamlined.

3) There is immediate need to make more public investment in agriculture based industries like fertiliser & pesticides. In India not even a single fertiliser plant has come up in public & private sector during the last 10 years.

4) There is definite need of mastering political will in favour of increasing food production. The political heads need the right type of orientation & knowledge of grass root situation.

I hope the views expressed will find substance for discussion at Expert Forum at Rome in October. 2009.

With best wishes

Virendra Kumar  
Consultant

### **Contribution from Mahtab S. Bamji from the Dangoria Charitable Trust, India**

Dear All

Feeding the world to ensure nutrition security and not just preventing hunger, is a big challenge even today. On August 3/4, 2009, the Indian National Science Academy organised the Symposium on Nutrition Security for India – Issues and way forward. I am reproducing below the recommendations made for the way forward to increase the availability and access to food. You can find the full report here [http://typo3.fao.org/fileadmin/user\\_upload/fsn/docs/Symposium\\_Report\\_Nutrition\\_Security\\_India.pdf](http://typo3.fao.org/fileadmin/user_upload/fsn/docs/Symposium_Report_Nutrition_Security_India.pdf)

#### **Increased Availability and Access to Variety of Foods**

1. Environmentally sustainable, nutrition oriented cropping pattern, using a blend of time-tested conventional and new technologies with appropriate safety checks.
2. House- hold food and nutrition security through decentralised, nutritionally oriented cropping pattern, homestead production of nutrient- dense vegetables, fruits, and animal products- poultry, dairy, fishery. Home grown food can ensure livelihood security, reliable and affordable food security, and reduce rural urban and gender divide
3. Nutrition dimension should be main- streamed into national missions like Horticulture, Food security, NREGA and Rural Health Mission, with defined input and output parameters for monitoring. NREG scheme should be well structured to create assets that would help ecology and nutrition and develop skills. S&T institutions should be involved in its execution.
4. Orphan crops like millets should be revived. Increase in production of pulses should receive high priority.
5. Efforts need to be made to bridge the gap between actual and potential productivity of all crops.
6. Community gene, seed, grain and water banks, and crop livestock integrated farming will enhance nutrition security in dry land areas.



7. Post harvest technologies including establishment of modern silos, and food processing for value addition should receive high priority to prevent wastage of farm produce and generate employment.
8. Public distribution system should be universalised and basket of commodities increased to include millets, pulse and blended oils.
9. Export of Soya bean products should be stopped till availability of other pulses improves. Soya bean can be used to fortify wheat flour and other vehicles.

Mahtab S. Bamji  
INSA Honorary Scientist,  
Dangoria Charitable Trust, Hyderabad

**Contribution by Raziq Kakar from the Livestock and Dairy Development Department, Pakistan**

Dear All,

I really agree with the note of Virendra Kumar from India. The situation in Pakistan is not really different from India. I really do not know the exact figure allocated for agriculture and allied fields but one thing clear is that the budget for agriculture and food development is far less than the expenditure on defence.

There is utmost need to spend more share of budget on agricultural development for more and safe food production.

My best regards

Raziq Kakar

**Contribution by Walter Mwasaa from CARE International, Kenya.**

Dear All

I am obliged to agree with Kevin's (Kevin Gallagher) remarks on the fact that it the question "*How to Feed the World in 2050?*" is not more urgent than it was in 1945. I would like to add the following argument on the futility of this discussion.

The world has focussed on capitalist approaches; small farmers will never be able to compete with the large producers. Governments are focussing on national output and very little consideration goes into the local re-distribution networks. This in itself leads to a paradox. Farmers with produce can't sell. Those without cant benefit from the prices of surplus produce.

It is time each sensible unit or geographical community was looked at: we need to move beyond availability to access and utilization. Answering these questions would help determine the directions and efforts to be put in place to assist the less privileged ones to enjoy at least two square meals in a day.

See model. [http://typo3.fao.org/fileadmin/user\\_upload/fsn/docs/Food\\_Model.pdf](http://typo3.fao.org/fileadmin/user_upload/fsn/docs/Food_Model.pdf)

Information about weather patterns, ongoing research and nutritional extension (support at village level on good nutrition etc) would then close any loopholes.

It is clear from statistics that even today as many in Sub-Saharan Africa go hungry, there is twice that number spending lots of money on health care for obesity and related health conditions. So the world has enough food.

Bottom line... we are not all equal and we need to see the numerous communities as such. National and global policies are good but in practice they hardly ever filter down to the bottom layers of society.

This is not a scientific argument but yet I am convinced we need to go down to those we often never see in the bigger picture!

Walter Mwasaa  
CARE

### **Contribution by Hartwig de Haen**

**Response to George Kent:** I agree very much that there are two issues which are quite different. One is ensuring that the global resource base is adequate to generate sufficient food supplies on a sustainable basis. The other is reducing, if not eliminating hunger and malnutrition now and preventing that hunger and malnutrition re-occur in future again. Thank you for reminding that the two should not be mixed up.

Generally, I also agree that the two issues require different policy approaches. This is most obvious when we consider the different timelines for action. For example, ensuring adequate supplies in the longer term requires inter alia measures like investment in research, irrigation and rural roads, but also investment in education and training, none of which will have a immediate positive effects for most of the about one billion people whose daily diet does not provide enough food energy and nutrients to conduct a healthy and active life. These people need help today and tomorrow. This help may be in the form of social safety nets including food or school feeding. Equally important is that these people need immediate access to income earning opportunities. Since most of the hungry and needy people live in rural areas, the real need is for the state to create a conducive social and economic environment for productive employment in rural areas. By the way, short term mobilization of investment and employment in favour of the rural poor is an example of policies that do indeed have the potential to promote both, ensuring sustainable supplies in the longer term and alleviating poverty and hunger.

**Response to Andrea Markos:** I fully agree, a very well written report!

**Response to Rene Gommès:** Many thanks, Rene, for the good point, it has been noted!

**Response to Moleka Mosisi:** Your reaction made me seriously think about the meaning of the central question raised in the title of the Forum. Can the question really be interpreted as 'ignoring the current food crisis and unnecessarily postponing to 2050 urgent solutions desperately needed by the more than one billion humans who are poor, hungry and malnourished today? This would indeed be an inexcusable and immoral lack of awareness of the urgency for action in favor of the hungry today. It would be a neglect of the fact that governments and the community of all who are better-off have an obligation to respect and fulfill the right to adequate food for everyone.

Needless to say that the originators of the basic question "How to Feed the World in 2050?" did certainly not want to convey the impression that they are more interested in the long-term food security than in short term hunger alleviation. However, I am sure your remarks may have an effect on the wording in further publications on the problem. On the other hand, we must acknowledge, and presumably you would agree with me on this, that the short term and the long-term action are interlinked. Action to alleviate hunger tomorrow must start with investment and policy reforms today, in favour of pro poor productivity growth, especially in rural areas. This is

because such reforms and investments take time to become fully effective. In the meantime, i. e. as long as the effects have not yet materialized, additional action is needed, such as the establishment of social safety nets in various forms, through which the most needy people get immediate access to food and fulfillment of other basic needs. More generally, measures to assist the poor, hungry and malnourished must have at least equal priority as investments in the resources and in research which will ensure that the global agriculture will be able to meet the demand of the growing world population in 2050.

It is true that ensuring long term global food supplies and short term hunger alleviation may require different policy measures. However, as I have noted in the response to another participant of this FSN Forum, there are also measures, in particular investment in the productivity of smallholder agriculture and related rural industries of poor countries, which can help achieve the long-term supply goals and at the same time enable the poor and hungry to help themselves.

**Response to Joy Selasi Afenyo:** Many thanks for the suggestions which are all pertinent in my view. I confirm in particular that more investment should be directed into in post harvest loss prevention and in enhanced food safety as an important aspect of food quality.

**Response to Ardhendu Chatterjee:** I fully subscribe to your sentence: ‘If we really wanted to reduce the number of hungry and malnourished it can be done’. Policies and investments in hunger and poverty reduction are a question of political will. There is no lack of consensus among experts on the best course of action. The real issue is that governments need to have the will to change priorities in favour of food security. Of course this means that other uses of public funds must be deemphasized, even if it hurts the better-off.

**Response to DSK Rao:** The statement that experts agree that the 9.1 billion people expected by 2050 can be fed was meant as a contrast to the lack of political will of governments which do not translate the experts’ recommendations into practical action. I fully agree with you and several other Forum participants that taking an outlook towards 2050 must not distract us from addressing today's hunger and malnutrition. Yet here again, it is not so much the experts, but the policy makers who need to address the issues. Finally, I agree that we are facing the fundamental risk that hunger continues to exist amidst adequate food supplies (at national or global levels). One billion people, most of them living in rural areas of developing countries, do neither have the income to buy the food they need nor the means and entitlements to produce it. This is, as you suggest, in stark contrast to people’s right to adequate food and should not be accepted under any circumstances. On the other hand, we must also recognize the encouraging aspect of the problem, which is that there are success stories in all developing regions, including in sub-Sahara Africa, where governments in cooperation with civil society, have indeed embarked on a course of action that has brought the prevalence of hunger down. Quite a number of them are even on track towards achieving the MDG One by 2015. Common characteristics of the policies of these countries include absence of conflict, good governance, investment in smallholder agriculture and rural infrastructure and social safety nets. More governments should be urged to learn from these success stories!

**Response to Mulia Nurhasan:** full agreement: diet diversity is very important to ensure an adequate intake of micronutrients!

**Response to Balakrishnaraj Neerchal:** I believe you are making an important point here. Adequate funding is a necessary, but not a sufficient condition for success of an investment. Equally important is an effective process, including a realistic strategic concept, clear goals and timelines for management action, social coherence, institution building and human resource development.

**Response to Rahul Banerjee:** I believe you rightly underline some of the advantages of organic agriculture, of watershed development, afforestation and improved dry land farming techniques, all of which can help reduce greenhouse gas emissions and keep dependence on external inputs

low. On the other hand, you need to recognize that organic agriculture can rarely reach the yield levels that high input agriculture has reached in areas of the world, and this by the way, not only due to subsidies. If farmers worldwide would all adopt organic agriculture, yield levels would go down significantly and the pressure to convert more forest and pasture into arable land might grow. This would be at the cost of many other ecologically useful functions of non-agricultural land use. In conclusion, while I fully share your view that the way forward should include organic agriculture in its very diverse forms, I would suggest that a wide range of options for technologies and farming systems with different input intensities should be given an equal chance. To avoid excessive external inputs use and exploitation of natural resources, governments and societies should establish adequate legislation with rules, norms and incentive systems.

**Response to Charlotte Dufour:** You have made several very interesting observations. I only wish to comment on the first: conflict with donor countries' interests. While you may be right in some cases that donors may have been reluctant to provide development assistance which would support agriculture which compete with their own farmers, I do not believe that this is the main reason why Official Development Assistance to agriculture in developing countries has declined so dramatically in the recent two decades. In my view, one main reason is that the governments of the recipient countries themselves, i. e. countries with high prevalence of hunger, have neglected their own smallholder agriculture. The shares of public budgets which many least developed countries have been allocating to agriculture and rural areas are often way out of proportion with the weight of rural areas in regard to the economic importance and social needs of the rural populations. Many of the least developed countries have still not changed priorities in favour of more investment in their own rural areas, although the majority of the poor and hungry live in their rural areas. Accordingly their governments have requested less assistance for their rural areas from the donors. Donor countries and financing organisations have followed this trend for too long, although in the recent few years various donors have started to urge for a renewed focus on rural development in support of food security.

**Response to Kevin Gallagher:** In my view you are overly critical with the role of chemical/mineral fertilizers for world food security. I am aware, and most experts will agree that certain pesticides are harmful for the environment or food quality and that in some locations fertilizer levels have been and are excessive, causing harmful nutrient leaching into groundwater and eutrophication of surface waters. However, you seem to be fundamentally sceptical regarding the useful role of mineral fertilizers and pesticides. I believe you should recognize the enormous progress that has been made in recent decades in regulating the production and use of synthetic inputs seeking to protect the natural resource base, although much more needs to be done in this regard. Moreover, I would ask you to imagine the (mostly negative) implications for food availability and prevalence of hunger which would have resulted in the world had these inputs not been used. While I fully agree that an earlier and clearer focus on technology that builds on natural cycles like nitrogen fixation and biological control could have mobilized additional supply potential and stabilized ecosystems as well as production, I am afraid that exclusive concentration on organic farming would still have been much lower overall supplies, rising prices and more food insecurity.

By the way, there was at least one very visionary author who, back in 1960, thought about how to feed the world in 2000 as you suggested. I am referring to Fritz Baade, at the time Director of the Kiel Institute of the World Economy who wrote the book 'Race to the Year 2000'. For him, there was no doubt that it would be possible to supply enough food for a world population in 2000, which he rightly projected at 6 – 6.5 billion. However, he based his optimism exactly on the possibility that world agriculture would continue to modernize on a broad scale, based on sustainable energy balances. Inter alia, he considered the use of mineral fertilizers to be vital in such a positive scenario. Interestingly, Baade saw three different main risks which made him very sceptical that hunger and misery would indeed be overcome: conflicts; lacking sense of responsibility in people's minds to address vital challenges for the future survival of humankind; and the inability of too many policy makers to find reasonable solutions to even simple problems.

**Response to Victor Oswaldo Puac:** Thank you for the very clear points which you are obviously making on the basis of a rich experience. I believe that you have a clear message when you underline that disaster relief must go hand in hand with disaster prevention and building resilience, that external assistance should be based on the active participation and empowerment of the local populations, that alleviating hunger is realization of a human right and that more efforts should be made to mobilize political for the fight against hunger!

**Response to Alemu Asfaw:** I believe you are putting your finger right on the fundamental cause of the problem, lack of access to food, resources and income earning opportunities due to a whole range of structural problems. I note your call for a paradigm shift and hope that this will trigger a more systematic analysis and open debate.

**Response to Peter Steele:** Thanks for your contribution, which provides plenty food for thought, very hard to digest! You are indeed describing frightening challenges, if I accept that we need an 80 to 90 percent improvement in resource use efficiency. I would be interested to know your views on two aspects. One: are you hopeful that these challenges will be met through a deliberate mobilization of human creativity and joint efforts world-wide? Two: do you agree that there is a good chance for a much reduced pressure on the resource base as a result of the ongoing slow-down of world wide population growth and the realistic prospects that the global population will stabilize before the end of our century?

**Response to P. K. Thampan:** In my view you are highlighting all the relevant factors that can make a farming system productive and resilient against external stress factors. I note in particular, your emphasis on the multiple benefits of trees, which has direct relevance for the forthcoming Copenhagen conference, which will hopefully recognize the positive climate role of trees and agree on ways how to better involve developing countries in Carbon markets.

**Response to K V Peter:** thank you for this visionary contribution.

**Response to Violet K. Mugalavai:** Thank you for the very concise description of the enormous and ambitious challenge that is before us, in particular governments of poor as well as rich countries, but also every citizen.

**Response to Yogendra Nath Das:** see my response to Virendra Kumar

**Response to Cavin Mugaura:** I agree that it will be important to bridge the information and communication divide, including all media, which exists between rural and urban areas, poorer and richer regions. This must certainly play an important role in efforts to promote rural development and improving food security. However, I would add that equal, if not even more deliberate efforts are needed to generate substance for the content of the information and communication. In other words, the key task must be to ensure that useful messages be carried to the people in need and that the thoughts and experiences of the people in need be transmitted to others through the same exchanges. To achieve this, more investment is needed in agricultural research and education, including in learning from the policies of countries which have been successful in reducing hunger and malnutrition.

**Response to Virendra Kumar:** Your suggestion that more public expenditure should go into rural development reflects a widely shared position. Assuming that you are familiar with the competing channels of expenditure in your state, I would submit that such suggestions may trigger even more public awareness and debate, if you would combine them with proposals of other domains of public expenditure which you would propose for scaling down.

### **Contribution by Patricia Methven from UK**

It maybe simplistic but teaching on “how to compost” locally might be a good way of providing fertiliser where it is needed, although the volume would depend on location but a scheme to provide bins/self build systems for a village using dung etc., would be carbon neutral.

Also free standing solar water heaters would reduce much of the wood gathering, these could be robust metal with tubes in the traditional sense just for boiling water, it would always be pre heated.

Are wells/pumps not crucial to everything, could these be a reason for a major funding push?

P. Methven

### **Contribution by Riccardo Rifici from the Ministry of Environment, Italy**

*Additional reasons for thinking of changing the present agriculture systems*

Dear FSN Forum Members,

I would like to focus again on the environmental and energy impacts of the agriculture system that have also been raised by Kevin Gallagher and in Hartwig de Haen response.

Many of the contributors agree that the present agriculture system has been imposed all over the world based on the need to achieve higher efficiency, in order to feed all inhabitants of the world. But although there has been an increase in the quantities of food produced, overall farmers have become poorer and many people still suffer hunger not because of a lack of food but because of a lack of money to buy food.

Moreover the actual agriculture system is not at all efficient, as many studies show. This model is not only one of the most polluting productive sectors but also it consumes much more energy than the one it produces in food. It can be said that until now it has been sustained thanks to the relatively low price of petrol. This is an inconvenient and worrying truth.

What's going to happen when the price of petrol will increase again? This will mean that it will be more expensive to withdraw water for irrigation, to buy fertilisers and plant protection products, to buy the fuel for the agriculture equipment.

Isn't it the case to engage from now in the changing of such system?

Although it is quite clear that the response cannot totally lie in organic agriculture (at least not today) but rather in a change of the actual agriculture system, giving more importance to the role (including the energetic role) of human labour.

Summing up, the core of the problem lies in these 2 aspects:

1. Understanding if the availability of food for people living in developing countries can be improved with an industrial agriculture model or with a different system
2. Recognising that, as a matter of fact, the actual agriculture model is not environmentally sustainable and will not be economically sustainable due to energy costs.

Last but not least, it may be that changing the actual agriculture system will entail a significant reduction of profits of certain multinational firms.

Riccardo Rifici  
Ministry of Environment  
Italy



### **Contribution by Renata Mirulla from FAO, Italy**

Dear all,

I would like to draw your attention to two documents that are relevant to the previous contribution:

- “Food & Farming Transition. Toward a post carbon food system”, by the Post Carbon Institute, downloadable from <http://postcarbon.org/food>
- “Organic Agriculture and Food Security in Africa”, by UNCTAD – UNEP, downloadable from:  
[http://www.unctad.org/trade\\_env/test1/publications/UNCTAD\\_DITC\\_TED\\_2007\\_15.pdf](http://www.unctad.org/trade_env/test1/publications/UNCTAD_DITC_TED_2007_15.pdf)

Renata Mirulla  
FAO  
Italy

### **Contribution by Anura Widana from New Zealand**

Hi all,

First, let me thank Hartwig de Haen for running a brief feed back under each response. I like this practice as it lets contributors know their submissions are considered. That said, I've some significant concerns on Hartwig's response to contributions on organic farming in this forum. My 3 points are below:

First, Hartwig asked the question whether the organic agriculture can rarely raise yields that high-input agriculture has reached in some areas of the world. I'm surprised by this comment as experience in several locations have already proved that yield level reached by organic farming is comparable or in some instances in fact, higher than high-input farming! This evidence comes from IITA (Agricultural Research for Development in Africa) research as well as in several other stations some of which are written up as well (see link below). Hence, I believe this comment is not really valid now that organic farming has already made substantial headways!

My second point is related to the first one. Hartwig makes the point on high-input farming benefits considering the output of just a single crop. This is what is all about high-input farming! What is more relevant in the context of feeding the world is NOT just a single crop output but what can be achieved from the farming system as a whole. It is in this respect that organic farming pays out more dividends compared to high-input farming is. Organic methods of farming promote the growth of several other plants (in addition to the main crop), creatures and associations which provide many-fold benefits to rural people not only in terms of food but also cash and supporting their entire livelihoods. Mulia Nurhasan from FAO Indonesia has made an excellent submission on several food and nutrition related benefits in the context of the Laotian paddy-based farming system which is predominantly (as yet!) organic-based. Such benefits as well as other employment and livelihood benefits would not be there under high-input farming! Isn't this a better way to feed the world's population rather than relying on a single crop which is the focus of high-input farming? In addition to food and livelihood support to rural people, the organic farming has wider benefits to the society at large such as increase in honey bee production, reduction of mosquito larvae (as predators feed on them) thus lowering the need for chemical methods of mosquito control, reduction in eco-system pollution including a slow-down in human poisoning by agro-chemicals, and the list goes on. Professionally, it is a weaker argument to say that high-input farming is able to feed the world without making a comparison on the overall benefits to the society by two systems of farming. The point is such a comparison is very-hard to find. Why making this comparison itself should not become the focus of the "expert" panel?

See this, the argument is still valid:

<http://agriculturas.leisa.info/index.php?url=show-blob-html.tpl&p%5Boid%5D=12138&p%5Baid%5D=211&p%5Bseq%5D=1>

See this link to see food and livelihood benefits derived by the Laotian paddy-based farming system and not just a single crop benefits:

<http://cid-d45da47840a43937.skydrive.live.com/browse.aspx/Food%20from%20chemicals-free%20paddy%20fields>

To elaborate the above point further, I would like to draw your attention to a Master's thesis produced by the University of Jayewardenapura, Sri Lanka. This research compared net benefits accrued to just 1-2 crops vis-a-vis some of the livelihood benefits for local people from *wewa* (small tank) based farming system in the country. The annual net benefits to a household were six times when total benefits were compared with just the value of a single crop, say paddy from this farming system. The economic value of farming systems benefits were four times larger than just the benefit of a single crop. These results are further corroborated by an IUCN (International Union for Conservation of Nature) study which has produced comparable results. Sad enough, investments on small *wewa* rehabilitation in Sri Lanka are justified through the evaluation of benefits produced by 1-2 crops!!

Hartwig suggests that government and societies should establish adequate legislation with rules, norms incentive system to avoid excessive external inputs use. My third point is that international agencies should set an example by following these rules, norms and value system established by developing country governments. Such governments more often than not, become a prey to short-term funds lured by multi-national agencies at the expense of indigenous and time-tested technologies in the developing countries. I do not want to dwell any more on this issue which has already been raised by several other contributors in this forum, which should be carefully considered by the expert panel.

On a separate note, it is necessary that food production and distribution efforts are worked through user organisations especially in the case of poor farmers. The dividends to organisation-based production control arrangements are already clear in a number of countries such as India (dairy and value-adding enterprises), Bangladesh (credit), Nepal (forest management), Sri Lanka (water management), etc. It is necessary that this final issue is highlighted by the forum.

See this link:

<http://zunia.org/post/group-approach-to-poverty-reduction/>

Good luck!

Anura Widana Ph D

Community Development Specialist

### **Contribution by Michael A Roy from CBRMP-LGED, Bangladesh**

Thanks for arranging the discussion. The topic is very crucial and has been raised in time. The introductory paper is also has rightly put the matter to guide the discussion.

To address the issue it may need some concerted efforts with diverse strategies. From a farmer to global leader should understand the crisis in a harmony and become responsive to the needs. The main challenge is how the message will be disseminated so that it may reach all and make them responsive.

The responsibilities lie on

- International organisations/forums/ institutes to form right convention



- Donor with proper strategy, focus and covenants
- Government to frame policy, regulation and programme to address the needs
- Institutions like civil society, NGO to stage campaign and advocacy
- Institutions for agriculture research to develop new appropriate technologies
- Market to become more responsive under proper regulation
- Communities to become aware of the situation and with the voice on the needs
- Farmer to produce more

All the above are to be happened and it may only be possible with mutual cooperation and commitment among above stakeholders

Farmer should have to be assisted with proper technologies and other assistances including incentive by concern institutions and government. Communities should be assisted by civil societies and NGOs to become aware of the situation and raise voices for their needs to the causes. Market should be regulated rightly by the government and other agencies to give access of the people to purchase food and sell their produce at right prices. Research institutions should be assisted by the government with proper funding and scope to develop effective and efficient technologies. Donor should be careful and more focused with their funding and proper compliances with covenants should be in place to ensure the use of fund for right causes with results. International organisations should frame conventions in a manner that can stir the world and make the concern committed to the causes.

If it works, don't think the world will face any food crisis. However for formulating any convention, policy, and strategy massive interactions are required among extended numbers of stakeholders. This open discussion in this regards really deserve thanks again towards that.

Michael A Roy  
CBRMP-LGED  
Bangladesh

### **Contribution by Stanford Blade from Alberta Agricultural Research Institute, Canada**

Dear Dr. de Haen and members of the Forum:

I find this discussion very fascinating. The depth and range of expertise of the individuals responding to the question(s) posed by Dr. de Haen is remarkable. The experience of participants is obvious as each person shares their perspective. We are shaped by what we have seen and accomplished.

In order to interpret my views (and biases), I am a plant breeder by training who grew up on a large dairy farm in western Canada. I have spent years in the CGIAR system (sub-Saharan Africa) as a doctoral student, research scientist and DDG-Research. I currently work within the Canadian R&D system setting strategy and investing in innovative ideas which will benefit producers, processors and consumers. I have just had an article published in Canada's national newspaper that identified Dr. Borlaug as my hero.

(<http://v1.theglobeandmail.com/servlet/story/LAC.20090929.IREM29ART2147//TPStory/Obituaries>).

Contributors have articulated the problems (as well as the opportunities) to feed the world in 2050 with great skill. At the risk of being redundant I will list my top three suggested areas of focus:

1. Invest in technology development and translation - society has always underestimated our ability to increase productivity.

2. Release the potential of farmers - provide the tools for farmers to succeed (market access, credit, risk management, acknowledgment of local knowledge).

3. Develop a balanced policy perspective that addresses economic, social and environmental sustainability (trade liberalization, value chain development, climate change, water issues)

My frustration with the Forum (and my own list) is that I have heard most of the same issues debated *ad nauseum* for the past 30 years. This is not to diminish the importance of these elements, but if we are to make progress with any of these issues we need to get the attention of people outside of our usual participant roster.

I would like to address the question of how we raise the level of global interest (and specifically that of decision makers who have the capability of directing resources) to the issues that will allow the world to be fed in 2050. How do we increase the excitement and engagement of the global group (municipal, provincial/state, national and international) that must balance investment in agri-food systems/communities with that of education, healthcare and other "competing" demands?

One suggestion:

Position agriculture as a "solution provider" - we can sequester carbon, enhance nutritional density, increase biodiversity, manage wetlands, be an economic driver in rural economies, increase the amount of calories made available and deliver a host of other answers to global issues. When leaders meet to debate an issue (healthcare, climate change, economic development), their first thought should be "how can agriculture help us with that"?

Other "crazy" ideas that need refining (as motivators to enhance public pressure to increase investment in agriculture):

Measure food production per capita, and publish a list in the Economist every year of which countries have increased their productivity. Perhaps an "enhanced value" ratio (value-added production/raw commodity exports) could be highlighted.

Create national programs where urban kids (and adults...and maybe political leaders) spend time in rural areas with farm families.

Create an "X Prize" by establishing a baseline of productivity/quality and have regional groups compete with each other to increase outputs for a significant prize. Or maybe a prize for a technological practice that doubles yield in a crop, system or region.

In summary, I agree that it is absolutely necessary to discuss how we will feed the world in 2050, but it may be just as important to discuss how will we generate global interest, engagement and support from individuals and organizations who do not currently see themselves as having any role in agriculture.

Stanford Blade, Ph.D., P.Ag.  
Executive Director  
Alberta Agricultural Research Institute  
Canada

### **Contribution by Asima Chakraborty from the Organisation for Peace Environment and Human Rights, India**

Dear FSN members,

I am Asima Chakraborty, from India to participate on the discussion in this forum. Virtually the subject of the discussion is essential to understand the real problem of feeding world in near or far future.

We may remember the past first. The world history people are the history of hunger, in the past of fifty years or five hundred years. The real history is hunger, malnutrition, diseases, famine, torture, poverty, displacement and deprivation of all human rights. On the other hand politics, arm-power, imperialism, money and autocracy ruled the world.

Present world system denied feed all the people. Is the world is not enough fertile to produce crops to feed? Not at all. More than 1.2 billion people are in extreme starvation. More than 3 billion people are marginally poor. Only 1 billion people are living in luxurious lives and enjoy a lion's share of the world resources. Obviously the major section of these poor people is living in the third world countries. On the other hand the major section of the rich people is living in the first world countries.

Now we may ask whether the state rulers of the third world countries:

- Whether the third world states can manage globalization?
- Whether the states are out of imperialism?
- Whether the states respect human rights?
- Whether the ruling political parties of the states willing to develop standard of living than autocracy?
- Whether the ruling government can deny of their economy depends on state promoted capitalism or affected from transnational neo-imperialism?

In the first phase we can fetch the real reasons of poverty and hunger. The world has enough efficiency producing crops to feed the entire people of the world. But poor people cannot afford due to poor income level.

Thank you all

Asima Chakraborty  
General Secretary  
The Organization for Peace Environment and Human Rights (TOPER)  
NGO  
Kolkata, India

### **Contribution by Andrew MacMillan from Italy**

Friends,

Hartwig asks "Why are so many governments still reluctant to change priorities and invest in hunger reduction? Do they lack the political will to adopt a long term strategy towards food security for all?"

It will, of course, be a great deal easier to feed the world in 2050, if we do everything that can be done now to make sure that everyone who is already alive can eat adequately, supplied with food that is produced in ways that do not lead to a deterioration in the natural resources required to support expanded food production in the future. What we succeed in doing now will set precedents on which to build valid strategies for achieving the longer term goal.

The issue of political will is, of course, fundamental. So is the choice of instruments.

In most countries, especially democratic ones, the political determination to take action on a specific issue is a reflection of the extent of public support that is expressed for such actions. My own experience suggests that in very few countries is there any popular (i.e. voter) awareness of the scale of the hunger and malnutrition problem, the vast human suffering it causes, and the huge economic and security threats that it poses. People who have televisions know about acute hunger, caused by crises – conflicts, droughts or tsunamis – and these visible disasters trigger an outpouring of sympathy and solidarity with the victims. But most hunger and malnutrition is hidden from sight, especially from the sight of those living in developed countries. And when the issue is raised, most people with whom I have discussed it believe that, if there is such widespread hunger, it is because there is a shortage of food in the world which prevents everyone from eating properly. Some take this further and believe that, if others are to be fed adequately, this means that they will have to eat less. Fortunately, at least for the moment, that is not so.

The Jubilee 2000 campaign that played such an important role in getting the international community to act on debt reduction, showed that, once people understand that their governments, through their negligence, are needlessly perpetuating an injustice, they will become very vocal in their support for decisive action – and governments will listen. I would argue that there can be no greater injustice inflicted by humans upon each other than to condemn one in 6 people to spend their brief life on earth without access to the food that they need for a healthy and joyful life, when, for decades, there has been enough food in the world for all (to the point that developed countries have been paying farmers to take land out of production!).

As a result of lack of public knowledge and support, governments are naturally hesitant about committing themselves to serious action against hunger and malnutrition. This reluctance may be compounded by the pressures coming from urban elites to adopt policies that benefit them rather than the population as a whole.

**So my first point is that, to generate genuine political commitment, there is a need for a massive campaign aimed at raising popular awareness throughout the world about the problems of hunger and malnutrition and the solutions, with the aim that this should express itself in strong support for serious action.**

What we have also seen are commitments to end hunger being made by governments, especially in Summits and high-level meetings, and then an absence of follow-up action. One possible excuse for this is that, for years, the “international community” spread the idea that hunger would diminish as a consequence of poverty reduction, thus encouraging a *laissez-faire* approach to the problem. Some of us have been preaching that “hunger is both a cause and an effect of poverty” and arguing that there will be little progress in reducing poverty without taking direct measures to reduce hunger – a view that seems to be gradually gaining ground.

But the main reason for lack of follow-up action by governments is that no country that has endorsed a global goal at a Summit can be held accountable for any particular actions to ensure that the goal is achieved. It would be difficult for any Head of State to come to Rome and not endorse a global goal for eradication of hunger when he or she is speaking – but unless this commitment to a global goal is translated into a national commitment and into plans on how the goal will be achieved, the global commitment is bound to be largely meaningless.

**My second point is, therefore, that, in endorsing a global goal for eradicating hunger and malnutrition, governments should agree to translate this into a voluntary national declaration of commitment and a national food security and nutrition action plan (in which they describe how they will achieve the goal in their country and how they will help other committed countries to achieve it). The Declaration and the Action Plan should be**

**deposited in an International Public Register – for all to see – as an indication of the government’s willingness to be held accountable for delivery on its commitments.**

I am very glad that these two points are now being taken up and carried forward by a group of CSOs/NGOs: see <http://www.moreandbetter.org/en/news/declaration-from-governments-to-eradicate-hunger-and-malnutrition>, join the “yahoo group” at [http://groups.yahoo.com/group/Anti-hunger\\_commitment/](http://groups.yahoo.com/group/Anti-hunger_commitment/) or view the latest paper on the initiative (including contact addresses) in this forum’s resources at [http://typo3.fao.org/fileadmin/user\\_upload/fsn/docs/Background\\_Paper\\_and\\_Draft\\_DoC\\_25Sept.pdf](http://typo3.fao.org/fileadmin/user_upload/fsn/docs/Background_Paper_and_Draft_DoC_25Sept.pdf).

Many of us argue that ending hunger and malnutrition is entirely possible. However, the choice of instruments is important. This must be a national choice, that takes account of the specific local situation and is arrived at through consultation with the people most affected, and with recognised sources of expertise, both national and international. My concern is that the discourse on food security continues to be dominated by a focus on agricultural development. Though vitally important – and I am delighted to see the increasing attention given to small-holder farming and the search for more sustainable technologies for raising productivity in intensive farming systems – progress in reducing the number of people who are hungry and malnourished will be very slow unless more resources are also devoted to social security and social protection programmes. These complement the agricultural development initiatives because they provide the means by which the food needs of the hungry can be quickly translated into effective demand, and so stimulate expanded production. Measures to raise output must go hand in hand with measures to raise consumption and improve nutrition within the most needy sectors of the population. Well designed social protection programmes will protect small-farmers’ assets at times of shock, and can generate new productive infrastructure, especially in rural areas. By enabling people to eat better, they create a greater learning and working capacity and reduce losses due to ill health and premature death, and hence generate their own stream of benefits.

**So my third point is that, if political commitment is sustained, it is vital to be able to demonstrate that programmes achieve quick and lasting results. This will usually require that governments take simultaneous action to expand food output (especially by those farmers that are themselves food insecure) and to broaden access to food, as well as offer guidance on nutrition.**

Looking to the longer term, it is clear that there are all kinds of things that we need to do now, to see that the world can still feed all its people adequately in 2050 (and between now and then). We have to shift rapidly away from the present intensive farming technologies that are enormously damaging to the very resources (agro-biodiversity, soils, water etc) required to raise future food output towards an entirely new suite of truly sustainable technologies that harness ecological services and offer greater resilience to shocks (especially climate-induced shocks). We need to move towards global food management systems that have, as their basic objective, the assurance that everyone has enough to eat – including drawing up in place contingency plans to adjust consumption patterns and reduce waste should global food supplies fall short of unrestrained demand. We need to take action to conserve prime quality agricultural land for future food production, restraining its permanent conversion to non-agricultural uses. And we need to find ways of preventing the unilateral actions of one country or group of countries from worsening the food security situation in other countries.

**My final point, therefore, is that the reformed CFS, if it is to contribute effectively to Feeding the World now and in 2050, must be given a very clear mandate to address the above types of global issues and to ensure that timely action is taken on them. This vital global policy-making role is insufficiently explicit in the CFS Reform Proposal, posted on 18 September, which I believe should respond to the following principles:**

- Any new or strengthened international governance institution must focus its attention mainly on identifying and addressing those issues that require multilateral actions to assure that the following two objectives are met:
  - Ensure that everyone in the world is able to enjoy their right to adequate food as soon as possible
  - Safeguard the availability of adequate food for future generations
- Decision-making on global policy issues, including the approval of international conventions and treaties, in this institutional framework, has to be by governments, acting multilaterally, but respecting an institutional code of conduct that obliges them to subordinate national and regional interests to concerns for the impact of their decisions and recommendations on the global “good”;
- The institution must be endowed with the authority and resources needed to ensure that its members can be held accountable for taking actions to implement decisions taken in the global interest;
- The institution may for most purposes report to the governing bodies of the international organizations that provide the Secretariat: however, it may, as considered necessary by the participating governments, also submit issues for decision-making either by UN General Assembly or by the Security Council.
- In order to ensure coverage of all of the major dimensions of food security, the Secretariat must be provided jointly by those international agencies most concerned, and report to their governing bodies. It may also establish partnerships with other relevant international bodies.
- In line with the principles of subsidiarity, States are responsible for internalising their international commitments;
- Should States, however, require access to financial resources or technical cooperation, the capacity of international institutions to respond efficiently and impartially to their demands for funding and services needs to be improved.
- In order to secure the fullest possible access to available knowledge and expertise as well as to strengthen reporting, monitoring and accountability processes, international institutions may engage in various forms of partnership with other international institutions, regional bodies and civil society institutions, including engaging them as observers and partners in their decision-making fora, as well in operational work to respond to country demands in a joined up manner.

Andrew MacMillan

**Contribution by C.L. van Beijma thoe Kingma from the Association Nieuwe Natuur?, Nee! Behoudt ons Agrarisch Cultuurlandschap, The Netherlands**

***Who stops the increasing waste of arable lands?***

As the chair of a Dutch Association which aims to preserve the agricultural destination of arable land in the Netherlands, I would like to offer the following observations:

At the occasion of the World Food Day (WFD) in 2006, the FAO Director-General stated among other things that: “Agriculture may have become a minor player in many industrialized economies, but it must play a starring role on the world stage if we are to bring down the curtain on hunger”

***A few words on the arable land situation in the Netherlands***

Because of various economic and environmental reasons, there are plans (with some projects already partly being implemented) to withdraw – on a large scale – land (including very fertile soil) from its present agricultural use.

Lands to be withdrawn from agricultural use, will be totally inundated or converted into marshlands, or even vegetable earth will be removed hoping that special plants will develop. Such initiatives are not only taken by the national government, but also by local authorities and even by private persons, who can obtain subsidies to do so.

All these initiatives are captured under the term “Nature Development”, and the areas affected are called ‘nature area’. Activities by the national government alone are foreseen to increase the ‘nature area’ from about 490 to 730 thousand ha, or an increase of about 240 thousand ha.

Since the national government, and also local governments and corporations have many more plans to convert arable land into land for non-agricultural use (and this does not include land withdrawn for residential and infrastructure purposes), plans which are often still in the early phases of formulation, it is difficult to see where this transformation of arable land will end. This was confirmed in an answer by the Dutch Minister of Agriculture to a question concerning the total area involved, in which she stated that it was impossible to give an exact answer as a consequence of the great number of actors involved.

### **Conclusion**

Based on the above-mentioned observations, my association is concerned that the Netherlands will not be able to contribute a proportional part of the goal stated at the 1996 World Food Summit to “... double food production in the next 30 years”.

Recently the Minister of Agriculture did say not to expect that the food production should diminish as result of the loss of arable land (in the Netherlands). We as an association however are concerned that, due to the loss in arable land, the Netherlands will not be in a position to contribute its fair share to any target that might be set by FAO for 2050, in particular bearing in mind that any the increase in agricultural production will for ninety percent have to be produced on existing land.

We as an association therefore would like to see (i) that the October 2009 FAO Forum would pronounce itself as to how much land should be used for agriculture and ecological purposes, and (ii) that the Forum will subscribe to the notion that agriculture “..must play a starring role on the world stage if we are to bring down the curtain on hunger” as stated by the FAO Director-General in his 2006 WFD message.

Jhr Mr C.L.van Beijma thoe Kingma  
Chair Vereniging Nieuwe Natuur?,Nee!  
Behoudt ons Agrarisch Cultuurlandschap.  
The Netherlands

### **Contribution by Thomas Mokake from the World Food Programme, Italy**

Dear All

I cannot agree less with the contributions from Stanford Blade.

a).However, while we focus on sustainable agriculture development as the key to feed the hungry, we should not lose sight of the importance to combat poverty that drives hunger. New avenues for job creation and improved household incomes that enable families get out of the hunger trap should be developed, considering the experiences of the recent world economic recession and near saturation of the classical job market.

The FSN Forum members may need to consider unemployment -poverty-hunger relationships, in view of the growing numbers of educated youth requiring skills to match the new potential employment sectors: managing effects of climate change, sustainable water management for agricultural production, plant/animal genetic engineering, etc..

b). Why is all the investment in over half a century today, by both the international community and national governments in Capacity Development to promote agricultural production/productivity not giving the desired results in hunger reduction and reducing of the hungry population numbers?

Best Regards

Thomas Mokake  
Programme Officer  
Cooperation and Partnership Unit  
Reversing Food Aid Dependency  
WFP

### **Contribution by Hartwig de Haen**

**Response to Walter Mwasaa:** I agree with you (and many of the other FSN participants) that 'we need to move from availability to access and utilization' of food. We need a broader discussion about what kind of policies this need entails. In my view it entails higher priority for three policy entry points: (1) public investment in productivity enhancing technologies from which the poor (rural as well as urban, in and outside agriculture) can benefit the most; (2) stronger institutions, which provide social services and extension for poor families on ways to help themselves (health, education, farm extension, nutrition); (3) social safety nets which ensure the realization of human rights, including the right to food, meaning that everybody has physical or economic access to a minimum level of food, water, health services etc. Especially children and their mothers need to be reached.

**Response to Patricia Methven:** I believe that your ideas regarding advice and infrastructure for the production of good compost as a cheap source of plant nutrients are extremely relevant. However, presumably there are already numerous projects in which this and your other suggestions are already being promoted. I only wish to caution with regard to the spread of further wells and pumps. This is only a sustainable solution in areas with adequate ground water supplies. 1.4 billion people live already in areas with sinking ground water levels.

**Response to Riccardo Rifici:** I agree with you that agriculture systems, which rely on high fossil energy inputs are often not efficient and even less as the price of oil rises further. And I also agree that the response cannot totally lie in organic agriculture. Obviously, there is a need for broad mix of technological options that are well adapted to the local economic and ecological conditions. More generally, aiming for more sustainable technologies to raise productivity in intensive farming systems, public research must focus on small-holder farming.

**Response to Anura Widana:** I thank you for re-opening the debate on organic farming. It gives me the opportunity to clarify that I am of course fully aware of the examples in many locations of the world where systems of organic farming have produced high yield levels, even higher than yields in comparable conventional farming. (I add that the comparative advantage of organic farming can even be realized with lower yields due to lower production costs and often higher market prices). I also agree with you that organic farming often has wider benefits to the society at large, which must be included in a comprehensive assessment. These benefits include the better compatibility with the local ecosystems, the superior greenhouse gas balance and advantages for the biodiversity. The point on which we presumably disagree is the generalization from these various advantages of organic farming compared to conventional farming. When you say that the 'yield level reached by organic farming is comparable or in some instances in fact, higher than high-input farming' this sounds to me that you see a general advantage, i. e. at global scale. I just do not recognize the empirical evidence for this broad advantage and therefore I plead to establish fair and market oriented conditions in which all these farming systems, organic



and conventional, can co-exist, of course all adhering to meaningful ecological standards and rules.

**Response to Stanford Blade:** In my view you are again putting your finger on the right spot, namely: 'How do we increase the excitement and engagement of the global group?' I believe that we need to draw the attention of a broader public to the enormous costs, injustice and moral unacceptability of not taking action against hunger and malnutrition. Only through such broad awareness can we expect that governments and lawmakers will feel motivated to change priorities and take the right action. Your not at all 'crazy' ideas are creative examples of action that can be considered, mobilized by competition of ideas. However, I would submit that your focus on production and productivity performance needs to be supplemented by action which draws attention to action that has helped improve the situation of the poor and malnourished, especially the rural poor who represent the majority of the poor.

**Response to Asima Chakraborty:** Your list of questions seems to express a deep frustration which I understand, noting that there really is no acceptable justification of hunger and poverty in a world of plenty.

**Response to Andrew MacMillan:** Thank you for the very comprehensive comments and suggestions. I couldn't agree more with all your points. I agree in particular when you underline the need to generate genuine political commitment through a massive campaign for raising popular awareness throughout the world. I share your experience that, in spite of ample empirical evidence, ignorance about the magnitude of the social and economic consequences hunger and malnutrition is still wide spread. Even many experts in development strategy seem not to appreciate the fact that overcoming hunger and malnutrition is a truly vital precondition for the achievement of many of the other global development goals, for example achieving widespread primary education, reduction of child mortality and improving general, including maternal health.

Furthermore, I agree that measures which ensure an adequate and sustainable food supply in the long term need to be complemented by equally important short term programmes which provide social security and social protection for the neediest to have access to the food they need to survive and to enjoy a life in dignity.

Personally I hope that the forthcoming Forum and the subsequent Summit will support the idea of an International Public Register, which governments can join not only to confirm their determination to establish a realistic national plan for hunger eradication but also to accept that they will be held accountable for the implantation of such a plan.

**Response to C.L. van Beijma thoe Kingma:** To begin, I should underline that I am not familiar with the specific situation of land use structure in the Netherlands, including in particular the relative benefits of alternative land use options in terms of producing basis agricultural commodities versus generation of other environmental services such as maintaining biodiversity, water balances, landscape maintenance or regeneration of wetlands. I only wish to state that there may very well be situations in which a comprehensive evaluation of costs and benefits may reach the conclusion that a non-agricultural land use is the preferable option under the given circumstances. Of course, the comparative advantage of producing food or feed on a piece of land will increase should the scarcity and hence the price of food increases in the future.

But even then, you may wish to consider that there are two alternatives to extending agricultural land use in the Netherlands as a contribution to future worldwide growth of agricultural production: (1) *expansion of arable land in other parts of the world*. There are indeed considerable land reserves which could in theory be converted to arable land, especially in Latin America and Sub-Sahara Africa. Even though the extent to which this can be realized is rather limited, FAO projects that by 2050 the area of arable land will be expanded by 70 million hectares, or about 5 percent. This would be the net balance of an expansion by 120 million hectares in the developing countries and a contraction of arable land in favour of other uses in developed countries by 50 million hectares. (2) *Yield growth and higher cropping intensity*. Already in the past 4 to 5 decades, almost 80 percent of global growth in agricultural production

has been achieved as a result of yield growth, 7 percent came from increased cropping (more than one harvest per year) and only 15 percent were due to arable land expansion. In the developing countries the share of yield growth was slightly lower, but also around 70 percent. For the future, FAO expects that globally 90 percent (80 percent in developing countries) of the growth in crop production will come from intensification, in particular higher yields and increased cropping intensity.

In conclusion, expansion of land use for normal agricultural production will play a declining role. I should add that this perspective does by no means diminish the importance to ensure that current agricultural land is kept in top fertility and withdrawal of land is kept to a minimum and limited to cases where the non-agricultural use has clearly recognized advantages.

**Response to Thomas Mokake:** With regard to your point a, I fully agree and refer you to my own response to Stanford Blade. Your point b touches upon the very fundamentals of the substance and modalities of development cooperation. Although some partial answers have been attempted in the various contributions to this FSN Forum, the question is so important and the need for answers so complex that this would certainly warrant opening a new FSN Forum focussing on just this question.

### **Contribution by Sadhan Kumar from Kerala Agricultural University, India**

Dear FSN members,

I am Sadhan Kumar from South India participating for the first time in the discussions in this forum.

In the first half of this century, the world's population will grow to around 9 billion. Demand for food, feed and fiber will nearly double. The demand for food is expected to grow as a result of population growth and rising incomes. I want to emphasise two points:

- Changing food habits:

Three plant species (rice, wheat and maize) provide more than half the dietary energy of the world's population. There is need to change this food habit. Locally important minor crops should be popularized. Underutilised underexploited crops should be given priority.

- Changing to C4 metabolism:

Possibilities of adapting C4 species to new environments and also transferring the C4 metabolism to important C3 species should be explored.

Thank you all

Prof.P.G Sadhan Kumar, Ph.D.  
Kerala Agricultural University  
India.

### **Contribution by Thomas Mokake from the Word Food Programme, Italy**

Dear Colleagues

I could not agree less with the contribution from Andrew MacMillan.

If the Right to Food is a human right, and the FAO is handling the technical aspect of it, globally, what stops the UN Office of the High Commission on Human Rights from handling the legal and Constitutional aspect of the Right to Food, and thus oversee how governments remain accountable for food security and proper nutrition of their citizens. This may sound like interfering in domestic affairs of states ---- but when hunger confronts a country, the UN is called upon to

intervene...should the UN only manage crisis, and why not pre-empt them from occurring in a more effective and constitutional but durable manner.

In addition, the UN High Commission for Human Rights should promote civil society action in holding their governments accountable for food security, because there has been a plethora of World Summits on Food Security with declarations and commitments which have accumulated a lot of dust in the shelves of government offices, especially in Sub Saharian Africa (SSA). Multiplying these summits and awareness building among the population is not the answer --- the world including the villager in the remote rural areas of SSA is aware of the causes and consequences of hunger - however the problem is that citizens are toothless in holding their governments accountable. I need to be given proof of any allusion to food security in the manifesto of any political party during election campaigns in SSA.

Best regards

Thomas Mokake  
Programme Officer  
Cooperation and Partnership Unit  
Reversing Food Aid Dependency

#### **Contribution by Patrick Chatenay from UK**

Dear All,

Though somewhat depressing, Dr Stanford Blade's contention that "(we) have heard most of the same issues debated ad nauseum for the past 30 years" is spot on the mark. He is also right to focus on raising "the level of global interest ... of decision makers who have the capability of directing resources ... to the issues that will allow the world to be fed in 2050", and his suggestions are sensible and welcome. So are Andrew MacMillan's detailed proposals aiming to strengthen and implement the political commitment to food security world-wide?

They both touch upon what is – in my view – the major factor in addressing food supply: agricultural policy. Interestingly, Andrew MacMillan mentions that the international community adopts "a laissez-faire approach to the problem" which has dismally failed to solve it.

I believe it is precisely the role of the FAO to bring to the attention of policy-makers world-wide the right policy recipes for increasing and securing food. The FAO should look back in history; find which policies have succeeded in augmenting farm output and then champion them to governments.

A major hurdle, of course, will be that successful agricultural policies are incompatible with free trade as conceived by the international community today.

Good luck!

Patrick Chatenay

#### **Contribution by Brian Thompson, Irela Mazar, Juliet Aphane, Leslie Amoroso, Nomindelger Bayasgalanbat and Janice Meerman from FAO, Italy**

Dear friends and colleagues,

In preparing for the High Level Forum on "How to feed the World by 2050" it is critical that in discussing the issues raised by Mr. de Haen we take special care to examine ways in which support for agriculture and food security can lead to explicit improvements in people's nutritional welfare. In short we need to link agricultural investment to improvements in food and nutrition security so that the "nutrition gap" is closed.

Agricultural development programmes that aim to address food security solely via increased production of staple crops, while essential, are insufficient for alleviating hunger and malnutrition. To address these issues fully and effectively, efforts to improve food security must be accompanied by efforts to improve nutrition security. Nutrition security refers to the “quality” component of food production, consumption and physiological need. That is, while food security may increase the total quantity of energy consumed – typically via increased production and consumption of staple foods – only nutrition security can guarantee the quality and diversity of food necessary for good health and nutritional status. Programmes aimed solely at increasing production, raising incomes and increasing energy intake will not reduce malnutrition as effectively as programmes that also recognize the importance of diet quality and diversity. For instance, animal source foods, legumes, fruits and vegetables are important components of nutrition security. These foods are important sources of protein, fat and micronutrients. The iron and zinc, for example, contained in animal source foods are critical to good nutrition and health outcomes. Thus, the agricultural sector can contribute to nutrition security through small livestock and poultry ventures, aquaculture, horticulture and extension programmes that educate consumers about the important nutritional aspects of these foods.

#### Making nutrition security a priority area for investment

In developing countries, 178 million or one in three children under the age of five is stunted due to chronic malnutrition, and 148 million children are underweight. Moreover, micronutrient malnutrition affects approximately 2 billion people, over 30 percent of the world's population [UNICEF 2009]. Malnutrition is accompanied by serious physical incapacity, impairment, illness and disease, and incurs incalculable social losses, including premature death, bereavement and suffering. Taking action to reduce malnutrition is not only a moral imperative; it is also integral to sustained economic growth and national development. The economic costs of hunger include (1) direct costs of lost productivity, lost earnings and the medical care required to treat those suffering from malnutrition and associated diseases, including those related to excess consumption (overweight and obesity, heart disease, diabetes and stroke) and (2) indirect costs due to compromised cognitive and physical development, as shown, for example, in a 2004 FAO report that attributed up to 14 percent lost productivity and earnings in adulthood to stunting in childhood.

It is clear making nutrition security a priority area for investment is not only a moral imperative, it is integral to sustained economic growth and national development.

#### Agriculture-based interventions to improve nutrition security

Advances in agriculture are typically framed in terms of narrowing the gap between current and potential production yields. However, there is another type of gap that exists, the “nutrition gap” which refers to (1) increasing availability and access to the foods necessary for a healthy diet, and (2) increasing actual intake of those foods. The investment options discussed below, while viable from a yield gap perspective, are presented as strategies to narrow the nutrition gap. Each aims to boost production and/or consumption of a diversity of high quality foods. While it is important to note that none of these interventions will eliminate malnutrition on its own, each represents an initial step in narrowing the nutrition gap. Moreover, each is compatible with traditional agricultural development objectives:

Agricultural extension services to offer communities information and improved inputs, including seed and cultivars for better crop diversity, and small livestock and poultry ventures, marine fisheries and aquaculture for improved dietary diversity

Agricultural extension services to provide nutrition education at the community level

Research and development (R&D) programmes selectively breed plants and livestock to enhance nutritional quality, namely by increasing micronutrient content

## Micronutrient supplementation of compound fertilizers

Reduction of post harvest losses via improved handling, preservation, storage, preparation and processing techniques

Each intervention category can be adapted to a wide range of countries, agro ecological zones, and food typologies. In warm arid and semi-arid tropics, introduction of drought-tolerant cultivars that have also been bred to include high levels of micronutrients should be a priority. In addition, these areas are good candidates for agricultural extension services that increase awareness and consumption of existing local or indigenous plant and animal products to improve nutrition. For example, intercropping cereal crops with drought-resistant legumes such as cow pea or pigeon pea improves both nutrition and food security, the former via increased protein intake, the latter via increased nitrogen fixation and subsequent increased yield.

In warm sub-humid tropics, a common problem is the inability of farmers to invest in fertilizers needed to overcome soil acidity (due primarily to lack of availability and purchasing power). Although fertilizer use is typically associated with production potential and food security, enhancing the micronutrient and trace element (iodine, zinc, iron) content of crops by applying enriched fertilizers to the soil might also improve nutrition security. This measure is, by itself, insufficient to address dietary deficiencies in zinc, iodine and iron. However, it could be used in conjunction with other nutrition-based interventions to maximize efficacy. Micronutrient-enriched fertilizers might have particular potential where input subsidy schemes are already reaching large numbers of farmers.

In warm humid tropics, production may be sufficient in terms of calories but diets may still be deficient in micronutrients and some macronutrients. In Ghana, dietary energy supply meets population energy requirements but shares of protein and lipids are lower than recommended. This is the case for a number of reasons, including factors that extend beyond the purview of direct agricultural interventions (e.g. constrained access due to poor infrastructure). Nevertheless, lack of nutrition education is also a factor and extension services that provide information on crop and dietary diversification could have an impact. Introduction of cereal-legume mixing maximizes protein availability, and horticultural training improves access to and availability of micronutrient-rich vegetables and fruit. Horticulture also has the potential to increase incomes via produce sales, assuming transaction costs (e.g. access to markets) are not prohibitive. Further, selective breeding to increase the protein content of cassava, a central component of this zone's food typology, could increase macronutrient intake.

In addition to the benefits listed above, these interventions are excellent investment options in terms of their potential to increase women's roles in managing productive assets. The resources and income flows that women control wield disproportionately positive impacts on household health and nutrition [World Bank, 2007]. In many cases, these interventions increase women's access to services, technology, and income generating opportunities.

### What can be achieved? Where can FAO assist?

Agriculture has great potential to alleviate poverty and improve the food and nutrition situation in vulnerable rural communities. FAO is at the forefront of global efforts to incorporate nutrition objectives into agricultural development policies and programmes. Through its expertise in nutrition assessment, policy advice, food-based nutrition programmes and nutrition education and policy advice, FAO has a strong comparative advantage in providing the knowledge and technical support required to narrow the nutrition gap in developing countries. Further, FAO is uniquely positioned to work closely with technical experts in agricultural R&D, agricultural extension, fisheries and livestock to increase crop and dietary diversity for improved nutrition outcomes.

Simply put, nutrition security should be a priority in all areas where food security is a challenge. Doing so requires explicit incorporation of nutrition objectives into the design and implementation

of agriculture development initiatives to ensure they are i) not detrimental to nutrition and that ii) potential opportunities to improve nutrition are identified and fully utilized.

Best regards

Brian Thompson, Irela Mazar, Juliet Aphane, Leslie Amoroso, Nomindelger Bayasgalanbat and Janice Meerman of FAO's Household Food Security, Nutrition and Livelihoods Group

**Contribution by P.K. Thampan from the Peekay Tree Crops Development Foundation, India**

Dear Members,

Dr. Anura Widana has highlighted the efficiency of organic agriculture in producing multiple crops as against one or two crops under high input cropping system. Organic agriculture system (OAS) has been practised for long with success by many traditional farming communities in India as well as in other developing countries. The system depends on the primary production capacity of the soil resource and the positive biotic interactions in the agro-ecosystem. It manages the agro-ecosystem as a self-reliant organic system based on the regenerative capacity of a biologically active soil and the beneficial interactions of the different components involved. Though OAS sustains a continuous process of nutrient cycling and nutrient addition within the agro-ecosystem, transfer of organic inputs from external sources may also become necessary especially when high intensity cropping systems are followed.

Organic agriculture makes agro-ecosystem self-supporting in all respects by promoting diversity in the cropping system, mixed farming and appropriate agronomic practices which are consistent with the local edaphic and climatic conditions. Diversity in the cropping system is introduced through mixed cropping, crop rotation, agro-forestry etc. depending on the local farming conditions. Mixed farming benefits the agro-ecosystem by optimizing the interactive synergy of crops and livestock components. The system and practices of agro-forestry involving compatible combinations of tree species and arable crops with or without livestock components have a protective influence on the ecological base of farming besides being economically viable. Thus, OAS stimulates the underlying productive capacity of the soil resource and sustains optimum levels of agricultural output without eroding or deteriorating the natural resource base. On the other hand modern farming aims at maximizing the production of one or two major crops by resorting to the use of synthetic fertilizers and plant protection chemicals without regard to the health and underlying productivity of the soil resource. This causes slow but steady degradation of the ecological base of farming leading to gradual decline in agricultural productivity.

In many countries the farmers have adopted intensive homestead farming system for producing multiple crops and livestock products to satisfy the food and cash needs of the family. In Kerala, India, the coconut farmers generally adopt intensive integrated agriculture in their holdings involving a combination of diverse food crops and livestock components. Through this farming system, in most instances organically managed, the farmers could generate multiple sources of food, income and employment at the farm-household level. The approach adopted is not to maximize the production of coconut through high-input farming but to produce diverse foods including livestock products from the same operational unit without damaging the ecological base of farming.

Regards,

P.K.Thampan  
Peekay Tree Crops Development Foundation  
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## **Contribution by Geoff Tansey from UK**

Dear FSN Forum members,

I would like to make a contribution to this important discussion by introducing briefly some core issues we need to take into account if we want to shift to a fair and sustainable food system.

We do not have the right rules globally and nationally, nor the institutions, incentives and practices, to deliver a well-fed world now, let alone in 2050

I will first describe the core trends in the food system up to now and then propose some things to do to ensure the food system contributes to achieving food security for all.

These and further issues are analysed in a recent book ("The future control of food. A Guide to International Negotiations and Rules on Intellectual Property, Biodiversity and Food Security") that can be downloaded freely in [English](#) and [Spanish](#).

To introduce myself, after having worked on food policies and agricultural development, for the last 10 year I have focused on the global rules affecting food, especially those on patents and other forms of intellectual property ([www.tansey.org.uk](http://www.tansey.org.uk))

### **Looking at the core trends in the actual food sector**

The core trends in the food system that dominates today have been driven by developments in the OECD countries, with saturated markets and the type of farming there. This is a fossil-fuel based, industrial and intensive approach, based on competition amongst and between the food system actors –input suppliers, traders, processors, retailers and caterers – for who makes what money out of the food system, which has squeezed both farmers and workers and aims to create new needs and demands amongst consumer for more profitable – or "value added" – products.

Within each of these areas, we have seen a growing economic concentration of power.

We have also seen a progressive deterioration in the terms of trade for rural people and farmers, the squeezing out of smaller farmers, the replacement of detailed local knowledge and labour using practices with broadly adapted varieties and breeds requiring fertiliser, pesticides and veterinary drugs to ensure productivity in more monocultural farming systems.

Furthermore, rules and regulations - and in particular those on intellectual property law - have become a key battleground in the past few decades, and, especially, since the global extension of minimum intellectual property standards through the TRIPS Agreement (World Trade Organisation Agreement on Trade-Related Aspects of Intellectual Property Rights), that offered a way to gain control of the base of the food chain by former chemical industries.

On the commercial side, retailer concentration has also led to powerful standard setting on suppliers throughout their supply chains globally.

These various shifts have also led to a serious change in research and development, with the open exchange of knowledge, and materials and methods becoming more difficult with the extension of the desire to privatise knowledge and patent processes and products. It is also narrowing down the kind of questions being asked and the approaches taken to solving problems to those than can be captured and commercialised. Indeed, the current trend is away from the historic, open-access, disseminated system of innovation that agricultural development has been, mostly in the hands of millions of small farmers then supplemented by public good R&D – and which the software industry seems to be embracing now –towards a model more similar to that of brand-based pharmaceutical research. Here R&D led mainly by a few private corporations, underpinned by publicly funded R&D, and focussed on those things which are

commercially important – with anything else requiring charitable support or some form of inducement to get the companies to do it.

### **What need to be done to move towards a fair and sustainable food system?**

I – and many others – would argue that a fair and sustainable food system will not follow the trends I outlined above, which seem to be leading us in the direction of a kind of corporate feudalism.

Indeed, the [International Assessment of Agricultural Knowledge Science and Technology for Development](#) made it clear: business as usual is not an option and we must move to what is called an agro-ecological model of farming. This requires more complex, much more interdisciplinary science, rooted in cooperation and sharing with those working on the land.

You cannot solve problems of hunger and malnutrition with technologies as they are not technological but social, economic and political problems related to power and wealth distribution, not the simple availability of food. This approach would be embedded in a broader understanding of the complexity of food policy and the food system – from soil to mouth – so that the measure of its success was based on how well it achieves the multiple goals of producing a sustainable, secure, safe, sufficient and nutritious, culturally appropriate, equitable diet for all.

That will require diversity – not just agricultural biodiversity but social, cultural and in cuisines. In the face of climate disruptions and changes, it will require open access systems for seeds and breeds, more locally based farmers varieties' improvements supported by a different kind of public good breeding programme, attention to and development of poor peoples' and neglected food crops, development of ecosystem mimicking complex production systems – which are more biomass productive than monocultural ones anyway. It builds on the farmer and peasant movements call for food sovereignty and democracy, the insights of those calling for an ecological economics, full-cost accounting and measures that truly assess human progress rather than that of GDP (Gross Domestic Product). We will need different legal and institutional frameworks, incentives for research and innovation, and seeing innovation as something widely-practiced and recognised in the field and village and small business not as something held and controlled by a few corporations and profession scientists.

While we do have global problems – from the challenges of climate change, to growing levels of inequity, and the dangers of global conflicts – the solutions to these may not all be global but may require a change in the global governance structures to facilitate and support locally, environmentally-grounded and equity-based solutions to those problems.

Farming is site specific, climate specific, local ecosystem knowledge specific – a one size, one approach does not fit all in this case – including to a move to a western style diet from both a health and sustainability point of view.

### **So what are some of the areas where we need new rules and frameworks?**

Today we need to be smart enough to realise we have made a mistake in the direction we have taken – in fossil fuelled industrialisation, especially of the food system – and which contributes substantially to Greenhouse Gas emissions. We need to marry our fantastic creative scientific and technical abilities with the ecological knowledge and empirically derived understanding still found in many farming communities around the world and build on that into a new agro-ecological, cyclical not linear model of food and farming both for sustainability, for adaptation to climate change and for equity.

- A really big area for change is Economics. We need a new conception of economics, which grows out of ecology and challenges the economic growth model; many people are working on this, such as Herman Daly, the New Economics Foundation, the [Sarkozy](#)



[Commission on the Measurement of Economic Performance and Social Progress](#), the OECD, and the Green economics groups report.

- Rules governing land access and use policies. These may include stopping the use of good agricultural land for industrial and urban development and biofuels. And this takes us into the more general area of how we deal with property – both real and imaginary
- The biggest recent shift in the rules concerns imaginary property, such as patents, copyright, plant breeders' rights, and trademarks, where these privileges are now being given priority over those of people with real property. We need countries both to use the flexibilities allowed in the existing rules and to work to change them by, for example, removing the exclusionary element from patents affecting food security and climate change technologies. More radically, we need a different means of promoting innovation far more widely and in ways that go beyond the control of a few players. More immediately, as Oliver de Shutter noted amongst many other things in his [Report to the UN General Assembly](#) this year on seed policies and the right to food, countries should refrain from imposing TRIP-Plus condition in free trade agreements.
- Other rules need to look at power relations, social, political and commercial. This takes us into the realm of rules on the nature of corporations themselves and rules on competition – over retail concentration for example.
- Others rules relate to subsidies, trade and the economics of farming, as their margins are squeezed, the access to markets inadequate, the profits go to others between them and the consumer.
- We also need to focus not simply on production and products but also processes and power. Empowering people, especially women, to have control over their lives and be confident actors in their own right is a key ingredient to a fair food system. I've seen it demonstrated recently in the work of the [Deccan Development Society](#) with the dalit (untouchable) illiterate women with whom they've worked over 20 years and who have become transformed – both in their ability to act together, have access to and farm land, and to communicate about their experiences and concerns directly to the outside world by enabling some of these illiterate women to become movie makers and radio broadcasters.

Transition strategies will be needed to support and build upon this agro-ecological approach where it is already being practiced to move to those areas addicted to today's fossil fuel dependent industrial approach without major loss of food in the process. This means a concerted attempt to reduce waste and losses through out the food system, that represent a huge waste of resources and a massive potential saving in greenhouse gas emission and production needs, as a recent Food Ethics report ("[Waste: dishing the dirt](#)") noted, and it means matching production more closely to nutritional well being and health to avoid the burden of the diet related cancers, heart disease and diabetes that is growing.

Changing systems is challenging and difficult but it is possible ([see Meadows, Thinking in Systems](#)). Times of danger and crisis are times of opportunity for such changes. In looking at the various areas for changing the rules today, it will be helpful to link proposed changes to specific examples of how this works. With this mixture, we will have both stories to tell and frameworks to propose that show a humane, vibrant, inclusive way out of the problems that lie ahead. But when we do succeed in shifting the paradigm we will still have to be ready to transcend it – for no paradigm or model is wholly true, and accurate. We have to remain open and flexible.

**Contribution by Brian Thompson, Irela Mazar, Juliet Aphane, Leslie Amoroso, Nomindelger Bayasgalanbat and Janice Meerman from FAO, Italy**

Dear friends and colleagues

The primary focus of the High Level Forum on “How to Feed the World by 2050” will be on global challenges and solutions in agriculture and food security. These subjects are, of course, directly related to the more general issues of poverty reduction and human development. The contribution below- the second in a series posted by FAO’s Household Food Security, Nutrition and Livelihoods Group- articulates the links between nutrition, food security, and broader development goals, as described by the MDGs.

Nutrition makes an important direct contribution to all eight MDG goals, and is especially crucial to reducing hunger and poverty (MDG 1). Nutrition plays an important role in the monitoring and mapping of the hungry and poor, in food and nutrition security policy formulation and assistance, in guiding National Programmes for Food Security, and in emergency response.

Nutritional status is a key indicator of poverty and hunger, poor health, and inadequate education and social conditions. Improving nutrition is crucial to achievement of the health, education and economic goals of the MDGs. Poorly nourished children cannot grow and develop properly, are highly susceptible to infection and disease, and are often compromised in terms of cognitive function and educational achievement. Malnourished adults are less capable of working and are severely disadvantaged in terms of their social and economic security. In addition, good nutrition can greatly improve health outcomes for people living with HIV/AIDS and can mitigate the impact of the disease among all members of HIV/AIDS affected households.

Nutrition improvement programmes have a unique and essential role to play in efforts to reach the MDGs. Good nutrition makes an essential contribution to the fight against poverty. It protects and promotes health; reduces morbidity and mortality (especially among mothers and children); and encourages and enables children to attend and benefit from school. Furthermore, by indirectly strengthening communities and local economies, good nutrition contributes to the achievement of other development objectives which in turn impact the MDGs. For example, effective community nutrition programmes can empower women and other vulnerable groups to increase the volume and efficacy of their demands for improved social services and better use of existing resources.

Comprehensive, multi-sectoral intervention designs are needed to achieve the MDGs. Incorporation of nutrition goals, indicators, and participatory community nutrition initiatives will facilitate the development, implementation and monitoring of such interventions. Within the agricultural sector, incorporating nutrition objectives into policies and programmes for food security can lead to explicit improvements in people’s nutritional welfare, health, and productive potential. Each of these outcomes increases human capital and is thus integral to achievement of the MDGs and to feeding the World in 2050.

Best regards

Brian Thompson, Irela Mazar, Juliet Aphane, Leslie Amoroso, Nomindelger Bayasgalanbat and Janice Meerman of FAO’s Household Food Security, Nutrition and Livelihoods Group

**Contribution by Lorenz Bachmann, Freelance Agronomist working in Africa and Asia**

Dear Mr De Haen,

Feeding the world in 2050 will be a considerable challenge. Already today we are quite far from reaching that target. Recently I did very broad comparative studies with 700 farmers in Uganda comparing ordinary farmers with farmers working in sustainable organic agriculture. The results showed that the food security of the organic farmer was far better than the conventional farmer.

The main factor can be seen in the focus of programs to diversify agricultural production away from a few crops to a diversity of crop and livestock activities. This also resulted in 50% higher income of farmers and a much better health status. In a similar study in the Philippines last year, the sample was even larger with 840 farmers. In that case we compared conventional farmers using the typical green revolution package with farmers that are in conversion to organic farming (reduced input use) and fully organic farmers.

The results for farmers that area about 5 years in the program are exceptionally good. Just to name a few impacts, 20% more income, 50% more different crops planted and used 88% have better health. Strikingly the full organic managed to obtain the same rice yields compared to their conventional colleagues with out using chemical inputs.

The study is published as a book “Food security and farmer empowerment” and can be downloaded for free at [www.Masipag.org](http://www.Masipag.org)

What were the reasons for these outstanding successes? The organisation “Masipag” has developed a trial farm approach were farmers learn how to compare rice varieties on their own farm, farmers learn how to select varieties, how to purify and maintain the quality of seed. On village level, farmers grow 60 varieties in their seed bank, and then select the best 4-5 for mass production on their own farm. This ensures a perfect adaptation process to local the soil and climate condition. Growing many varieties reduces pest infestation and makes them less vulnerable to climatic changes. Furthermore the varieties are bred by the farmers themselves, this is probably the most outstanding innovation, after 20 years of work the Masipag network has 235 farmer breeders, all over the country that have conserved more than 1000 traditional old Philippino varieties and used them to bread another 1000 new Masipag lines! Member farmers can access these new varieties free of costs. This makes it possible for all farmers to have a free access to high quality seed. As all member farmers are trained in seed purification, all members are able to grow new varieties by just supplying them little packages with just a few grams of seed! The yield data of the study showed that these adapted varieties had the same performance compared to the high yielding varieties coming form IRRI and other commercial sources without any commercial fertilizer input! All fertilisation is organic: Green manure, agroforestry trees, farm manure, azolla, compost.

This approach and its results are really breathtaking and would merit the title “true green revolution”, much more than the old green revolution with all its many flaws!

Another important aspect of the success of the program is the “farmer-led approach in management and diffusion. All programme activities are directed by real farmers, farmers hold the majority of the 9 positions in the board. But the Network also involves scientists and other NGOs for frequent knowledge exchange. The diffusion work of technologies is done by farmers themselves. Only farmers that have adopted the technology on their farm for a number of years are selected by the local farming groups to do extension for new groups. This ensures a very high quality of extension work. Since it beginning in 1985 the network has grown to 35,000 farmer members today.

This is certainly an approach to expand much further in particular towards feeding the world in 2050.

What are the key issues to promote further? The Masipag networks focuses on rice breeding and diversification into many different other crops for the reason of better diets, food security, lower marketing risk, and better incomes. Farmers are free to choose how fast they reduce their inputs and when they reach the status “full organic”. This would be also the way to go for the world as large. Considering climate change and the heavy negative CO<sub>2</sub> print of N-fertilizers in their production, but also the losses into as N<sub>2</sub>O back into the air, clearly ask for a strong reduction in the future.

However, at present they are still indispensable to maintain production levels. However, with a view to 2050, fertilizer subsidies should be slowly reduced and eventually even a N-fertilizer tax should be introduced gradually (rising slowly each year) so that farmers can adopt. At the same time new clean subsidies should be introduced for sustainable land use (using green manure, planting agroforestry trees, etc.). We need truly green clever subsidies in the future and a phasing out of all the old wrong incentives worldwide. Future funds becoming available under the

new international CO<sub>2</sub> reduction programs should include sustainable agriculture as one viable way of reducing emissions.

Farmer-led breeding should be used on a wider scale. With this adapted system of breeding, it may be possible to obtain the yields needed on farmers level by 2050. The system also ensures the distribution of seed that today is by far not reached properly in particular in Africa. Regarding agricultural research we do not need more, but simply a stronger focus on participatory work with farmers. And of course we need a much more efficient extension system. The Masipag example also gives hints here, farmers should be given a much more important role, farmers can be perfect breeders and extensionists! Farmers have been treated by researchers and extensionists as "traditional" for too many years. It is about time that farmers are taken serious. What we need is a paradigm shift in thinking of researchers and extension workers. With some empowering training, farmers can quickly become very efficient breeders and extensionists by themselves.

Many comments given by other contributors here in the forum (K. Gallagher; A. Widana) equally point in the same direction. Fighting hunger is very complex, many more factors than what I mention are important too. However, regarding agricultural production, reducing input use, orientation towards sustainable agriculture and true empowerment of farmers are the most important changes needed for the future.

Dr. Lorenz Bachmann, Freelance Agronomist working in Africa and Asia

### **Contribution by Manoj Singh, Agricultural Development Specialist, New Delhi, India**

#### **Are current investments sufficient to ensure adequate growth of agricultural production, sustainable use of natural resources, efficient market infrastructure, and technical progress?**

Investment in agriculture has been steadily declining since the 1970s. As a result, the rate of growth of agricultural capital stock (ACS) in the world fell from 1.1 percent in 1975–1990 to 0.50 percent in 1991–2007. Similarly, the share of official development assistance going to the agricultural sector fell from 17 percent in 1980 to 3.8 percent in 2006, with the same downward trend observed in the national budgets of developing countries. With the recent surge in food prices and food riots across the globe and interest in large-scale land acquisition by investors - especially foreign - across the developing world has attracted substantial media interest and provoked international concern and made everyone to focus on increase in investment in agriculture.

The main focus of investment in agriculture should be based upon the desired framework, which will build on and expands existing analysis, recommendations, guidelines and mechanisms, will facilitate compilation and sharing of relevant data and information, lessons learned and good practices, definition of basic and operating principles, creation of analytical and operational tools, and encouragement of partnerships at the subnational, country and perhaps regional level. The success of this framework depends directly on three major concerns: deriving a broad-based agreement that spans all relevant sectors; achieving full transparency and accountability in program and project design and implementation; and ensuring sufficient flexibility to allow for customization at the national, subnational and even community level, as well as experiential learning.

Developing nations such as Africa requires investment in roads, irrigation schemes, storage, production, marketing, processing, research and institutions. There is need to coordinate private and public investments. Problem areas should be identified and investment must be made in agricultural research to solve the global food crisis. Such an approach has succeeded in the past. Investment in agricultural research has "paid off handsomely," delivering an average rate of return of 43 per cent in 700 projects evaluated in developing countries, according to the [World Bank's World Development Report 2008](#).

In one of its recent reports, the [Deutsche Bank](#) identifies a number of strategies to increase global agricultural productions in sustainable ways, including improvements in irrigation, fertilization and agricultural equipment using technologies ranging from geographic information systems and global analytical maps to the development of precision, high performance

equipment. It also stresses on applying sophisticated management and technologies on a global scale, essentially extending research and investment into developing regions of the world. The report says that investing in “farmer competence” is important to take full advantage of new technologies through education and extension services, including investing private capital in better training farmers.

Those Agricultural Investment Projects should be identified which has made an impact in economics of the nations and their possible replication process should be studied and implemented for other nations. The Comprehensive Africa Agricultural Development Program provides one of the model. All of its member nations have pledged to devote 10 percent of their national budgets to agricultural development. Rwanda has become the first country to complete its agricultural development plan and it's already showing results. In three years, Rwanda's investment in agriculture has increased fivefold and agricultural GDP has doubled.

In Mali, for example, the World Bank financed the modernization of a system of canals that improved irrigation, and as a result, rice yields and farmers' incomes increased dramatically. In Ethiopia, the World Bank rebuilt and expanded road networks, which reduced travel time and freight costs by 25 percent.

Countries have already made contributions in strengthening investments in agriculture. The leaders of the G-8 pledged \$20 billion to a global effort to strengthen agriculture. Pakistan offered to sell or lease 404,700 hectares of farmland to foreign investors looking to secure food supplies to their countries. And Egypt is expanding its hold on farmland in Nile Basin countries in order to protect its water supply and boost supplies of staple crops.

### **Will improvements in food availability to meet the global demand growth projected for 2050 help turn the current trend of rising hunger and malnutrition?**

Improvement in food availability depends upon many factors not necessarily related to agriculture production and productivity improvement only. These factors are:

#### Economic access

- Increasing productivity in food production, leading to increased incomes and improvements in purchasing power;
- Technology options like cell phones and the Internet that help get crops and livestock to market at lower cost and with improved price transmission;
- Increased attention to value addition for food staples, horticulture, and animal products through postharvest research and development on processing, packaging and marketing, which can enhance non-farm income opportunities.

#### Social access

- Technology options that are especially accessible to women - given their indispensable role in ensuring household food security - and allow child care at the same time, such as advice and assistance with home vegetable gardens.

#### Physiological utilization

- Technologies for successful food fortification and water purification;
- Nutrient supplementation and biofortification;
- Access to safe water and health/hygiene services

Therefore need is to focus on all the factors in a holistic manner.

### **Which additional measures might be needed to broaden access to food?**

Access to food is mainly determined by household income. Lack of access is therefore closely linked with poverty. Where incomes are insufficient, transfer or food assistance programs (such as feeding programs or food subsidies) are a means to ensuring access to food.

Sometimes people do not have access to food even when it is available at national level. This is a particular issue for poor households without access to land. There are two important aspects of access to food:

- **Economic access** People need to have money to buy food and agricultural inputs. Food prices also affect people's ability to buy food. Food prices are influenced by local and

global factors, including the impact of droughts on harvest, government policies and trade agreements.

- **Physical access** People may live far from the market or insecurity may prevent them from travelling. They may not have access to transport or there may be physical barriers such as poor quality roads, a broken bridge or a road that is washed away.

There is need to strengthen accessibility to above mentioned aspects which leads to broadening of access to food. With a growing world's population, access to food, particularly healthy food needs to be a priority in our communities, schools, and governments. Money or geographic location should not be the determining factor in deciding who gets to eat a healthy meal. There is need to stop the commercialization and politicizing of food, and ensure that the world's population, especially young children, are guaranteed unrestricted access to the food resources they need to survive.

**Should competition for scarce resources be reduced between food and biofuels? If the answer is yes, through which policies?**

There is direct correlation of growing demand for crops for biofuel production and its effect on global crop prices. The Policy Research Institute Japan's Ministry of Agriculture, Forestry and Fisheries (PRIMAFF) released the results of quantitative analyses on how the growing demand for crops for biofuel production would affect global crop price, on January 30, 2009. Based on the price of maize in 2006/07 (from April 2006 through March 2007), the Institute estimated the price of maize for each year to 2018 under two scenarios; one in which the U.S. continues to implement the current bioethanol program, and one in which it does not. The results showed that without the ethanol program the price decreased by 22.2 percent for 2007/08 and by 36.9 percent for 2017/18, from the 2006/07 level. An International Monetary Fund assessment was even more pessimistic. IMF estimates suggest increased demand for biofuels accounts for 70 percent of the increase in corn prices and 40 percent of the increase in soybean prices. In an article entitled "[How Biofuels Could Starve the Poor](#)", published in the Council on Foreign Relations Foreign Affairs magazine for May/June 2007, economists C. Ford Runge and Benjamin Senauer concluded that if the prices of staple foods increase because of the demand for biofuels, "the number of food-insecure people in the world would rise by over 16 million for every percentage point in the real prices of staple foods."

There is urgent need to shift in policies related to biofuel across the nations. Japan's biofuel policy could be one of the benchmark in this direction. The primary biofuel policy of Japan for 2008 places importance on research and development and promote research and development of ethanol using cellulosic biomass, which does not compete with the supply of food. Further, selective-breeding is being promoted to develop suitable biofuel crops to enable large volume ethanol production, for example, breeds which have an inferior taste but larger harvest volumes than existing crops. Large-scale demonstration facilities, not laboratory level facilities, will be established that embrace production and sales. Furthermore, as a tax measure, the bioethanol portion of gasoline mixed with bioethanol is scheduled to be made tax exempt.

Regards

Manoj Singh  
Agricultural Development Specialist  
New Delhi

**Contribution by Patrick Chatenay from UK**

Dear FSN forum

I was very interested by the contribution from Brian Thompson, Irela Mazar, Juliet Aphane, Leslie Amoroso, Nomindelger Bayasgalanbat and Janice Meerman of FAO's Household Food Security,

Nutrition and Livelihoods Group. I must admit not to have realized before the important distinction between food security and nutritional security they illustrate.

The “agriculture-based interventions to improve nutrition security” they suggest appear to the layman I am quite valid.

When they address what the FAO can do to assist, however, I feel too much weight is given to technical improvements: though it may not be its most striking traditional feature, the FAO must get involved in agricultural economic policy formulation. If food and nutritional security are to be attained world-wide, it will be because agriculture is profitable. Given the physical constraints of food production and their consequences on farm cash flow profiles over time when left to “market forces” only, regulations are needed to render farming attractive.

Good agricultural policies are absolutely key to solving “how to feed the world in 2050”.

Patrick Chatenay

**Contribution by Brian Thompson, Irela Mazar, Juliet Aphane, Leslie Amoroso, Nomindelger Bayasgalanbat and Janice Meerman from FAO, Italy**

Dear colleagues and friends,

Six Issues Briefs are posted as background documents for the High Level Forum on “How to Feed the World by 2050” (<http://www.fao.org/wsfs/forum2050/wsfs-background-documents/hlef-issues-briefs/en/>). This contribution - the third in a series posted by FAO’s Household Food Security, Nutrition and Livelihoods Group – addresses three of these briefs (Global Agriculture toward 2050, The Technology Challenge, and The Special Challenge for sub-Saharan Africa) from a nutrition perspective. Excerpts from the briefs are copied below to which we have included additional important information regarding food and nutrition security.

**1. Global Agriculture towards 2050**

This brief points out that “Projections show that feeding a world population of 9.1 billion people in 2050 would require raising overall food production by some 70 percent between 2005/07 and 2050. Production in the developing countries would need to almost double. This implies significant increases in the production of several key commodities.” However, feeding the world population adequately also means producing the kinds of foods that are lacking to ensure nutrition security. In addition to cereals, diets should also include a diversity of fruits, vegetables, pulses, nuts, fats and animal source foods. In many developing countries, where over 60% of calories is typically cereal derived, dietary diversity is lacking and only a small amount of these other foods are consumed on a regular basis, thus leading to increased risk of malnutrition and associated ill-health effects.

Production increases alone will not be sufficient to ensure food security for everyone. Unless governments make sure access to food by the needy and vulnerable is significantly improved, and while the prevalence of chronic undernourishment in developing countries could fall from 16.3 percent (823 million) in 2003/05 to 4.8 percent in 2050, this still means that some 370 million persons would be undernourished in 2050. On these prospects, the World Food Summit target of halving the numbers of hungry people by 2015 (from the 813 million of 1990/92) may not be reached until well into the 2040s. These calculations underline the importance of putting in place effective poverty reduction strategies, safety nets and rural development programmes, including increased funding for nutrition education and extension programmes, as well as health and sanitation projects.

And to this brief’s Discussion Points, we would add:

- Should the focus of agricultural production continue to be dietary energy or should micronutrient content be considered equally important?
- How can the goal of increased global food production, including biofuels, be balanced against the need to protect biodiversity, ecosystems, traditional foods and traditional agricultural practices?



## **2. The Technology Challenge**

Yield gaps exist mainly because known technologies that can be applied at a local experiment station are not applied in farmers' fields having the same natural resource and ecological characteristics. In addition to yield gaps, "the nutrition gap" is wide in many poor countries and should be narrowed in conjunction with closing yield gaps. To do this, agricultural technology must increase availability and access to a diversity of nutrient-rich foods necessary for a healthy diet, and increase actual intake of those foods. Factors that contribute to the nutrition gap are similar to those that cause yield gaps. They include lack of institutional capacity, lack of access to nutrition information, lack of funding and personnel for extension services, and poor infrastructure. In addition, lack of nutrition awareness among policy makers, and lack of recognition regarding the need to encourage production of nutrient-rich foods for consumption widens the nutrition gap in many countries. At the policy level, solutions require incorporation of explicit food and nutrition security objectives into the design and implementation of agricultural development initiatives to ensure that potential opportunities to improve nutrition are identified and exploited, and to ensure that production-based policies are not detrimental to nutrition. For research and ground-level interventions, technology-based solutions include R&D to increase yields, nutrient content and resilience of staples appropriate for resource-poor smallholders, as well as innovations to reduce post-harvest losses. For example, solar dryers for mango, papaya, and other fruits could be improved in terms of efficiency. In areas where infrastructure is sufficient to support mechanization, simple automated fruit dehydration techniques to improve nutritional content, longevity and safety could be introduced. Finally, simple technology-based solutions such as SMS-based reporting systems can improve access to market price information for farmers and traders, and better nutrition indicator information for planners.

And to this brief's Discussion Points, we would add:

- How do we ensure that agricultural development leads to improved nutrition rather than simply boosting agricultural production?
- How can R&D be mobilized to develop or refine rudimentary technologies in processing, food preservation and storage to be used at household level?

## **3. The Special Challenge for sub-Saharan Africa**

For the continent as a whole, economic growth was well above 5 percent until 2008, and for sub-Saharan Africa, above 5.5 percent. Agricultural growth in sub-Saharan Africa has been more than 3.5 percent, well above the 2 percent rate of population growth. Nevertheless, 218 million people in Africa, some 30 percent of the total population, are estimated to be suffering from chronic hunger and malnutrition, 38 percent of Sub-Saharan African children under five years are stunted (low height-for-age, reflecting a sustained past episode or episodes of undernutrition). Furthermore, in the 29 African countries where trends in stunting prevalence over the last decade could be examined, only 12 improved, while 6 had no change and 11 saw prevalence rates increase.

The comparative advantage that African smallholders have in food production is under threat as larger commercial farms are better placed to handle the process of managing risks associated with adoption of new technologies and the diffusion of knowledge. The result may be over time an increase in the average farm size, land consolidation, increased commercialization of agriculture and possible migration out of the sector. In this process, small-scale farmers will be under increased pressure to adapt. Efforts should thus be made to facilitate positive spillover from commercialization into small-scale farming. In terms of food and nutrition security, possibilities include (1) improved availability, access and intake via improved quality and safety of local food supplies and (2) improved access via contract-farming opportunities and subsequently increased purchasing power. From a policy perspective, global, regional and national policies focused on market-seeking, rather than resource-seeking, commercial ventures will improve smallholders' chances of benefiting from global integration of food systems, and decrease their vulnerability to food and nutrition insecurity.

The recent price spike highlighted the challenges farmers (especially small farmers) in developing countries face in trying to expand production in response to higher prices. Many smallholders and their families have coped with the challenges posed by the food and financial



risks by reducing plantings, reducing the quality, variety and quantity of household food consumption, spending less on basic needs such as clean water and healthcare, and engaging in the fire sale of assets such as land or livestock. All of these responses have increased vulnerability to malnutrition and food insecurity.

And to this brief's Discussion Points, we would add:

- Considering the high and pervasive rates of malnutrition in sub-Saharan Africa, how are we to ensure agricultural development in this region leads to improved nutrition rather than simply boosting agricultural production?
- How are we to protect smallholders' livelihoods, nutrition and food security in response to rising price volatility, commercialization and transition in the agricultural sector?

Best regards

Brian Thompson, Irela Mazar, Juliet Aphane, Leslie Amoroso, Nomindelger Bayasgalanbat and Janice Meerman of FAO's Household Food Security, Nutrition and Livelihoods Group

### **Contribution by Thomas Mokake from WFP, Italy**

Dear members,

As a contribution to the question asked below by Brian Thompson and its group, please find possible response in my comments below:

Brian Thompson's text:

1." How are we to protect smallholders' livelihoods, nutrition and food security in response to rising price volatility, commercialization and transition in the agricultural sector."

2."The result may be over time an increase in the average farm size, land consolidation, increased commercialization of agriculture and possible migration out of the sector. In this process, small-scale farmers will be under increased pressure to adapt. Efforts should thus be made to facilitate positive spillover from commercialization into small-scale farming."

#### **My comments:**

- **Mechanised/commercial agriculture is capital intensive.** If agricultural production becomes mechanised, pushing the small-scale farmers out of the land, then their access to proper nutrition and sustained food security shall be compromised if there are no policies/legislative frameworks and institutions to dynamise the private sector growth in off-farm and agro-related economic activities. Does the national parliament care? Therefore, What are the policies to be encouraged at national level to guarantee food security of small farmers in SSA --- considering the fact that this rural population constitutes about 60 - 80% of the national population, depending on the country under consideration. Who monitors the implementation and reporting of such policies/laws that address food security?, and to what overseeing body? So national governments are accountable to who on food security and proper nutrition of their citizens?
- Should we not move gradually from subsistence farming, through partial mechanisation, before encouraging total mechanisation of agriculture in SSA? What successes have we registered in partial mechanisation and where?, and what are the prospects?
- How can the international community guarantee that nations shall implement policies that address the concerns of small farmers. What is the experience in the past since the last world food summit?-- note that for SSA, the Heads of State promised in 2006 (Maputo declaration) to invest 10% of national budget into agriculture; but this remains on the "wish" list for most countries whose national budgets are balanced mostly from grants and external loans---external loans that hardly get cleared as only interests is being paid

while further loans are engaged and the Principal progressively increases--debt burden for the future generations!!!!

Best regards,

Thomas Mokake  
Programme Officer  
World Food Programme

### **Contribution by Charlotte Dufur from France**

Dear Mr. de Haen,

Thank you for facilitating such a fascinating exchange of experiences and ideas. The wealth of contributions is in itself a reason to hope that we may rise to the challenge of feeding the world sustainably. Such pooling of minds is probably part of the process we need to build on, in order to find unique solutions to common problems and work together to respond effectively to complex and diverse needs.

I am most interested by the examples showing how the development of local farming systems (esp. using organic methods) has yielded improvements in income, nutrition and health. Dr. Lorenz Bachmann's example of Masipag's work is really inspiring, as are the numerous success stories that have been shared.

Many contributions in this debate have focused on the agricultural approaches and techniques that underpin these interventions. But this makes me question **what type of economic systems/policies could support the development of local farming systems in a way that benefits local populations**. This also raises questions regarding **which level of governance could provide effective support for such approaches**. (I apologize if the ideas below have already been raised by others; I have not been able to keep track of all contributions!).

- **Regarding economic policies and investments**: it seems, from reading various contributions, that developing local market opportunities, and shortening the chain from producer to consumer, are often effective ways of meeting local nutritional and income needs (c.f. access and distribution issue), while also promoting more sustainable farming. My question is then: *what economic and infrastructural investments could support the development of such markets?* Many investments outside the agriculture sector may need to be thought about differently. For example, the development of secondary roads could become as essential as that of highways to capital cities and ports. Other types of infrastructure, such as hygienic market sites, storage facilities, etc. may need to be developed in provincial and district centres. Local training and educational facilities could also be developed at the provincial level, thereby capitalizing, disseminating and building upon local knowledge (about agriculture, biodiversity, etc.).

- **Regarding levels of Governance**: I agree fully with previous contributions that a global campaign is crucial, that reviewing international and national policies is essential, and that participatory and farmer-led initiatives are the key to sustainability. But I am not sure if the *role of local government institutions* (at the provincial and district levels) has been highlighted as much. But these are precisely levels where integrated local planning –including agriculture, infrastructure, health, natural resource management, etc.- can be more easily managed and where economic, social and agricultural policies can be best aligned. In that regard, the processes of decentralization initiated by several countries can represent an opportunity. It raises the question of making sure capacity is strengthened at that level.

I fully agree that we need more awareness, more political commitment and improved locally adapted farming techniques, but this will probably not suffice to bring about significant and

lasting change. The issue is how we can shift incentives from promoting mainly export-oriented large-scale farming to equally promoting locally oriented production and marketing systems. The slogan "think glocal" comes to mind... In any case, wider economic policies, governance structures, and consumer education all come into play.

Thank you once again for a rich debate,

Charlotte.

Charlotte Dufour  
Nutrition, Food Security and Livelihoods consultant  
France

### **Contribution by Prakash Shrestha from Nepal**

Namaste (Greeting) from Himalayan country, Nepal

My name is Prakash Shrestha and I keeping in mind that:

- around three fourth of world population is in developing countries- in 2050, 9 in every 10 people will be from developing countries
- Challenged of providing food particularly the people who live in food insecure areas like remote villages/mountains;

I would like to share following:

In mountain regions (particularly in Nepal-my country), there have been chronic food shortage- a large portion of Nepalese population live in extremely vulnerable (food insecure) situation. Approach the government/external development partners has been sending subsidized food/charity food to these regions when food crisis arises year after year. I see two main problems associated with this:

Firstly, as some of the contributors correctly pointed out, we need to seek diversity in food (not only focus on rice, wheat and corn). Local produce such as potato, beans, yams and millet must be promoted. They are considered 'poor man's food' and its price is unreasonably cheap-cheaper than subsidized food support (usually rice).

Secondly, this subsidized food has been changing the eating habit as well as working habit of the mountain people. Eating habit- it is becoming social status to eat rice- the subsidized food that is cheaper (people walk 3-4 days to district headquarters-distribution center- to buy 5-15 kg quota of subsidized rice- giving preference over local food.) Who will work so hard to produce local foods (that is 'poor man's food'), while one can work (under food for work schemes of development partners or as cheap unskilled labour in cities/across border) and get better money that can buy 'reach man's food' is subsidized rate.

No wonder, this has been happening in last 30-40 years and food shortage and hunger is only increasing and not decreasing in the mountains of Nepal (and of other economically poor countries- I assume) and if this train continues without seeking alternate situation will only worsen even in 2050.

As issue of food is not only technical issue, but also issue of political, governance, social and economic, demographic issue- I think following points should be considered for long term solution particularly at remote rural/mountain areas:

1. Review food aid system/move towards sustainability: While food aid is necessary for coming few years; it should be well considered that this is not leading community to (exotic aid) food dependent. Food support must promote local food- buying the local food from local

farmers as far as possible in reasonable price and re distributing it is subsidized rate. This should be cheaper than air transporting food to rural mountain areas.

2. Food bank: As proved in many places around the world, community based food bank can insure food security. Facilitating to build community food bank system can bring following benefit: it stores food safely- from rodents and other loss; it promotes production of food (rather than switching away from farming to labour for aid supported low cost-‘infrastructure’ development).

3. Alternate Crops: Government, external development partners and private sectors should support on research, processing and marketing on valuable herbal products that are now being under used or used in unsustainable way and local getting very poor share of total economic return.

4. Demography and settlement: As death rate- particularly child mortality- in mountain areas are gradually coming down- the population in mountain will be rapidly increasing. These are scattered population. Government/development organizations effort should put more effort on controlling population growth and also bring policy that promotes shifting scattered population to small cities so that food delivery (from market system or aid system) become more practical.

5. Fresh Water: Mountains are source of fresh water. There can be alternate to (fossil) fuel, foods, and transportation system but not alternate to fresh water. National & International Government bodies should work together to make a just system to utilize the fresh water- so that these fresh water become available to people who need it while local people get economic benefits from it (incentive to conserve/protect it from being polluted- the fresh water system). As the population grows, by 2050, fresh water will be also highly valuable resource.

6. Carbon Credit: Can the international communities (who have 100s of times larger per capita carbon footprint) make system to pay mountain people ‘Carbon Credit’ as these rural/mountain people use very limited natural resources as there is no road, no electricity and no industries meaning they have only negligible ‘carbon foot-print’. The payment system can be based on maintaining (increasing) greeneries in these critical rural/mountain areas. After all the mountain people are among the one who are most adversely affected by climate change.

I am fully convinced with Prof George Kent:: ‘Food follows where money is’

Namaste (also meaning bye)

Prakash Shrestha  
Kathmandu, NEPAL

### **Contribution by Rebecca Kik from FAO, Italy**

Dear all,

Thank you very much for the opportunity to discuss about this interesting question and for all the interesting comments and ideas which have been contributed so far. As I am working as a legal consultant in the FAO Right to Food Unit I would like to give some contribution regarding the right to food aspects of „How to feed the world in 2050“, as Mr de Haen has mentioned „it is also clear that good governance, including the realization of the right to food, is an essential ingredient of success“.

The query is raising the question whether the „Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context of National Food Security“ (Right to

Food Guidelines) are a good framework to remind governments of their obligations. This question must be answered with a clear YES. The Right to Food Guidelines do not only remind the governments of their obligations, they also give them guidance and support on how to realize their obligations. The Right to Food Guidelines give guidance in 19 different policy areas and „take into account a wide range of important considerations and principles, including equality and non-discrimination, participation and inclusion, accountability and rule of law“.

I am also very thankful to Mr Thomas Mokake who is arguing that governments which are violating their right to food obligations should be held legally responsible by the UN system. So far 160 countries signed the International Covenant on Economic, Social and Cultural Rights (ICESCR) and thereby have accepted their obligation to respect, protect and fulfil the right to food. On the 24th of September the Optional Protocol to the ICESCR opened for signature. Once this Optional Protocol enters into force, it will confer competence to the Committee on Economic, Social and Cultural Rights (the Committee) to receive and consider communications from or on behalf of individuals or groups of individuals concerning alleged violations of any of the rights set forth in the Covenant. It also permits the Committee to conduct inquiries into grave and systematic violations of any of the economic, social and cultural rights – including the right to food– by a Party that has made a declaration recognizing this competence of the Committee. This Optional Protocol is a huge step forward to the justiciability of the right to food!

Additionally to that I would like to direct your attention to the „CALL from the Cordoba Group“ which was released last week. In their last meeting the Cordoba Group addressed food security and climate change and they also came to the conclusion that „today’s hunger is not a result of production failure but due to failure of equitable access“. In their CALL the Cordoba Group focuses on two mayor issues:

1. Coherence in four policy areas, namely coherence in decisions, coherence in delivery, coherence in dialogue and coherence in diplomacy (Rome and Copenhagen).
2. Support to small farmers to achieve food security by 2050 in a world with a changing climate.

They point out that „climate change will lead to highly unstable production conditions that will require farmer-led research and breeding strategies in changing ecosystems. In particular, the development of the numerous underutilised (so-called „orphan“) crops could, for a very small investment, yield reliable and nutritious food. The innovative potential of small producers must be recognized and supported“. Furthermore the governments have to ensure that intellectual property rights requirements and restrictions are not barriers to innovation and diffusion.

The whole CALL from the Cordoba Group is available at:

[http://www.fao.org/righttofood/news35\\_en.htm](http://www.fao.org/righttofood/news35_en.htm)

Rebecca Kik

Legal Consultant, FAO Right to Food Unit

### **Contribution by François Leonardi from FAO, Zimbabwe**

Feeding the world in 2050 is an issue that has already been focused by more than one publication. As many authors say, general food security – sufficient production per human on the earth – it’s a different theme from the one of suppression of malnutrition and hunger.

The coexistence of the two elements is a constant factor of our food production and economic systems since decades if not more.

Malnutrition and hunger are the result of the big poverty and, excluding the areas of acute conflicts, they are the result of a problem of money access to agriculture markets

Paradoxically, as many studies demonstrate, this phenomenon increasingly touches farmers and rural communities. This decrease of production per family in rural areas is also linked to the decrease in farmland size, as agriculture census in many countries show. This decrease is explained by the subdivision of estates due to agriculture reforms or inheritances.

The decrease in size of farmlands is by 35% over 20 years in Madagascar, where nevertheless there are still important landholdings. In Ethiopia, in the majority of districts, there is no place left to integrate young rurals. Some districts have already reached 600 inhabitants per km<sup>2</sup>, which means a family per hectare without any remunerating activity other than agriculture. With less than a hectare to cultivate it is impossible to capitalise, to buy inputs ... and therefore to exit the poverty circle if not moving out of these areas. Each additional mouth cannot be nourished if not with a social security system / food aid.

Promoting migration, displacements and urbanisation – including the rural zones – and their support should be seriously envisaged. Agriculture cannot do everything. FAO and even more WFP should not uselessly maintain populations in their “overpopulated” areas in the agriculture sector. Besides a certain pressure on natural resources, the maintenance of agriculture productivity becomes more and more difficult and expensive.

The positive role of mobility has been underlined in one of the recent World Bank Development reports, isn't it?

Public powers and FAO could look more at the access operations to new lands ant to front pioneers where to much regulation or the opposite, the “laissez faire”, have often disastrous impacts.

Interventions to support rural people need also to largely be thought over by “Developers”; including and especially by the technicians – to which I belong. The majority of aides to farmers need to be monetised to become more effective. Our objective must be to promote choices and self decisions including amongst the poorer. Technical packages – grains, sements or others – are extremely expensive when they are put in place directly by an institution and often not adequate. The cost of intermediation is often by 100%. The same is for food aid. Money has quite reasonably been invented to reduce these costs and offer choices... In the end public authorities should only intervene on rural infrastructure, on regulation of crises – economic or climatic -, to offer farmers a social protection that for the poorer could equally be in the form of premiums for cultivations and in the end to support the development of production by offering technical information.

When thinking about 2050, it is then necessary to rethink about the State's role and the role of other organisations that are involved in rural development, such as NGOs.

A last point on the global demand: it is necessary to decompose in various sub systems interrelated. Example: the needs in carbohydrates, lipids and protids face sensibly different problems. The two first ones largely depend on vegetal production while proteins are mostly linked to animal production. The development perspective needs to be examined whereas urbanisation and increase in life levels causes an explosion in their demand. Which type of livestock will supply their proteins? Behind this issue, the future of millions of breeders of arid zones is involved – Sahel, East Africa, periphery of Kalahari.

Urban markets in Africa will increasingly turn on the intensive chicken, more affordable than the traditional cattle. A comparison between the abandonment of agriculture in Mediterranean regions – former intensive livestock – offers more then one reasons of anxiety.

A reflection on the future of these regions in 2050 – future of the traditional pastoral model – is of high importance and little prospective seem to exist, as far as I know.

Thinking of the world in 2050 is thinking about how different populations, different geographical zones and different production models will evolve and will be interrelated.

### **Original message in French**

Nourrir le monde en 2050, est un sujet qui a fait déjà l'objet de plus d'une publication. Comme indique par plusieurs auteurs, la sécurité alimentaire générale –suffisamment de production par humain sur terre- est un sujet différent de la suppression de la malnutrition et de la faim. La coexistence des deux éléments est une constante de nos systèmes de productions alimentaires et économiques depuis des décennies pour ne pas dire plus.

La malnutrition et la faim sont le fruit de la très grande pauvreté –a part en zone de conflit aiguë-, ils résultent d'un problème d'accès monétaire a des marchés agricoles. Paradoxalement, comme de nombreuses études l'ont démontré, ce phénomène touche de plus en plus d'agriculteurs ou d'habitants des zones rurales. Cette baisse de production par famille dans les zones rurales est liée a la diminution de la taille des exploitations agricoles –pas seulement-. Les recensements agricoles de nombreux pays le montre. Cette diminution s'explique par le fractionnement des exploitations lors de réformes agraires ou d'héritage. La diminution de la taille des exploitations est de 35 % sur 20 ans à Madagascar, où pourtant il existe encore des réserves foncières importantes. En Éthiopie, dans la majorité des districts, il n'y a plus de place pour installer des jeunes ruraux. Certains districts ont déjà atteint 600 habitants au km<sup>2</sup> soit une famille par hectare, sans aucune autre activité rémunératrice que l'agriculture. Avec moins d'un hectare à cultiver, il est impossible de capitaliser, d'acheter des intrants... et donc de sortir du cercle de la pauvreté sinon en émigrant hors de ces zones. Chaque bouche supplémentaire ne peut être nourri que par un système de protection sociale/aide alimentaire...

La promotion des migrations, des déplacements, de l'urbanisations –y compris dans les zones rurales- et leur accompagnement doit être sérieusement envisagée. L'Agriculture ne peut pas tout. La FAO, et plus encore le WFP, ne doivent pas retenir inutilement les populations sur des zones «surpeuplées» dans le secteur agricole. Au delà d'une certaine pression sur les ressources naturelles, le maintien même de la productivité agricole devient de plus en plus difficile et coûteux.

-Le Rôle positif de la mobilité a été souligné dans un des derniers World Bank Développement Report, non?

Les pouvoirs publics et la FAO pourraient regarder davantage les opérations d'accès aux nouvelles terres et fronts pionniers où trop de régulation ou son opposé, le laisser faire, ont souvent un impact désastreux.

Les interventions d'appuis aux ruraux doivent également être largement repensées par les «développeurs»; y compris et surtout par les techniciens –dont je fais parti. La plupart des aides aux agriculteurs doivent être monétisées pour être plus efficaces. Notre objectif doit être de promouvoir le choix et l'arbitrage y compris chez les plus pauvres. Les packages techniques –engrais/semences ou autres- sont extrêmement coûteux quand ils sont mis en œuvre directement par une institution et souvent inadaptés. Le coût d'intermédiation est souvent de 100%. Il en va de même pour l'aide alimentaire. L'argent a justement été inventée pour diminuer ces coûts et donner du choix... A terme, les pouvoirs publics ne devraient intervenir que sur les infrastructures rurales, la régulation des crises –économiques ou climatiques-, offrir aux agriculteurs une protection sociale qui pour les plus pauvres pourraient également prendre la forme de primes de mise en culture et enfin accompagner le développement de la production par une offre d'informations techniques. A l'horizon 2050, il faut donc revoir le rôle de l'État et des autres intervenants en zones rurales –ONG.

Un dernier point sur la demande globale: il faut la décomposer en multiple sous systèmes en inter-relation. Exemple: les besoins en glucides, lipides et protides font face a des

problématiques sensiblement différentes. Les deux premiers dépendent largement des productions végétales alors que les protéines sont liées majoritairement aux productions animales. Les perspectives pour leur développement doit être examinées alors que l'urbanisation et la hausse du niveau de vie fait exploser leurs demandes. Quels types d'élevage fourniront ses protéines ? Derrière cette question, le sort de millions d'éleveurs des zones arides est en jeu –Sahel, Afrique de l'Est, pourtour du Kalahari. Les marchés urbains d'Afrique se tournent de plus en plus vers le poulet intensif, plus abordable financièrement que les bovins traditionnels. Une comparaison avec la déprise agricole des zones méditerranéennes –ex élevage extensif- est a bien des égards inquiétant. Une réflexion sur l'avenir de ces régions en 2050 –avenir du modèle pastoral traditionnel- est primordiale et peu de perspectives semblent exister –du moins a ma connaissance. Réfléchir un monde en 2050, c'est réfléchir a comment les différentes populations, les différentes zones géographiques, les différents modèles de production évolueront et seront en interrelation.

François Leonardi

FAO Sub-regional Office for Southern Africa

### **Contribution by Peter Steele from FAO, Egypt**

Contribution debate: 'How to Feed the World in 2050?'

#### **Communications is everything**

Great debate so far with some interesting contributions from well-informed, hard-thinking and clearly well-intentioned people; some of whom I know, others remain names/institutions and others still project that sense of 'if only' or 'déjà vu' into the debate. The complexity of the arguments and information overwhelm; and it takes an effort to compare, critique and/or agree. There is a sense of 'talking to the converted' in the debate; nothing novel, nothing new and little in the way of change likely to result. Frustration? Sure.

Given the collective years that so many of the contributors have spent pursuing these kinds of challenges the wonder is that we have not already reached some kind of consensus on what to do next – excepting that the goal posts continue to move as the game remains underway. Much of this rests with the original resource base of the planet/region/country, those in charge of national territories, those who manage to transcend these barriers by projecting development across national boundaries (i.e. those of us in the development industries, but more so those trading/investing commercially – with goods and money) and, not least, those in the communication industries. Communications remains a key issue and so does population. So, here is a small contribution for today.

Taking the metro to work this morning, I was surrounded by your typical Mohamed Citizen going about his daily work. This is a megacity of >20 million (M) people in an unusual country wherein estimated 80 million people live on less than eight percent of the land area. We depend upon the waters of the Ethiopian Highlands for our well-being. Unusual parameters, sure, but then there are similar constraints for most national territories – here they are just a little more extreme. The Nile nurtures the Delta and the Delta provides the basis for food security in the country. We know the fragility of this land area – from encroaching human populations, their structures, space and demands and, equally, from the projected impact of climate change which may result in seawater incursion and lands lost to cropping. Just 30 years ago, the same land resources, space and facilities provided for <40 M Egyptians; and people were less demanding in their lifestyles. So, what has all this got to do with 'feeding the world?' Consider that key word 'communications'; and link back to that point about 'talking to the converted'.

The state supports of the order 85% of the people in Egypt with some kind of public subvention/resource/service/subsidy – whether food, energy, transport or whatever.



Unsympathetic economic management in 2008 led to food riots as prices rose and people felt themselves becoming marginalized. Not so much that national managers were acting poorly, but that people were not adequately informed. You can consider similar arguments about 'feeding the world'. Those of us in the industrial countries may be aware of these global issues (in the development industries – you would hope so), but that accounts for less than 10% of the world's people. Even supposing that national managers could grasp the complexity of the international debate on food vs. people vs. markets vs. trade and so on, we are still probably dealing with <1.50 billion people. The other 75% of the world's people have neither access to, nor understanding of, the many issues involved (and if they did, may be would not want to become involved anyway). And these are not simply the illiterate; for most people have neither the opportunity, time, inclination nor ability to follow this kind of debate. Everyone, however, now watches television. Note the success of the 'soap operas' in both industrial and developing countries; note how these include hidden agenda and messages for a whole host of ideas (from HIV mitigation, to illegal immigration to farming technologies).

You can design the world's best mousetrap, but if you can't sell the idea you are simply wasting your time. The world will not beat a path to your doorstep when the existing mousetrap is working OK. We have yet to learn how to reach our clients with the right messages.

Have a good day everyone.

Salute.

Peter Steele. FAO, Cairo

#### **Contribution by James Breen from Ireland**

Dear Dr de Haen,

I have read the contributions with interest, but failed to see much comment about the need for private land ownership. Without this, there is no hope of us feeding the world in 2050. Communal land ownership, combined with more than 60% of people on the land is a guarantee of poverty and soil degradation, even allowing for the palliative measures such as seed and fertilizer subsidy schemes, to cover the lack of working capital that communal land ownership guarantees. Poverty in rural areas means more children, witness the population trebling, or more, in Kenya, Ethiopia, Malawi since 1970. Without working capital, a given in communal areas, yields must stay low, as in the Eastern Cape in South Africa where 'emerging farmers' on communal land obtain maize yields of 0.7t/ha compared to a national average of commercial producers of around 4.2 t/ha, or six times more per hectare. Much of Eastern Cape land is not cultivated at all due to the poor return among other factors. This is a WASTE of land, some of the best watered land in South Africa.

My second point is the need for alternative fertilizer strategies. The liquid Flex fertilizer system keeps N and P in the root zone for some weeks after planting, with little or no N leaching. This results in much larger root systems than are obtained with conventional fertilizers. With good root systems, plants can forage for water and nutrients and can get by with 50% less P and 25% less N. This system is widely used on potatoes, in particular, in Holland and Ireland, resulting in much higher quality potatoes of saleable size. It could save a lot of money on P transport around Africa if it were used. In addition, trace elements can be added easily and now even micro-organisms are being mixed with the liquid fertilizer resulting in much less fungal problems on potatoes. This fertilizer can be made in a small \$300 000 plant, fully computerised, using Phosphoric Acid, Sulphuric Acid and Urea as basic feedstocks. The formulations can be changed in minutes to match exactly the soil test results, rather than the hit and miss of conventional compounds. Why are research stations not looking at this product? The farmers, as usual, lead research by years.

Third, given the benefits of Conservation Agriculture in terms of crop yields, reduction in fuel use and in reducing GHG emissions, it should become the system of choice if we are to feed the world in 2050. Currently, about 1/15th of the world's arable land is managed in this way.

Fourth, more research is needed on the benefits of micro-organisms in agriculture, both for improving the soil and in reducing GHG emissions from cattle. It is estimated that silage treated with Effective Micro-organisms generates 10% less GHGs than conventional silage. This is a saving that cannot be ignored for much longer as for every 1 degree rise in temperature above the norm, crop yields decline by 10% (IRRI) or more in the USA, as quoted in Lester Brown's books. We need to prevent global warming every way we can as if we don't, perhaps 10 percent of the 9 billion population will survive.

Finally, more money and manpower must be put into an agricultural research effort, similar in seriousness and desire for success to the Manhattan Project, to find alternative ways of food production, as yet undiscovered, but also to improve existing food production systems. Serious research has been an orphan for too long. We have finally awoken from our complacency about world food security due to the price spikes of 2008. We can't press the snooze button now that prices have come down again, given the huge rise in world population in prospect.

James Breen, Wexford, Ireland.

**Contribution by Angeline Munzara from the Ecumenical Advocacy Alliance (EAA), Switzerland**

Dear FSN members

I would like to input into this important discussion as by highlighting important aspects that should be taken into consideration to ensure a just and sustainable food system. It is evident from the prevalent world food crisis that the world do not have the right rules to ensure food self sufficiency for all. Although the multiple crises have been acknowledged by international and national bodies, the responses they are proposing are woefully inadequate. Our systems for producing, buying, selling and sharing food are profoundly broken, and more of the same will not help. We need to recognize that policies and practices of governments, international organizations and agribusiness have been central parts of the problem and we must accept that hunger is being caused by fractures in the structure of our global society.

This is evident from the fact that after nine years after all governments endorsed MDGs-one sixth of all humanity is still suffering from hunger. It is also evident from the fact that 61 years after signing the Universal declaration on Human Rights the number of people in the world will increase by an estimated 105 million this year. And there are no word for the appalling reality that in 2009 we have crossed the threshold of more than one billion people in the world who are malnourished.

**Action points towards ensuring food justice**

1. There is need to **respect the right to food in all negotiations**. It is high time that we all recognize that food should not be treated like any other tradable commodity. It is a matter human dignity and ensures the full enjoyment of the right to life of an individual. Trade negotiations can undermine the efforts and commitments already done to ensure the protection, fulfillment and respect of this right in accordance to the FAO Voluntary Guidelines for the progressive realization of the right to adequate food in the context of national food security (FAO, 2005).

Also with the advent of HIV/AIDS, nutrition aspects have to come into play when developing strategies on feeding the world and respecting the right to food. Article 28 of the Declaration of Commitment by the United Nations General Assembly Special Session dedicated to HIV/AIDS (UNGASS) highlights the essential role of food and nutrition in a comprehensive response to HIV/AIDS. It provides, at long last, the high-profile international endorsement needed by

campaigns to secure vigorous action by donors and national policy makers on food and HIV/AIDS. The effective response to medication of people living with HIV/AIDS is strongly linked to access to nutritious food.

The Right to Food should therefore be understood as far more than the provision on minimum sustenance through aid to prevent people from starving. It is about ensuring food self sufficiency and control of the means of production to produce food. It is understood as the right to have the means to feed oneself adequately, either through income to buy food or through land or other productive resources to produce it. If neither of these is possible, adequate social safety net policies are needed. In this respect trade liberalization policies that gives way to dumping of cheap products in developing countries undermine this right and destroys local production systems is not helping solving the problem but worsening it.

This requires adopting a holistic approach to address issues related to food security ranging from trade, biodiversity and climate change negotiations. In the meantime, a fragmented approach is being followed with Climate Change upcoming in December at Copenhagen and the WTO Ministerial Conference. The world faces acute crises today – manifested in the severity of the economic crisis, sharp increases and very volatile prices of food, and documented effects from climate change. These crises are interlinked and will have a severe impact on the most vulnerable groups in the developing countries. There is need for a common understanding that food is a matter of justice and comprehensive, multi-sectoral intervention, strategies have to be adopted if feeding the world in 2050 is to be a reality.

## **2. Need to adopt sustainable production, consumption and distribution practices**

We believe that access to food cannot be guaranteed simply through technical approaches to increasing global production. It is not enough that the world produces enough food to feed everyone. It must reach the poor and the rich alike. At present efforts to increase production are needed in the global South and particularly for small-scale food producers, but in the global North we need to reduce surplus food production that undermines other producers' livelihoods. In future, the world's growing population will need an overall increase in global food production. With a large percentage of poor people making their livelihood from food production, it is imperative that in meeting these production needs we look at food not only as something to be eaten, but also something which gives sustenance (physical, economic and cultural) for those who produce it.

The production, distribution and consumption of food must be based on equality, socially and environmentally sustainable agriculture, and economics which prioritize the welfare of all people. Women, who make up the vast majority of smallholder farmers as well as those in poverty, must be empowered through our response. This is only possible if trade rules are also transformed

In reference to the TRIPS Agreement and UPOV 91, these should be reformed to allow the free exchange, saving and further development by local farmers. The means of production should not be left in the hands of the few multinational companies. Just to quote Geoff Tansey (Trade, Intellectual Property, Food and Biodiversity: Key Issues and Options for the 1991 review of Article 27.3(b) of the TRIPs Agreement, Quaker Peace & Service, London, p10. ), the UPOV system "promotes commercially bred varieties geared for industrial systems in which farmers have to pay royalties on such seed and the seed sector becomes an investment opportunity for chemical and biotechnology concerns. This is unsustainable as evidenced by a study in West Africa, that after forty years of breeding research on sorghum and millet at internationally-supported research stations, less than 5% of the crops are planted to such material because it does not meet most farmers' needs (Carr. S (1989), "Technology For Small-Scale Farmers in Sub-Saharan Africa", Experience with Food Crop Production in Five Major Ecological Zones, Technical Paper No. 109, World Bank, Washington DC) .These farmers abandoned their traditional seed varieties and practices and took up the free inputs of pesticides, fertilizers and hybrid seeds. As a result, they lost their traditional seeds and became dependent on outside technologies. According to the FAO report of 1995, it is estimated that African farmers depend on

seeds cultivated within their own communities for as much as 90% of their seed needs (FAO Report, (1995) "A Synthesis Report of the Africa Region: Women, Agriculture and Rural Development") If these systems are not promoted the food crisis will continue in developing countries where most people depend on local seeds for food security and will witness poverty due to unjust production, consumption and distribution patterns in the world of abundance.

No one size fits all approach should be adopted to solve the food crisis.

Thank you for allowing me to make this contribution

Angeline Munzara

Ecumenical Advocacy Alliance (EAA)

**Contribution by Brian Thompson, Irela Mazar, Juliet Aphane, Leslie Amoroso, Nomindelger Bayasgalanbat and Janice Meerman of FAO's Household Food Security, Nutrition and Livelihoods Group**

Dear colleagues and friends,

Six Issues Briefs by FAO's Economic and Social Development Department are posted as background documents for the High Level Forum on "How to Feed the World by 2050" available at: (<http://www.fao.org/wsfs/forum2050/wsfs-background-documents/hlef-issues-briefs/en/>).

This contribution - the fourth in a series posted by FAO's Household Food Security, Nutrition and Livelihoods Group – addresses three of these briefs (Climate Change and Bioenergy Challenges for Food and Agriculture, Non-Distorting Support Measures to Farmers, and Investment) from a nutrition perspective. Direct quotes from the Issues Briefs are in plain font with our additional comments on food and nutrition security in *italics*.

## **1. Climate Change and Bioenergy Challenges for Food and Agriculture**

The current impetus for investing in improved agricultural policies, institutions and technologies to meet food security and energy goals offers a unique opportunity to mainstream climate change mitigation and adaptation actions into agriculture. Further research is needed on the various dimensions and impacts of climate change and biofuels on food security across regions and over time. *In particular, assessment of the impacts of climate change on nutrition and food security, identification and development of adaptive solutions and scenario-building of the projected changes on resource and livelihoods options of poor households are essential.*

All current quantitative assessments indicate that climate change will adversely affect food security in developing countries, particularly Africa. *It is estimated that the number of malnourished children between 2000 and 2050 will likely increase from 33 to 42 million (without climate change), but climate change will further increase this number by over 10 million, resulting in 52 million malnourished children in 2050.*

Adaptation to climate change – including the ability to mitigate exposure to, and cope with, extreme weather shocks – will be necessary to ensure global food security in both the short and long-term. To the extent that certain activities fulfil both adaptation and mitigation objectives, such activities could offer new opportunities for financing. *Sustainable development and research to enhance both adaptation and mitigation can diminish climate change based threats to nutrition. Adaptation and mitigation measures should be integrated into national and sector-specific development programmes, such as poverty reduction strategy papers, safety nets and national food and nutrition action plans.* The main obstacles include significant data requirements, as well the legal and institutional frameworks that reduce transactions costs of participation in mitigation programmes. *Lack of capacity for the development of integrated adaptation, mitigation and*

*sustainable development strategies to address food security and nutrition issues driven by climate change and biofuel demand is another challenge.*

*Although this brief nicely describes the impact of climate change on all four aspects of food security, we would add:*

*“Efforts to assure food security and good nutrition in the face of current challenges, including climate change and rising bioenergy demand, must continue to place achievement of the MDG’s at the centre of human endeavour. FAO and other international organizations should assist countries in assessing their capacity building needs for the development of integrated adaptation, mitigation and sustainable development strategies to address food security and nutrition challenges from climate change and biofuel demand. Agriculture, food and nutrition issues need to be placed onto national and international climate change agendas. The expiration of the Kyoto Protocol in 2012 offers an opportunity to bring these issues to the table.”*

To this brief’s Discussion Points, we would also add:

- *How can we accelerate progress in reducing poverty hunger and malnutrition while mitigating risk and protecting the environment?*

## **2. Non-Distorting Support Measures to Farmers**

*Border policies that restrict market access from third countries are trade distorting... Analyses show that market access restrictions vary widely across countries, and greatly impair nearly 30 developing countries. Improved market access is key to translating increased agricultural productivity into improved food and nutrition security. The current trade negotiations should recognize this issue and make it a priority. OECD countries should grant developing countries increased access to their markets and reduce their domestic agricultural subsidies and import tariffs. Assistance should also be provided to help developing countries meet international nutrition and food safety standards for globally traded food products.*

*Many developing countries have undertaken major economic reforms since the 1980s, including phasing out agricultural export taxes, reducing manufacturing protection and allowing markets to determine the value of their currency. However, these reforms remain incomplete and distortion rates across many agricultural sectors continue to be large. For example, consumer subsidy and trade restriction policies lower domestic food prices and increase the consumption and welfare of net food buyers. However, consumer food subsidies are costly in terms of efficiency (high budgetary burden), efficacy (difficult to target) and administration. Furthermore, export restrictions can lower the income of sellers over time, and subsequently reduce incentives for production. Nevertheless, the immediate, positive effects of these policies may well outweigh the longer term trade-offs, especially if paired with social safety net programmes. In this and similar contexts, further analysis and debate is required to assess whether trade policy instruments can be used in support of pro-poor development objectives, including sustainable improvements in food and nutrition security.*

## **3. Investment**

*The latest UN estimates of population suggest that by 2050 the planet will be populated by 9.1 billion persons, up from the current population of 6.8 billion. This represents a 34 percent increase over the next 41 years. The latest FAO estimates indicate, however, that agricultural production would need to grow globally by 70 percent over the same period (by almost 100 percent in developing countries) to feed this population, because of a shift in demand towards higher value products of lower caloric content and an increased use of crop output as feed to meet rising meat demand. Further, these predictions of additional output are likely to be a low estimate, as they do not take into account any increases in agricultural production to meet possible expansion in demand for biofuels. These statistics have stark implications for food and nutrition security. In developing countries, 178 million, or one in three children under the age of five, is currently stunted (low height-for-age, reflecting a sustained past episode or episodes of*

*undernutrition), and 148 million children are underweight. Moreover, micronutrient malnutrition affects approximately 2 billion people, over 30 percent of the world's population. These figures are likely to grow in conjunction with the shifting trends in demand described above. While agriculture has a key role to play in mitigating the negative impact of these trends via reduction of food insecurity and malnutrition, investment and growth in the sector have been slow over the past decade. One important indicator of this neglect is the proportion of official development assistance designated for agriculture, which fell by 70 percent between 1990 and 2004 from approximately 12 to under 4 percent. Long-term investments in agricultural development, medium-term efforts to build institutional capacity and empower organizations of rural poor people, and short-term emergency and safety net initiatives for the most vulnerable are imperative to address food insecurity and malnutrition.*

To this brief's Discussion Points, we would also add:

- *How can private-sector interest be linked to needs of smallholder farmers and marginalized groups, including indigenous people, to meet the challenges of food insecurity and malnutrition?*

Best regards

Brian Thompson, Irela Mazar, Juliet Aphane, Leslie Amoroso, Nomindelger Bayasgalanbat and Janice Meerman of FAO's Household Food Security, Nutrition and Livelihoods Group

### **Contribution by Muna Lakhani from the Institute for Zero Waste in Africa, South Africa**

Context and Reality Check:

We currently grow more than enough food to feed everyone – let us not lose sight of that. Despite the wastage of food; the diversion of food to animals that could feed humans; and the belief that 'biofuels from food crops' is a necessary and required further diversion of potential food for humans; are all part of the problem – just like we will not "solve" climate change by any thing other than reducing consumption by the rich (generating 80% of the pollution, but making up only 25% of the world population), we will not solve hunger by continuing within the current paradigm that created the problem in the first place – the culture of entitlement of the rich.

This statement is unpalatable to many, but must be confronted as part of the reality within which we operate.

So, the question we must maybe begin to discuss, is WHAT will feed all the hungry people in the world by 2050? If we fall into the trap of thinking that meat (as it is currently the case) is the 'best' food, then we are doomed. However, if we accept that meat is over emphasised as a food (and the way in which we currently produce it is simply unsustainable) then we will solve the problem much easier.

During our peaceful political transition here in South Africa, we chose (amongst many others) a governance principle that could well apply to food production – it is called "subsidiarity" – the notion that a problem must be solved at the lowest level possible, but at the highest level necessary.

So, if we work from the premise that it is most sustainable for people to grow their own food where they are, using local energy, water, organic nutrients (such as biodigesters) and land – but where this is difficult, impossible or simply unfeasible, then they should be supplied from the next most local level, but guaranteed by the highest level of governance (generally, National government).

Further, another area which (so far, anyway) I have not seen much discussion on in the field, is the notion that countries must only export food once the needs of the population are satisfied – only surplus production should be exported. Yes, this topples the current development paradigm, but is it not the current paradigm that created the problem in the first place?

Or do we try and use a flawed system to find an equally flawed solution?

Muna Lakhani

### **Contribution by Glenn Ashton from South Africa**

I feel I have to respond to the uninformed and markedly neo-colonial inferences made by James Breen of Ireland in his recent posting on food security.

His assertion that productive agricultural activity can only exist where land is privately owned, and that by extension, communally held land "is a guarantee of poverty and soil degradation" is not only uninformed but is insulting.

South Africa, where most of the arable land is privately held, is victim of serious abuse of the land by commercial, private farmers. We have some catastrophically degraded land in all of our various climatic zones from poor land husbandry by commercial farmers. With very little topsoil to begin with, irresponsible farming practices by private interests have cost future generations dearly, from overgrazing, over fertilisation, allowing invasive alien plants to overrun the land and so forth.

While there is degradation on land that is communally owned, this is not always the case. Much of this degradation is the result of 85% of the population being shoe-horned into 12% of the land, an historical situation that still needs to be rectified.

Therefore James's conclusions and inferences are inaccurate and misplaced. Land degradation in communally owned areas are all too often the result of drought, poor central planning, lack of extension services, having to compete against subsidised northern produce, of being ill advised to institute commercial farming practices on land ill suited, etc etc. Most land degradation on communally owned land in the Southern African region is not the result of overuse of the land through ignorance but rather through circumstance, and, all too often, from poor advice from Northern funders who then leave after three years and wonder why their projects have failed. But that is another story which I may tell if time permits!

The fact that most US commercial farmland is in private ownership further shows that there are serious dangers of this model being exported to the developing world. Pollution of water sources by leaching of artificial fertilisers into water courses has created a massive dead zone in the Gulf of Mexico. Elsewhere aquatic systems are under equal pressure because of the commercial imperative. Dust bowls are reappearing - and lets not forget that the original dust bowls of the 1930s were equally from abuse of privately owned land. On the other hand communally owned land, in tribal or other collective ownership, is in far better shape in most cases. So lets be very careful about wild generalisations drawn from ill informed conventional wisdom.

Finally it may inform Mr Breen were he to undertake some research into the latest winner of the Nobel Prize for Economics, Elinor Ostrom, who has clearly demonstrated that communally owned resources are, contrary to mainstream beliefs, well managed and regulated by the communities who administer them. There is an interesting analysis at Forbes <http://www.forbes.com/2009/10/12/nobel-prize-economics-elinor-ostrom-opinions-columnists-elisabeth-eaves.html?partner=relatedstoriesbox>

I think that an analysis of the work of this remarkable woman would go a long way to further informing this debate in general.

Glenn Ashton  
Environmental researcher and author

### **Contribution by Dominic Glover from Wageningen University, the Netherlands**

James Breen has advocated conservation agriculture as 'the system of choice if we are to feed the world in 2050'. I recognise that conservation agriculture is being used to advantage in some parts of the world and that it has some attractive aspects, and I agree that it holds considerable promise for further expansion to improve the sustainability of agriculture. However, I think it is not

realistic to advocate this single approach (or any other single approach) as a panacea that may be applied in all contexts and circumstances. In particular, it may not be easy to adopt or beneficial for resource-poor farmers in sub-Saharan Africa, which helps to explain why there is little evidence of conservation agriculture having spread in that part of the world.

The argument has been made better than I can make it the following recent paper from the journal Field Crops Research:

Giller, K. E., Witter, E., Corbeels, M. and Tittonell, P. 2009. '[Conservation agriculture and smallholder farming in Africa: The heretics' view](#)'. Field Crops Research 114 (1), pp. 23-34

Abstract: "Conservation agriculture (CA) is claimed to be a panacea for the problems of poor agricultural productivity and soil degradation in sub-Saharan Africa (SSA). It is actively promoted by international research and development organisations, with such strong advocacy that critical debate is stifled. Claims for the potential of CA in Africa are based on widespread adoption in the Americas, where the effects of tillage were replaced by heavy dependence on herbicides and fertilisers. CA is said to increase yields, to reduce labour requirements, improve soil fertility and reduce erosion. Yet empirical evidence is not clear and consistent on many of these points, nor is it always clear which of the principles of CA contribute to the desired effects. Although cases can be found where such claims are supported there are equally convincing scientific reports that contradict these claims. Concerns include decreased yields often observed with CA, increased labour requirements when herbicides are not used, an important gender shift of the labour burden to women and a lack of mulch due to poor productivity and due to the priority given to feeding of livestock with crop residues. Despite the publicity claiming widespread adoption of CA, the available evidence suggests virtually no uptake of CA in most SSA countries, with only small groups of adopters in South Africa, Ghana and Zambia. We conclude that there is an urgent need for critical assessment under which ecological and socio-economic conditions CA is best suited for smallholder farming in SSA. Critical constraints to adoption appear to be competing uses for crop residues, increased labour demand for weeding and lack of access to, and use of, external inputs."

Best wishes,

Dominic Glover

Technology and Agrarian Development Group,

Wageningen University, the Netherlands

### **Contribution by Julien Custot and the “Food for the cities” interdisciplinary initiative from FAO Italy**

Dear FSN members,

Since 2007, more than 50 % of the world's population lives in cities. Urbanization is a constant trend and by 2050, the UN estimates that about 70 % of the population will live in urban areas. Covering staple food needs has always been a priority for governments and has been a major driver of food – agriculture and trade – policies. The present crises raise questions as to the sustainability of the approach so far. So; when we try to answer to the question “How to feed the world in 2050?”; we need to revisit urban-rural linkages and aim for sustainable food security of both rural and urban populations. The linkages between food, agriculture and cities need to be thoroughly reviewed, and present food and agriculture policies be revisited to ensure sustainable food systems and appropriate territorial planning.

For more than 20 years, work has been done. “Food for the cities” has been officially identified in 2000 as a priority area of interdisciplinary action for FAO. A technical consultation on “Food, agriculture and cities: challenges and way forward” recently organized in collaboration with RUAF gathered experts from a variety of organisations, including CGIAR institutions (CIP/Urban Harvest. Biodiversity International, IWMI), IDRC, CIRAD, GTZ, Heifer international, as well as universities.



During the workshop, the different sessions showed the wide range of experiences and expertise build during the last decade either in nutrition, urban agriculture, water management, land use planning or crisis responses. From this global picture emerged the need to have local integrated approaches.

A two page document (draft below) is presently being finalised by FAO to summarize key issues and priorities for action. Inputs will be made by the participants. We hope this document will provide a useful background document for the debate and look forward to your feedbacks on the analysis and recommendations made.

Sincerely,  
For the Food for the Cities interdisciplinary initiative,  
Julien Custot, FAO Food for the Cities facilitator

## **Food, Agriculture, and Cities: Where do we stand?**

### **Context and issues**

In 2008, the world's urban population outnumbered its rural population. The world population is expected to increase from 6.5 billion in 2005 to 9.2 billion by 2050, and will take place mainly in urban areas of developing countries, which are expected to count 3.9 billion people in 2030. The impact of strong urbanization will be country-specific and can affect hunger and poverty in both positive and negative ways depending on the overall policy settings and national economic structure.

The recent food and financial crisis, by eroding the purchasing power of urban households, mostly all net consumers without any capacity of self food production, has made the problem of urban food insecurity very visible. The negative impacts of climate change will further affect the urban areas that too often lack natural buffers, particularly for flood prevention.

In order to reach the Millennium Development Goal 1, Eradicate extreme poverty and hunger, urgent attention will need to be given to cities all over the world. Ensuring that people living in urban areas are food secure and enjoy a health and safe environment, with food security and better safety of the environment, is a major challenge to be faced. Feeding urban population will also prevent risks of social instability and conflicts in fragile countries. Therefore, the role of food and agriculture in and for cities will become increasingly important, either in developing or developed countries, though it is to date not sufficiently acknowledged. Food production, marketing, and transportation, natural resources management in and around cities will play an important role in responding to these challenges. On the other hand, urban consumption, as an economic force and social model, drives both food production and consumption in rural areas.

Specific attention therefore needs to be given to rural-urban linkages in terms of people, goods and natural resources. At a time where cities are born, expand and merge, it is urgent to bridge the increasingly unclear divide between urban, peri-urban and rural areas and to think in terms of territorial planning and urban-focused food systems. Urban food production and supply of diversified food, processing and marketing are interlinked and should mutually strengthen each other. This includes the need for protecting and preserving agricultural land areas and forestry resources, managing the livestock, promoting sustainable management of land and water resources, as well as treatment and productive recycling and safe reuse of waste and wastewater. Adequate food processing and marketing should also be promoted, linked to improved access to healthy and nutritious food and better consumption patterns.

In addition to that, in urban and peri-urban areas, responses to man made or natural disasters and to the needs of Internal Displaced People (IDPs) require integrating food and agriculture dimensions from the start of any emergency response project.

More than 40 cities receive FAO assistance all over the world, especially in Africa and Latin America, with specific approaches corresponding to local priorities. Some of them deal with food production and water management in the city, some with land and forestry management, and others on social inclusion linked with food production activities, producer's organizations, etc... A high level of expertise now exists. Thematic actions turn out to be useful to secure food, they also have broader impacts on social links in the city. Commitment of local authorities and integrated approaches are necessary to guarantee sustainability of the projects.

## Networking and partnership

FAO has been working since the early 1990s with a variety of international organisations. NGOs, national and local authorities are already working on food for the cities thematics, including among others UN-Habitat, World Bank, the RUAF Foundation (Resource Centres on Urban Agriculture and Food Security), IDRC (International Development Research Centre), CGIAR (Consultative Group on International Agriculture Research) (e.g. Biodiversity International, Urban Harvest, International Water Management Institute), CIRAD (Centre de Coopération Internationale en Recherche Agronomique pour le Développement), International Union of Forestry Research Organizations (IUFRO), Danish Center for Forest Landscape and Planning of the University of Copenhagen, European Urban Forestry Research and Information Centre (EUFORIC).

## Priorities for action<sup>1</sup>

In light of the experience generated by FAO and partner organisations in the last ten years, the following priorities have been identified:

- 1/ bring cities on the agenda of food and agriculture policy makers, planners and institutions, and**
- 2/ bring food and agriculture into the agenda of urban planners and local authorities.**

### At global level :

- 1. Taking stock of the urban food security and agriculture policies, legal frameworks, programmes** that cities and countries around the world have developed, or are developing, with view to their systematisation and wider dissemination.
- 2. Developing decision making and planning tools for policy makers at national and local level** (such as guidelines, criteria and indicators) regarding urban development in relation to agriculture, livestock, aquaculture, land use planning and forestry, as well as regarding local food systems planning and development.
- 3. Setting up multistakeholder platform for dialogue on good governance on food, agriculture and cities** (towards Right to Food) with a high level advisory panel to FAO, involving main international organisations, national and regional representatives and related sectoral expertise; implementing decentralized cooperation programs.

### At local and national level :

- 1. Assisting local and national governments in the development of policies and programmes on “food, agriculture and cities”**
  - a. Enhancing the productive capacity of urban and peri-urban areas for sustained food production**, with particular attention to indigenous foods. Important natural and/or agricultural areas are to be taken up in city development and land use plans and protected by strengthening integrated management of the urban/peri urban landscape (trees, land, water) and by linking urban and peri-urban agriculture with urban environmental challenges (mitigation of effects of climate change, urban heat island effect, floods; multi-functional land use).
  - b. Strengthening post-harvest and urban food systems**, by organising urban producers and consumers (with evolutions of consumption patterns), supporting technical innovation and direct marketing and supporting a shift to safer production, processing and marketing systems

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<sup>1</sup> This document has been written following a technical consultation on “Food, agriculture and cities: challenges and way forward” organised by the FAO-Food for Cities multidisciplinary initiative (<http://www.fao.org/fcit>) in collaboration with RUAF on 24<sup>th</sup>-25<sup>th</sup> September 2009 in Rome.

(formal or informal). Actions can be fostered by innovative financing for projects, use of information and communication technologies (ICT) and helping small-scale food production interventions for better nutrition.

2. **Promoting uptake of issues related to food systems linked with cities in national research institutions or programmes**, by enhancing action and policy oriented research, inserting monitoring and capitalization activities in all programmes on urban food security / agriculture and promoting uptake in curricula of universities,.

### **Contribution by Francois Leonardi from FAO, Zimbabwe**

I would like to share with you the key message from the Southern African Development Community Regional (SADC) Conference held in Gaborone 8-9-2009, sponsored by ReSAKSS-SA and FAO, that address the issues of the forum, although the target date is different.

The conference was attended by SADC Member States representatives, many of which were PSs, SADC Food and Agricultural Natural Resources Directorate, IFPRI, ReSAKSS-SA., and FAO SFS.

This statement came after two days where many regional studies related to food security were presented.

### **Agriculture-led Development for Southern Africa: Strategic Investment Priorities for Halving Hunger and Poverty by 2015**

National agricultural strategies and policies should aim to raise food security, production and wider economic development in member states. Regional policy and action should accommodate and complement national policies by harmonising national policies, encouraging knowledge sharing and transfer, and addressing areas that transcend national boundaries.

The conference notes that if goals and targets to halve hunger and poverty by 2015 are to be achieved, urgent and renewed effort and strategic investment in agriculture will be required.

In this regard, this conference highlighted the following messages:

- Government role is to create an enabling environment for active participation of all the stakeholders, including the private sector and NGOs. Government alone cannot drive agricultural transformation throughout the region, there needs to be a greater commitment to accountability, transparency and consistency among all stakeholders.
- While it is vital to increase food availability in the region, the conference noted that policies must also enable reliable access to and utilisation of nutritious food.
- The importance of agriculture-led development in addressing unemployment, poverty and hunger, especially among small-scale farmers, needs to be adequately documented to justify increased funding from the national budgets and development partners.
- There is need for greater investment in agriculture, improved spending efficiency by the agriculture sector, and a stronger role for public/private partnerships are needed. Improved collaboration and coordination amongst Ministries of Agriculture, Finance, Trade, Water, Natural Resources and other related Ministries are needed. Regional investment in agriculture should take into account of comparative advantages between countries.

- Some sectors, particularly staple foods (especially maize) and livestock, have greater potential for broad-based poverty reduction and growth and can benefit greatly from regional integration and policy harmonization. These sectors should be afforded high priority in regional policy.
- Regional integration, especially a reduction in non tariff barriers, can lessen the adverse effects of production variability on food prices and security in the region. However, production efficiency and information within countries must be improved if the full benefits of integration are to be realized.
- National and regional stakeholders in the agricultural sector should act early in the setting of common external tariffs. These tariffs should support national and regional policies. Tariff revenues can also provide an important financing mechanism for implementation of regional policy.
- The regional policy can help raise agricultural productivity in member states by encouraging regional technology development, transfers and sharing of best practices.
- Effective coordination between actors in the value chain is needed both within and across countries. Regional policy should support this by, for example, harmonising SPS, removing trade barriers, coordinating trans-boundary issues such as infrastructure, and promoting cross-country investment.
- Regional policy should strengthen collaborate in the sustainable management of trans-boundary natural resources, especially for water resources given the region's dependence on rain-fed agriculture, high rainfall variability and the uncertainties surrounding climate change.
- Regional policies and decision-making should be based on sound evidence. Likewise sound evidence should take into account the political context. This underlines the efforts ReSAKSS-SA and other stakeholders, including universities, to strengthen analysis and its links to policy making, and establish information systems in the region.

Francois Leonardi  
Policy Officer  
FAO Sub-Regional Office for Southern Africa  
Zimbabwe

### **Contribution by Moisés Gómez Porchini from Mexico**

Dear All

As I read the question posed by Brian Thompson and his colleagues of FAO's Household Food Security, Nutrition and Livelihoods Group on "*How private-sector interest can be linked to needs of smallholder farmers and marginalized groups, including indigenous people, to meet the challenges of food insecurity and malnutrition?*" I can only think that this question encloses the core of the conflict that arose in this debate and in many other debates in which I participated or have witnessed: The interests of the private sector appear to be in constant conflict with the interests of vulnerable groups (small farmers, indigenous, rural women, the poor).

The reason for this conflict, I see in the words themselves: private interests are exactly that - private interests, and their priority is to obtain profits. To expect that private interest become by themselves guarantors of sustainability and equity is to be naive or optimistic. No CEO of any multinational company could make its shareholders happy by telling them that he decided to make smaller profits to protect the rights of a disenfranchised group.

Ensuring food security, health and education of people is a responsibility of the state and we have to start from here. Private companies participate in the right direction only when the rules require it.

The point is that for each of the millions of people today who go hungry there is no time left. We need to give them food today. But if we hope that someday these people can stop being poor, we also need to give them education today, with the same urgency as food.

Imagine a young man (a) living in a marginalized rural area of Mexico, or any other developing country, with access only to basic education of poor quality and compare the knowledge he may have against that of young people simply of Mexico City, let alone New York or Tokyo, with access to universities and the internet: It is not a gap, it is a authentic abyss separating the information held by both. Without information, we are condemned to be poor.

People need the information to allow them to participate in solving their problems, including producing their own food and rising production levels to feed the world.

Therefore, in my opinion, food and education can not remain long-term goals left in private hands. The Experts' Forum should speak clearly and forcefully, leaving no doubt that ensuring food and education are immediate priorities of the states.

If we fail do to so, how can we really expect that by 2050 we achieve a 100% increase in food production in the developing world, whose people tofay are starving and kept ignorant?

Saludos

Moisés Gómez Porchini

Mexico

### **Original message in Spanish**

Estimados todos (as):

Mientras leo la pregunta que plantean Brian Thompson y sus compañeros del FAO's Household Food Security, Nutrition and Livelihoods Group acerca de *How can private-sector interest be linked to needs of smallholder farmers and marginalized groups, including indigenous people, to meet the challenges of food insecurity and malnutrition?* no puedo menos que pensar que es una pregunta que encierra la base del conflicto que se plantea en este debate y en muchos otros debates en los que he participado o de los que he sido testigo: Los intereses del sector privado parecen estar en permanente conflicto con los intereses de los grupos desprotegidos (pequeños granjeros, indígenas, mujeres rurales; los pobres, en palabras claras).

La razón para este conflicto la veo yo en las palabras mismas: los intereses privados son eso, intereses privados, y su prioridad es la obtención de utilidades. Pretender que por sí mismos los intereses particulares se conviertan en garantes de la sustentabilidad y de la equidad es pecar de ingenuos o de optimistas. Ningún director general de cualquier compañía trasnacional podría dejar contentos a sus accionistas explicándoles que decidió tener menores utilidades por proteger los derechos de algún grupo desprotegido.

Garantizar la seguridad alimentaria, la salud y la educación de los pueblos es asunto de estado y de ahí debemos de partir. La empresa privada participará en la dirección correcta solamente cuando las normas se lo exijan.

La cuestión es que para cada una de los millones de personas que el día de hoy tuvieron hambre, no hay más tiempo. Necesitamos llevarles la comida hoy. Pero si esperamos que algún día puedan dejar de ser pobres, necesitamos llevarles también hoy la educación, con el mismo nivel de urgencia que la comida.

Imaginemos a un jovencito (a) que vive en una zona rural marginada de México, o de cualquier otro país en desarrollo, con acceso solamente a una educación básica de mala calidad y comparemos el conocimiento que puede tener contra el que tienen los jóvenes, ya no digamos de Nueva York o Tokio, sino simplemente de la Cd. de México, con acceso a la universidad y al internet: No es una brecha, es un verdadero abismo el que separa la información con que cuentan uno y otro. Sin información, los estamos condenando a ser pobres.

Necesitan la información para poder ellos participar en la solución de sus problemas, incluyendo la producción de sus propios alimentos y la elevación de los niveles productivos para alimentar al resto del mundo.

Así es que, en mi opinión, la alimentación y la educación no pueden seguir siendo objetivos de largo plazo que se dejen en manos de particulares. El Foro de expertos debe decirlo claro y con fuerza, sin que quede lugar a dudas, que garantizar la alimentación y la educación son prioridades inmediatas de los estados.

Si no lo hacemos así, ¿podemos realmente esperar que de aquí al 2050 se obtenga un aumento del 100 % en la producción de alimentos en el mundo en desarrollo, con un pueblo hambriento e ignorante?

Saludos

Moisés Gómez Porchini

México

### **Contribution by Aruna Rodrigues from Sunray Harvesters, India**

#### **If the FAO is to seriously engage in this Effort it must get rid of the Distraction of GM Crops**

In 1943 Sir Albert Howard, (Formerly Director of the Institute of Plant Industry Indore, and Agricultural Adviser to States in Central India and Rajputana), considered to be the grandfather of the modern organic farming movement, published 'An Agricultural Testament', which was based on his years of patient observations of traditional farming in India. *"Instead of breaking up the subject into fragments, and studying agriculture in piece meal fashion by the analytical method of science, appropriate only to the discovery of new facts, we must adopt a synthetic approach and look at the wheel of life as one great subject and not as if it were a patchwork of unrelated things."*

Almost 70 years later, with the advent and adoption of GM crops succeeding the mislabelled 'Green Revolution', these words have returned to haunt us. *"Today, as a consequence of technologies introduced by the green revolution, India loses six billion tons of topsoil every year. Ten million hectares of India's irrigated land is now waterlogged and saline. Pesticide poisoning has caused epidemics of cancers. Water tables are falling by twenty feet every year. The soil fertility and water resources that had been carefully managed for generations in the Punjab were wasted in a few short years of industrial abuses. If India's masses have avoided starvation, they*

*have endured chronic and debilitating hunger and poverty”*.<sup>1</sup> India exports food, but 200 million of mainly rural, women and children go to bed hungry (Global Hunger Index). The ongoing commercialisation of agriculture in India continues, with the US extracting many pounds of flesh through trade agreements like the Indo-US Knowledge Initiative in Agriculture and US AID and USDA investments in agricultural universities to bring Indian agriculture under the full sway of genetically modified crops controlled by Monsanto the 90% market leader. Monsanto is also on the Board of this ‘Initiative’ representing US interests, along with other agri-giants.

Global hunger already at an unprecedented level is growing. Those who are the most hungry are the farmers who produce our food. The causes are mainly manmade attributable squarely to the free trade policies championed by the WTO, and manoeuvred through the chicanery of these processes to the detriment of the developing nations and backed by the IMF and the World Bank. The FAO contributes to this through its ambivalent stance, refusing to provide the kind of clarity that would encourage real solutions to the crises. Developing Countries have been forced to open up their markets to western agri-business giants and face a price war on cotton for example in India, because of huge US subsidies provided to American farmers exporting mainly GM cotton to India. We have the astonishing spectacle of poor Indian farmers not being able to compete with US farmers and they are committing suicide. It is called ‘competitive advantage’, which essentially means the Indian government is not able to protect our markets under the WTO policies, doesn’t feel obliged to provide the right level of support prices and/or just can’t compete with the magnitude of US government handouts to their farmers. Indian farmers are also GM cotton farmers facing higher input costs and of course, without the competitive advantage of their American counterparts. They also seem to have lost or have been deprived of the “*more sophisticated agricultural wisdom that has served Indian farmers for centuries*” (Lathem), (emphasis mine).

Corporations now own 98 per cent of patents in agriculture, own seed monopolies, and are extending their control of genetic stock (plant and livestock). Unless this trend is reversed, whole communities and countries will lose control over the production of their food and national food security. Fortunately, strongly echoing Sir Albert Howard, we have a new ‘avatar’ of him in the collective effort of 400 scientists, to champion our cause of how to produce enough food to feed the world over the next 50 years.

**The IAASTD:** The UN International Assessment of Agricultural Science & Technology for Development sees no role for GM crops or Modern Biotechnology, in a road map for agriculture for the next 50 years. Authored by 400 scientists and signed by 60 countries, including India, it took four years to complete. In its published conclusions in 2008, it states that there is no evidence that GM crops increase yield. Some biotech companies were so disgruntled by the report’s lack of support that they pulled out of the entire process. The IAASTD makes it clear that the road map for agriculture for the next 50 years must be through localised solutions, combining scientific research with traditional knowledge in partnership with farmers and consumers. The Report calls for a systematic redirection of investment, funding, research and policy focus toward these alternative technologies and the needs of small-farmers. Therefore, the IAASTD has clearly shown the international response to the WAY FORWARD which is sustainable agriculture that is biodiversity-based.

In his widely referenced report, ‘Organic Agriculture is the Future’, Doug Gurian-Sherman shows that organic farming systems round the world are *often as productive* as current industrial agriculture not only in developed countries, but more so in the developing world; that green and animal manures employed in organic agriculture can produce “*enough fixed nitrogen to support high crop yields*”.

*“These highly productive methods are needed to produce enough food without converting uncultivated land—such as forests that are important for biodiversity and slowing climate change—into crop fields. They build deep, rich soils that hold water, sequester carbon, and resist erosion. And they don’t poison the air, drinking water, and fisheries with excess fertilizers and toxic pesticides. Some have dismissed the promise of these methods. Among these are State Department Science Advisor Nina Federoff, who in [recent interviews](#) characterized organic agriculture as some kind of retreat to a quaint past. She and others characterize organic farming and similar systems as inherently unproductive, sometimes suggesting that such methods are capable of supporting only about half the current world’s population.*

*Federoff's view is at odds with the latest science, and represents a status quo kind of thinking. Today's dominant industrial U.S. agriculture relies on huge monocultures of a few major crops like corn and soybeans, and requires large inputs of fossil-fuel based synthetic chemicals to control pests and fertilize the crops. Such an agriculture churns out a lot of commodity crops (most of which are turned into meat and processed foods) while also contributing greatly to air and water pollution. Industrial agriculture is a major contributor of heat-trapping emissions and a major cause of so-called dead zones such as that in the Gulf of Mexico. And industrial agriculture is ultimately its own worst enemy, as it causes massive degradation of the very soil that is vital to farming itself. This kind of agriculture is unsustainable". (D G-S)*

**The MYTH of High Yields:** GM Crops will neither feed India nor the world. After 20 years of research and 13 years of commercialization, genetic engineering has not demonstrated sustainable benefits to farmers. 99% of GM crops, which have been commercialised, are either engineered (a) to contain the Bt gene, or (b) are herbicide tolerant (HT) GM crops as in Roundup Ready soybean. Neither of these is engineered for intrinsic yield gain. This is the plain science. The US Department's Agriculture's Review of 10 years of GM crop cultivation in the States, which has the longest history of GM crops, has concluded:

*"Currently available GM crops do not increase the yield potential... In fact, yield may even decrease if the varieties used to carry the herbicide tolerant or insect-resistant genes are not the highest yielding cultivars... Perhaps the biggest issue raised by these results is how to explain the rapid adoption of GE crops when farm financial impacts appear to be mixed or even negative."* USDA

'Failure to Yield' released by the Union of Concerned Scientists (UCS) considers the technology's potential to increase food production over the next few decades.

"The intrinsic yields of corn and soybeans did rise during the twentieth century, but not as a result of GE traits. Rather, they were due to successes in traditional breeding... Cutting through the rhetoric, overall pesticide use (herbicides, insecticides and fungicides) has not been reduced through GE... recent U.S. data suggest that herbicide use in GE crops is now significantly higher than it was prior to their introduction. Weeds that have developed resistance to the herbicide used with GE crops now infest several million acres, forcing greater herbicide use. Insect-resistant GE crops have reduced overall insecticide use somewhat, but on balance GE crops have not reduced our dependence on pesticides... It makes little sense to support genetic engineering at the expense of technologies that have proven to substantially increase yields, especially in developing countries... these include modern, conventional plant breeding methods, sustainable and organic farming and other **sophisticated farming practices** that do not require farmers to pay significant upfront costs..." UCS 2009 (emphasis mine)

### **Agriculture that is Biodiversity-based: The Irrelevance of GE Crops**

These reports bring us full circle to the evidence provided by Howard 70 years ago, as well as to the agricultural science and wisdom of Indian farming practices, which find their counterpoint in the wisdom of farmers in all traditional cultures and which scientists like Gurian-Sherman and of the IAASTD describe as "*sophisticated*".

Our health and nutrition are tied in with seed quality, variety and abundance. In over 10,000 years of agriculture, farmers have selected seed, exchanged seed, preserved biodiversity and delivered safe crops. It is noteworthy and a tribute to their acumen that over the past many centuries, not a single plant has been added to the list of major domesticated crops. On the other hand, with GM crops we cannot make an "*outcome prediction of the type that can be made when crossing two strains such as wheat that have been safely eaten for two thousand years*" (Schubert/Freese). In the span of 12 short years of GM crops, we are faced with major problems of safety and testing and billions of dollars are being spent in damage control and clean-up operations. GM is also drawing a disproportionate quantum of investment in research despite its weak performance to date. Instead, these billions of dollars of public money should be invested in now proven, modern alternative agricultural technologies.

**- The urgent question that must be asked is how much more of our scarce research dollars will be diverted to this controversial and unproven technology?**



The health and ecological risks of GM crops are well documented in the scientific literature. Now, the research on their contribution to CC (Climate Change) is gathering momentum. The new report published by GRAIN on the 7<sup>th</sup> Oct '09, shows that agriculture has a pivotal role in sequestering carbon, and that it is small farmers that hold the key to 'cooling the world'. The evidence highlights the fact that the global industrial food system is the most important "*single factor behind global warming, responsible for almost half of the world's greenhouse gas emissions*" and that its role in the climate crisis has been seriously underestimated. Soils contain enormous amounts of organic matter and therefore, carbon. Calculations in the report show that the organic matter that has been lost over the past decades can be gradually rebuilt, if policy is oriented to agriculture in the hands of small farmers and their ability through alternative farming practices to restoring soil fertility. "*In 50 years the soils could capture about 450 billion tonnes of carbon dioxide, which is more than two thirds of the current excess in the atmosphere*", a huge contribution to resolving CC. "*The evidence is irrefutable. If we can change the way we farm and the way we produce and distribute food, then we have a powerful solution for combating the climate crisis. There are no technical hurdles to achieving these results, it is only a matter of political will.*" (Henk Hobbelink)

On the other hand, with GM crops we face a dangerous pincer attack that we must demolish if we are to survive and thrive: (a) on the one hand, the massive disinformation that GM crops will feed the world including India through mythical high yields and without harm, is reminiscent of the 30 years of disinformation that surrounded Climate Change. The IPCC Report (with Pachauri as Chairman) though almost too late, was nevertheless required to change those perceptions and get consensus across borders on urgent climate mitigation solutions. Fortunately for the world, the International solutions for agriculture proposed by the IAASTD Report and the evidence for the potential contribution of agriculture in the carbon sequestering solutions of organic farming and the role of small farmers, are TIMELY. We must heed these; and (b) on the other hand, a comprehensive deregulation of the kind that led to the melt down of global financial markets. The clear evidence is that the US has similarly shown the way to a dangerous and unscientific deregulation of GM crops first in the US and that role-model is being pushed in India and other developing countries.

The FAO must take note of the sanity of these road maps for urgent change, and the great irrelevance of GM crops, which are seriously and it must be said, dangerously hindering that vital focus and redirection of resources that are required in agriculture. If the FAO will lead this process for change, then it must encourage and broker that change without ambivalence, and support national and sovereign governments in India and the developing world in these solutions, no matter what pressures a 'misguided' US policy may impose on all parties.

On the 'hope' that the IAASTD generates:

*"While here I stand, not only with the sense  
Of present pleasure, but with pleasing thoughts  
That in this moment there is life and food  
For future years".*

William Wordsworth, Tintern Abbey

Aruna Rodrigues  
Director, Sunray Harvesters  
India

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## **Contribution by Nnenna Nwoke Kalu from Nigeria**

### **Education, Information (dissemination and sharing) key to ending hunger by 2050**

I am Nnenna Nwoke Kalu, consultant in agriculture and food security and coordinator of an NGO working on agriculture and food sector, with bias to the vulnerable. Based in Nigeria.

I read the contribution of Mr. Moises Gomez Porchini from Mexico. I wish to say that while I agree with him on the profit priority interest of the private sector, I disagree that the responsibility to ensure food security, health and education is the responsibility of the state, and the the state should be the starting point. Anyone can undertake education, particularly, advocacy and sensitize and carry along other stakeholders.

I dare say that Moises mistake poverty for malnutrition or eclipsed malnutrition with poverty. Without information we are condemned more to malnourishment than poverty. Poverty and malnutrition can actually move in opposite direction and that is the project I am working on now sort of a new mandate of – **How to ensure that the poorer they grow**, particularly with this unholy wedlock between food and financial crises, **the better nutritiously fed they are**. This is very attainable and can be achieved mainly with education, information sharing and dissemination.

I wish to share an experience. I met a woman, obviously malnourished, backing a baby (about 2yrs, from looks). I did not have to consult a doctor to know the child is marasmic. You will know instantly they are both poor. The baby possibly showed sign of hunger or it was meal time and the mother bought him 'gala', a snack of high carbohydrate concentrate and a little meat filling. This product costs N60.00 (\$ is about N150). Without trying to run down the product, I feel a better option at their state of health and finance would have been to purchase a small bundle of vegetable, tied at the cost of N20.00, 'agidi', which is a thick paste made out of ground and sieved maize, another N20.00 and then pinch of salt, pepper etc at another N20.00. This would have made two nutritious and healthy meals for the baby. So, in the immediate, while resources have not improved, the poor can still feed well from locally available food. But that is if she is guided through education/ information to know what better options there are. These foods are not just available, they are accessible and affordable. Poverty can be a basis to encourage people to look inwards. And we know fresh foods are usually safer and richer than the processed. So the key issue is not to turn around poverty or to produce more food in the immediate (although we will keep trying) but to re-orientate them on what better options are already available.

Without information, we are condemned more to malnutrition, a situation that is plaguing a great percentage of the people in Africa, and offering a base for diseases and of course still perpetuating poverty. What the people need now is information to be major stakeholders / players in their own lives. The state could support with enabling policies and environment. But the drive should come from individuals and groups, or any quarters who will then seek support from others. The private sector, could still initiate it possibly as part of their corporate responsibilities and or via moralisation. Whoever is initiating it must include programs of sensitizing policy makers. We must seek recognition that the welfare of the individual is the foundation and real essence of development. Nutrition and safe food, which I term nature's health insurance, are the primary source of health and also the welfare of the people measured by nutritional status is the determinant of the seriousness of any government and its development partners etc. This should be the immediate goal and the time to start is NOW.

Nnenna Nwoke Kalu

## **Contribution by Lateef Bamidele Taiwo from Obafemi Awolowo University, Nigeria**

Dear All,

I read with interest the contributions of Brian Thompson and his colleagues of FAO's Household Food Security, Nutrition and Livelihoods Group on *"How private-sector interest can be linked to needs of smallholder farmers and marginalized groups, including indigenous people, to meet the*

*challenges of food insecurity and malnutrition?"* I also read the response of Moisés Gómez Porchini. I agree with his submission that the interests of the private sector appear to be in constant conflict with the interests of vulnerable groups (small farmers, indigenous, rural women, the poor). There are however, ways to wriggle out of this conflict. It is by enacting enabling laws that can compel the private sector to making their own contribution to developments from huge profits they declare annually. This method had worked in Nigeria especially in the education sector. By law, a private sector contributes certain percentage of its annual profit to education tax fund (ETF). This fund had in no small measure helped in rehabilitating decaying infrastructure in many tertiary institutions in the country. Similar fund can also be raised for agricultural development.

Another point raised, according to Moisés Gómez Porchini; ensuring food security, health and education of people is a responsibility of the state. Agreed. But individuals and non-governmental organizations also have their roles to play. For example, a system put in place for agricultural development by government has to be supported by end-users. If such a system is to survive, the private sector, the beneficiary of such a system and of course non-profit organization must rally round to ensure that the system is sustained. It appears government is overburdened by other sectors of the economy. The problem of corruption is taking a centre state especially in the developing countries. Rural infrastructural development programmes are of no priorities to many developing nations. Many governments now spend more on defence than on agriculture. The point is that, we as individuals must stop waiting for government. We must take our destiny in our own hands. Let us form pressure groups in form of cooperative societies and prioritized our needs. The little we can get from government must be maximally utilized. There must be the drive in the resource-poor individuals to survive. I know we can attain the target of 100% food production if we are committed to do so. Thank you.

Lateef Bamidele Taiwo  
Institute of agricultural research and Training,  
Obafemi Awolowo University,  
Ibadan,  
Nigeria.

### **Contribution by Nnenna Nwoke Kalu from Nigeria**

Brilliant work here by Brian Thomson et al. At all times dietary micronutrient content 'must' be considered. It is very important. It is essential. Diet should have supremacy over meal for utmost body utilization and function. Granted the body needs carbohydrate for energy, it also needs other nutrients for fighting diseases/ protection and protein for balanced growth and development. That is the basis of nourishment.

We can mobilize R&D by starting from the processing, storage etc that communities are used to before adding scientific improvement patterns. Change does not mean 'do away with the old/ known'. First recognition is given to what exists –traditional system, foods and practices and then gradually additions and subtractions are made. We must build on the old. I believe anything completely different will meet with resistance.

It could also in some cases mean development of the new modern concept alongside the traditional, where none disturbs the other. The old could gradually be integrated or left to serve its purpose and population. We must no encourage development that aims to completely do away with tradition.

Also, development as is used in agriculture is a concept connoting growth, expansion and progress. Moving from production to improved nutrition is progress. I believe geographical areas have foods that are high in particular nutrients. Depending on choice of nutrient, emphasis should be laid on their increased production. Also, improved storage and processing techniques should be encouraged, likewise education made to boost their intake. Above all, we must emphasize the link between health and good nutrition at all times.

Africa's problem is not much of hunger as it is of 'hidden hunger', which is lack of micronutrient intake. Poverty and lack of education/ knowledge are the two major contributors to high carbohydrate intake because of its bulk and cheapness. This has and is continuing to open people up to malnutrition which forms base for lots of diseases, and is also still pushing survivors into further poverty. A lot of work needs to be done in producing affordable high micro-nutrient food if we want to strengthen efforts at eradication of malnutrition, particularly in Africa. Home garden is a concept that should be re-introduced- where a household has something to fallback on in the immediate. With education, they know what constitutes their food need. This will help household food security and assist in malnutrition eradication.

Nnenna Nwoke Kalu

### **Contribution by Maria van Heemstra from the World Council of Churches, Switzerland**

I am a biologist and agronomist by training and have done research in the field of genetics; my PhD was on intercropping. I also just completed a certificate in Biosafety and Plant Genetic Resources Management (IHEID, Geneva, Switzerland). I wish to emphasize that the opinions expressed below are my own personal opinions based on my own research and experience.

I have just joined this forum and am grateful for this opportunity to express my views. I am very pleased to see the number of people who advocate for a more sustainable agriculture and recognize the benefits and potential of organic agriculture. We have to recognize that this is the type of agriculture that has sustained great civilizations since the beginnings of agriculture some 10,000 years ago, and what we now ironically call "conventional" agriculture has only existed since the last century. I believe in a food sovereignty model where food and agricultural products are not considered mere commodities in trade agreements, prices cover the real costs of farming, and farmers as well as common citizens are encouraged to be stewards of agrobiodiversity. Given that, according to statements often made by World Bank and other such entities, most the 1 billion+ people who live on less than \$1/day are farmers, it stems from this that the most effective way of ensuring food for all would be to empower such farmers to better feed themselves and to help provide for their fellow citizens.

Many people have emphasized some points that I feel are important including:

- the need to look at the problem of food production **holistically** in the context of global warming and the need to ensure the sustainability of our soils and environment: for example, the problem of industrial soybean cultivation is leading to soil nutrients of South America being mined to feed pigs in Europe and China just to end up as liquid manure in the waterways and eventually the ocean.
- the need to support small farmers who are producing food in sustainable ways, particularly **women** (i.e. reinforce women's rights for access to land, credit, education etc) who in certain regions of the world are the main food producers, rather than prioritizing large agribusinesses
- the issue of **land ownership**: there should be international policies to ensure that land resources cannot be usurped by large private corporations or individuals to the detriment of local farmers.
- I concur with the comments of Stanford Blade about the need to "**raise the level of global interest, engagement and support from individuals and organizations who do not currently see themselves as having any role in agriculture**". With the trend towards more and more people living in cities there will be fewer and fewer people involved in and knowledgeable about agriculture unless conscious efforts are made to educate and involve people in agriculture in some way. Food is the most basic of needs and its production should not be left in the hands of a minority. The more people there are involved in agriculture, the

greater the knowledge base available to find solutions. We cannot leave the problems of feeding the world in the hands of a small number of large agribusinesses. This would be far too dangerous. This, however, has been the trend and is leading to the “McDonaldization” of agriculture, where farmers are becoming mere technicians executing the technological recipes given to them by large multinationals, as opposed to the small farmers who may grow a myriad of crops and varieties and have intimate knowledge of these crops.

To add to some of the “crazy” ideas mentioned by Stanford Blade to involve more people I would suggest:

- including a garden in all schools for children to learn to grow food and having practice growing things as a compulsory part of school curriculum, as important as Maths or History
- creating urban communal gardens in inner cities;
- link gardeners without gardens with gardens without gardeners
- growing food as therapy and rehabilitation (in youth detention centres and prisons for ex.)
- agricultural education in Universities should be interdisciplinary, with links to sociology, anthropology and other disciplines.

Although the majority of contributors argue for support to small farmers the alarming trend towards the concentration of agriculture in the hands of a few powerful multinationals continues. An alarming new development which threatens to further exacerbate this trends is the fact that Monsanto has succeeded in achieving the labeling of the GMO round up ready no-till direct sowing method of soybean cultivation as a “carbon conserving” strategy, which would be eligible for funds from carbon credits in carbon offset schemes to reduce global warming. This will give even more power to the large soybeans growers and contribute to more land grabs and loss of small diverse farms in Latin America.

I fear, however, that despite these sound recommendations of many to support sustainable agriculture and small farmers and the benefits of organic agriculture will not be supported by those in power (governments, large companies, large funders). The fact that breastfeeding, one of the simplest measures to ensure good nutrition for babies, is only practiced by 30% of mothers today, despite the knowledge of its benefits which have been proven scientifically for many years now, is very discouraging. This situation is due to the fact that companies continue to do faulty advertising about the benefits of their milk substitutes and governments do not do enough to educate about the benefits of breastfeeding. Agriculture will likely follow the same trend owing to the lack of political will of most governments and large multinationals pushing their own products regardless of their social and environmental consequences.

Maria van Heemstra,  
Ph.D. in Agronomy (Rutgers University),  
project assistant for the Faith, Science and Technology and Health and Healing projects at the  
World Council of Churches,  
Geneva, Switzerland

#### **Contribution by Moisés Gómez Porchini from Mexico**

Dear All,

Food, good health and education are Human rights and as such it is mandatory to guarantee them. However, when saying this, I by no means hope neither that it is the State that takes care

of bringing meals to each person in the country nor that it is the only provider of education and healthcare, but that it is the State's responsibility to put conditions in existence which allow these rights to be guaranteed.

In fact, the way in which the government achieves equality among the population regarding health, nutrition and education, will give us the measure of its efficiency, regardless of who directly provides the service. Unfortunately, in the developing world, inequality is the constant that we find most often in this regards.

When, in my previous contribution, I spoke of "people hungry and ignorant", I said that being painfully aware of everything that this sentence entails, including the great paradox that we have in Mexico, where twenty million people are already in a state of food poverty, while at the same time we have a serious problem of obesity and diabetes.

The bottom line is that this paradox is not coincidental but the result of the collision of private and public interest, particularly of the disadvantaged.

We are the country with the second highest per capita consumption of soft drinks in the world, only after the United States, and this of course is the result of the sales work of soft drink companies, which, incidentally, do not use the Mexican cane sugar as a sweetener, but instead high fructose corn syrup, produced in the United States, because it better suits their interests. The result is that while the Mexican sugar industry is in crisis, our people nourish themselves, as mentioned by Nenna Mwoko Kalu from Nigeria, in an inappropriate manner, with a bottle of soda and some fries or a roll of low nutritional value but with a higher cost than more nutritious food. But our people are acting in response to information that they receive from the interested companies and end up buying their products.

I doubt these companies will, on their own initiative, decide to spend an amount equivalent to that spent to sell, on informing the public that is not healthy to consume as much soda.

So I agree with Nenna Mwoko; people need information to take their fate in their own hands; now.

Saludos cordiales

Moisés Gómez Porchini

### **Original message in Spanish**

Estimados todos(as):

La alimentación, la salud y la educación, son derechos humanos y, como tales, es obligación del estado garantizarlos. Sin embargo, al decir esto, de ninguna manera espero que sea el estado quien se encargue de proporcionar la comida a cada habitante del país ni que sea el único participante en proporcionar educación o salud a la población, sino que es el responsable de que existan las condiciones para que esto sea posible.

De hecho, la medida en que un gobierno logre que exista equidad entre la población en cuanto a salud, alimentación y educación, nos dará la medida de su eficiencia, independientemente de quien lo proporcione directamente. Desafortunadamente, en el mundo en desarrollo, es la inequidad la constante que más encontramos en este aspecto.

Cuando hablo en mi participación anterior de "un pueblo hambriento e ignorante", lo digo dolorosamente consciente de todo lo que encierra la frase, incluyendo la gran paradoja que tenemos en México, en donde veinte millones de personas se encuentran ya en un estado de pobreza alimentaria, al mismo tiempo que tenemos un grave problema de obesidad y diabetes.

La cuestión de fondo es que esta paradoja no es fruto de la casualidad sino del choque precisamente de los intereses privados con el interés público, en especial el de los desprotegidos. Somos el país con el segundo consumo per cápita más alto del mundo de refrescos embotellados, solo después de los Estados Unidos, y esto por supuesto es el resultado de la labor de ventas de las compañías refresqueras, las cuales, por cierto, no utilizan el azúcar de caña mexicano como edulcorante, sino jarabe de alta fructuosa de maíz, producido en Estados Unidos, pues así conviene a sus intereses particulares.

El resultado es que mientras la industria azucarera mexicana está en crisis, nuestro pueblo se alimenta, tal como lo plantea Nenna Mwoko Kalu, de Nigeria, en forma inadecuada, con un refresco embotellado y unas papas fritas o un panecillo de escaso valor nutricional y un costo más alto que el que pagaría por un alimento más nutritivo. Pero nuestro pueblo está actuando en respuesta a la información que, esa sí, recibe de las compañías interesadas en que compre sus productos. Dudo mucho que estas compañías, por su propia iniciativa, decidan gastar una cantidad equivalente a la que han gastado para vender en informar ahora al público que no es sano consumir tanto refresco embotellado.

Así es que coincido con Nenna Mwoko, necesitan la información para apropiarse de su destino, ahora.

Saludos cordiales

Moisés Gómez Porchini

#### **Contribution by Doreen Stabinsky from Greenpeace, UK**

Dear FSN-members,

The attached document is a Greenpeace International briefing on the topic of the High Level Expert Forum "How to feed the world in 2050."

Regards,

Doreen Stabinsky

#### **How to feed the world in 2050? An inconvenient truth**

The International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) is the first and most authoritative global assessment of agricultural knowledge, science and technology (AKST). Concluded in 2008, the IAASTD addresses the overarching question: *"How can AKST be used to reduce hunger and poverty, improve rural livelihoods, and facilitate equitable environmentally, socially, and economically sustainable development?"* Four hundred scientists, in over 2000 pages, assess the state of agricultural knowledge, the challenges currently faced by agriculture, and lay out possible policy directions for governments and intergovernmental bodies.

The overarching conclusion of the assessment?

**Business-as-usual is no longer an option.**

*"If we do persist with business as usual, the world's people cannot be fed over the next half-century. It will mean more environmental degradation, and the gap between the haves and have-nots will expand. We have an opportunity now to marshal our intellectual resources to avoid that sort of future. Otherwise we face a world nobody would want to inhabit."*

*Professor Robert T. Watson, Director of the IAASTD*

This is a hard message for the keepers of the status quo to swallow. Organisers of the High-Level Forum on “How to feed the world in 2050” clearly took pains to avoid consideration of the IAASTD conclusions. A review of the numerous background papers written for a preparatory meeting held in June 2009 revealed a single paper referencing IAASTD conclusions, with the reference buried deep in the paper. The intervention of an impressive number of civil society organisations who called attention to the deficit only resulted in the FAO including a link to the IAASTD reports on the conference website and the invitation of a co-chair of the IAASTD process as a panelist.

Why go to such pains to ignore the most far-reaching and comprehensive assessment to date of agricultural knowledge, if the meeting organisers are indeed serious about feeding the world? Clearly the IAASTD comes to some inconvenient conclusions that run counter to the dominant paradigm and its trilogy of outdated solutions: ‘markets first’, trade liberalisation, and input-intensive production technologies.

The current industrial farming system, which is dependent on fossil fuels and chemical inputs and gives scant regard to common goods, is not sustainable from an environmental, economic and social point of view. It has led to a world where 1 billion people suffer from hunger and 1.6 billion people are overweight.

**The results of the IAASTD must be the starting point for an urgently needed thorough and radical overhaul of present international and national agricultural policies**

#### **I. Markets first vs. farmers first**

The smallholder farm sector feeds the majority of humanity, manages about 60% of arable land worldwide and is the main source of income for one-third of the world’s population. Ensuring small farmers’ access to seeds, land, water, knowledge, capital, markets and human rights is essential to guaranteeing their continued survival.

The challenge of the coming decades is to achieve optimal food efficiency per hectare, i.e., to produce a maximum of healthy food where it is needed with the minimum of fossil fuel and chemical inputs, as well as freshwater, soil and environmental degradation. These goals are poorly served by present global market imperatives of producing a maximum of financial return with the minimum of human labour inputs and minimal regard for the overexploitation of common goods through externalisation of the environmental and social costs of production.

Trends towards further privatisation of water, seeds and knowledge, as well as unrestricted global markets for arable land, will serve the strongest market players at the expense of equitable global food security. They are unlikely to improve food efficiency and promote the vital reduction of our food, feed, fuel and fibre production’s ecological footprint. Restricting access to these resources to those best performing on a globalised market fails to address the fact that hunger and poverty and the depletion of public goods must be fought at a local level under generally imperfect market conditions.

IAASTD conclusions point instead to the need to **reduce reliance of small farmers on purchased and patented external inputs**, thus, to develop seeds, improve soil fertility and water efficiency, control pests, guarantee year-round food availability and adapt to climate change by means of **locally-adapted** farming methods and biodiversity, rather than expensive inputs.

*“In developing countries especially, instruments such as patents may drive up costs, restrict experimentation by the individual farmer or public researcher while also potentially undermining local practices that enhance food security and economic sustainability. In this regard, there is particular concern about present IPR instruments eventually inhibiting seed-saving, exchange, sale and access to proprietary materials...”*



Contrast that position with the one articulated by the US government in its new 'Global Hunger and Food Security Initiative', where farmers are to rely on purchased inputs from a strengthened private input sector:

*"We will work with partners to develop **private** input industries, organize **private** dealer networks."*

In this view of the world, small resource-poor farmers lack quality seeds or fertility only because there are no private input suppliers to sell them goods, not because the agricultural research and extension system has ignored them. If they only had access to a market, all would be solved - except perhaps the lack of effective demand, i.e., money.

## **II. Trade liberalisation**

The bulk of agricultural production and consumption takes place outside or on the periphery of national markets, rather than international markets, which concentrate on a few commodities, mostly for animal feed and industrial use. The economic invisibility of the small-farm sector, coupled with ever-declining commodity prices on the world market, led policy-makers for years to assume that cheap imports were the best way to feed poor populations. That is until the food crisis struck in 2007-2008 and prices of internationally-traded commodities and inputs went skyrocketing. Suggesting some international and national control mechanisms while continuing to advocate further liberalization of agricultural trade is unlikely to address the major underlying problems caused by the global commodification of agricultural products, externalizing ecological and social costs and maintaining wasteful and destructive, highly inequitable terms of trade.

On this topic, the IAASTD is quite cautious:

*"There is growing concern that opening national agricultural markets to international competition before basic institutions and infrastructure are in place can undermine the agricultural sector, with long-term negative effects for poverty, food security and the environment."*

*Some developing countries with large export sectors have achieved aggregate gains in GDP, although their small-scale farm sectors have not necessarily benefited and in many cases have lost out. The small-scale farm sector in the poorest developing countries is a net loser under most trade liberalisation scenarios that address this question."*

## **III. New technologies**

The IAASTD assessment of the Green Revolution is not welcomed by supporters of the status quo. While recognizing that the Green Revolution (and its component fossil-fuel dependent technologies of pesticides, synthetic fertilizers, input-responsive seed varieties and irrigation) contributed to substantial productivity increases, the assessment concludes that those increases were not well distributed and have resulted in serious environmental and human health consequences jeopardising the sustainability of our present food-system.

*"People have benefited unevenly from these yield increases across regions, in part because of different organisational capacities, socio-cultural factors, and institutional and policy environments. ... Emphasis on increasing yields and productivity has in some cases had negative consequences on environmental sustainability."*

To the chagrin of promoters of genetic engineering<sup>2</sup>, the assessment was decidedly lukewarm on the potential of this and some other new technologies exclusively aimed at increased market productivity. Instead, the IAASTD focused attention on the need for systems-oriented, agroecological solutions to the complex and diverse problems of agricultural production,

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<sup>2</sup> So much so that the representatives of the genetic engineering industry withdrew from the process before its conclusion.

redefining how we might conceive of 'cutting edge' research and offering a new, participatory concept of innovation rather than individual technologies.

*"Historically the path of global agricultural development has been narrowly focused on increased productivity rather than on a more holistic integration of natural resources management (NRM) with food and nutritional security. A holistic, or systems-oriented approach, is preferable because it can address the difficult issues associated with the complexity of food and other production systems in different ecologies, locations and cultures."*

Such integrated and multidisciplinary innovation concepts surpass the present 'technology transfer' system and its agricultural treadmill. Hence, a significant result of the IAASTD process was to elevate the status of traditional and local knowledge of farmers and communities to the level of knowledge coming from men in white lab coats at major formal research institutions.

*"[G]iven the new challenges we confront today, there is increasing recognition within formal S&T organisations that the current AKST model, too, requires adaptation and revision. Business-as-usual is not an option. One area of potential adaptation is to move from an exclusive focus on public and private research as the site for R&D toward the democratisation of knowledge production."*

*Once AKST is directed simultaneously towards production, profitability, ecosystem services and food systems that are site-specific and evolving, then formal, traditional and local knowledge need to be integrated. Traditional and local knowledge constitutes an extensive realm of accumulated practical knowledge and knowledge-generating capacity that is needed if sustainability and development goals are to be reached."*

Since the adoption of the IAASTD in April 2008 some of its messages have already been integrated – though rarely referenced to the IAASTD – in the perspectives and rhetoric even of most of its detractors. These agreements should serve as the starting point of the High-Level Expert Forum.

Among these agreements are:

- Acknowledgment of the pivotal role of small farmers in fighting hunger and achieving more sustainable agricultural practices
- Necessity of increased public investment in agricultural research, knowledge and extension as well as rural development and infrastructure with special emphasis on small and particularly women farmers
- Integration of development goals with urgent climate change and adaptation efforts, acknowledging industrialised countries' financial responsibilities
- Acknowledgement of the detrimental impacts of expanding present agro-fuel production on food safety and sustainability, requiring instant change of policies

**Contribution by Amanda Galvez Mariscal from Universidad Nacional Autonoma de Mexico, Mexico**

Dear FSN Forum,

Please find below the written version of the verbal intervention I made in High Level Expert Meeting in Rome on October 13 "How o feed the world in 2050", in the final round of participations.

My name is Amanda Galvez Mariscal, Food Chemist. I have a PhD in Biotechnology and I am a full time professor working for the National Autonomous University of Mexico (UNAM). I coordinate also a University Program on Food Science, a liaison office in UNAM for Food Science. My field of research in the University deals with the role of plant proteins in food formulations and in nutrition. I work on this last issue in association with researchers from the National Institute of Medical Sciences and Nutrition "Salvador Zubiran" in Mexico.

I attended the High Level Expert Meeting in Rome on behalf of Dr. José Narro, Rector of UNAM who was originally invited. Being an academic, I was worried by not finding Education as a key issue in the discussions, although it was mentioned by some of the participants.

Thanks for your attention!

## **THE ROLE OF EDUCATION IN TIMES OF CRISIS**

EDUCATION as a cross cutting issue has been mentioned several times in the discussions of the High Level Expert meeting "How to Feed the World in 2050?" Although it was not discussed as a specific matter in the meeting, its role in this matter is crucial. Funds have been invested in Education in all countries, and maybe no return has yet been observed. But then what is the yardstick to measure results on Education investments? Perhaps we also need here a paradigm shift just as Professor on Agricultural and Resource Economics Alain Janvry from UC Berkeley proposed at the beginning of the meeting.

For better targeting education we might take a renewed look at:

- Agronomical education for poor farmers
- Education poor farmers and breeders for a renewed extensionism
- Nutritional education for poor people and especially women, rural and urban, because they are the guardians of the well being and for feeding their families not to become mal-nourished, diabetic or obese.
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Any recommendation coming from this meeting cannot succeed if consumers, smallholders and farmers are not EMPOWERED WITH EDUCATION FOR THEM ACTUALLY SUCCEED IN FEEDING THE WORLD IN 2050. No program will succeed if EDUCATION is not there as a basis, for them actually apply the solutions proposed by economists, food scientists and agronomists in FAO.

Dra. Amanda Galvez  
Coordinadora  
Programa Universitario de Alimentos  
Universidad Nacional Autónoma de México

## **Contribution by Daniel Zimmer, former Executive Director of the World Water Council, France**

Dear Hartwig de Haen, dear colleagues

Thank you all for this very interesting discussion. Here is my contribution.

1. There is first of all a clear need to develop a comprehensive view and map of all issues raised by this discussion. The problem is too often perceived as a problem of food production in developing countries. We need to broaden this image and to develop an understanding "from field to fork" as well as "from undernourished to over-nourished". To do this there is an obvious need to increasingly involve the consumers who are key actors and may be the most important drivers in the future.

2. The issue of food losses and wastage needs to be raised much more clearly and solutions need to be developed in that direction. Losses by consumers and retailers in developed countries (without considering post-harvest losses and transformation losses) represent between 20 and 30% of the food produced and more than 60% of these losses could be avoided according to most recent studies. Average post-harvest losses in developing countries typically range between 10 and 30% of the food produced. It is therefore clear that we produce enough food globally. We should remember that in 1975 the General Assembly of the UN committed to a reduction by half of the post-harvest food losses. This commitment has vanished quickly after the successes of the green revolution. I feel that we should remind this old commitment to the next Food Summit.

3. Therefore the issue of famines and undernourishment needs to be clearly distinguished from the global issue of producing food for 9 billion people. There is and there will be enough food. The issue of undernourishment requires dealing with production capacities of vulnerable farmers on the one hand (who represent the majority of undernourished people) and with the growing number of poor and vulnerable people of the cities. The two types of populations need different measures, but the solutions of the two problems are strongly interrelated since poor farmers (or their children) are those likely to move to the cities in the future

4. Political will is obviously the key. How to develop it? The importance of the poor farmers in the development (or lack of development) of developing countries has been too much neglected. This needs to change.

I would like to bring to your attention the experience of the water community which has developed a World Water Forum to raise the political dimensions of the water issues. This Forum involves today all stakeholders (including (1) decision makers (2) experts and (3) civil society) who have the opportunity to sit at the same table and exchange views. Perhaps such a global multi-stakeholder platform would be very useful to develop the comprehensive view of the issues which in my view is a priority today.

Daniel Zimmer

Former Executive Director of the World Water Council

France

### **Contribution by Gangadhara Swamy from India**

Dear All,

Ensuring food security among all of us is the need of hour; I take this opportunity to share few of my suggestions for this topic:

1. **Decentralized agriculture planning:** Each area should not be more than 100 kms, plan for all the crops, which can be taken in that area, and include all the cereal, pulse, oil and vegetable crops. Ensure market linkage for the all the crops. Ensure the food security of each area first and collect the excess store as buffer for any emergencies in the same area or any nearby area for future.
2. **Utilizing the available natural resources:** Season wise planning is a must, during rainy agriculture season, rise as much as food crops as possible, in summer focus only fodder, vegetable and only essential crops, it helps to minimize water and electricity usage, when agriculture is done under limited irrigation condition. At family, community, school level kitchen gardens should be promoted to utilize the very inch of available land. IFS (Integrated farming system) is the good method, each and every component in agriculture should be integrated to get the maximum benefit from agriculture and reduce the cost of cultivation: seeds, compost, livestock.

3. **Sharing the benefits:** Promote the system of sharing the benefits with land owners and field workers in terms of grains (portion of daily wages in terms of grain) and develop proper food storage in the worker houses.
4. **Focus on seasonal unused food crops:** In most of rural area, people were collecting so many different types of leafy vegetables from agricultural fields, now we are treating them as weeds. Again this type of unused food crops should be identified and promoted.
5. **Balancing the food prices:** When price a particular commodity increases, suddenly focus should be given to other alternative commodity, otherwise people will spend more money on same commodity, lose their savings, so they can not buy other things.
6. **Food storage:** Government should decentralize the storage of food materials. For example in India, central govt is the sole in charge of food storage, it is a bad practice, it takes lot of time for distribution from one region- other region due to lengthy procedures. Each state should be given with provision to store a portion of it every year. Every quarter central govt should inform the stocks available in the storage, proper mechanism should be ensured to avoid wastage of it.

Let each one try our best to find solutions to eradicate poverty and food hunger in the world

With regards

B.P.Gangadhara Swamy

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### Concluding responses and comments by Hartwig de Haen

The broad and serious participation in this Forum has confirmed that the question posed in the title (How to feed the world in 2050?) is obviously of great interest and concern to many. I was particularly impressed by the commonality of arguments and positions that became apparent in a large number of contributions. Given the complexity of the issue and the diversity of approaches and solutions to promote sustainable agriculture and to end hunger and malnutrition, I had expected more controversy, for example on the pros and cons of modern biotechnology or on trade policies.

I am of course fully aware that participation in this FSN Forum cannot be taken as in any way representative for the opinions held worldwide. Therefore, I refrain from any generalization from the contributions. I simply note that the Forum has generated the presentation of a rather broad array of observations and interpretations of the current situation of food and agriculture worldwide and of creative suggestions of solutions, in many cases based on rich practical experience.

Although controversies did come out in several cases, for example on the role of organic farming versus high input agriculture, the majority of participants have expressed opinions which were mutually consistent or complementary. Without claiming to be exhaustive and at the risk of misinterpreting some statements, I want to share my own very brief summary by highlighting in bullet form just some of the major issues raised and propositions made by participants:

- **Singular versus comprehensive solutions:** Many expressed the need for comprehensive approaches to address the double challenge of (1) assuring access to adequate food for the more than one billion people who suffer from hunger and malnutrition today and of (2) increasing food supplies on a sustainable basis so as to meet the growing needs of the world's population over the next half-century. Reducing the issue to a problem of increasing production would clearly be too narrow.

- **The need for diversity:** Obviously motivated by the desire to address multiple causes of risk and uncertainty, but also seeking to preserve traditions and culture, many participants have expressed a strong preference for maintaining diversity, and this in very different areas: dietary diversity for healthy nutrition and culturally appropriate diets, diversity of farming systems for resilience against climate and market risks and for healthy ecosystems, genetic diversity for breeders, social and cultural diversity to enable site-specific, holistic and community-led livelihoods.
- **More focus on access:** Interestingly, many participants underlined strongly the need to ensure better and more secure access of the poor and vulnerable to various goods, assets and services. Most prominently, such calls referred to the access to food, which should receive more attention in comparison to the conventional focus on increasing the availability of food. It was stressed that people need not only economic access to food, but that access must also be socially equitable (e.g. no discrimination of women or children), physical and physiological. Improved access was also called for with regard to land, water, seeds, inputs, credit and social services.
- **Ingredients of successful strategies:** Various elements of successful policies and strategies against hunger and malnutrition have been mentioned, some of which have not been getting adequate attention in the public debate: good governance (including absence of corruption, subsidiarity principle, accountability, human rights, etc.), secure access to land, public investment in agricultural research and rural development, focus on nutrition improvement, policies/legislative frameworks and institutions to dynamise the private sector growth in off-farm and agro-related economic activities, active participation of all stakeholders, including the private sector and NGOs and also parliaments in the policy process, social safety nets. Interesting issues discussed amongst participants included the question whether certain services, such as training and education, traditionally provided by public sector institutions, couldn't also or more effectively be delivered by private organisations. Different positions were expressed regarding the role of trade liberalisation, although many participants seemed to share the view that small farmers in developing countries should not be fully exposed to competing low price imports from countries which protect their own agriculture.
- **Nutrition security as an integral part of food security:** Several detailed contributions suggest putting greater emphasis on nutrition security and recall also that nutrition improvements would contribute directly to the attainment of a large number of MDGs. All too often, proposed strategies to fight hunger are still based on the implicit assumption that the main cause of food insecurity is lacking quantities of food and lacking food energy. It is obviously still not widely enough known that an adequate food intake needs not only to satisfy food energy needs, but also provide an adequate supply of micronutrients to avoid or reduce hidden hunger and related diseases. As the participants have underlined, nutrition interventions in the broadest definition need to be included not only in the design of food security strategies (in addition to food safety regulation), but also in estimates of investment costs of specific nutrition interventions, including the promotion of the nutritional diversification of diets, supplementation as well as various forms of fortification, nutrition education etc.. The aim must be to address the growing double burden of under-nutrition and of over-consumption. I hope that more governments will finally be convinced by the evidence that improving nutrition especially of children is not only a moral imperative and fulfilment of a basic human right, but also an investment of extremely high returns, even at aggregate levels of entire economies. Unfortunately it is hard to be optimistic, in view of the fact that this clear evidence has been publicly available since quite some time, yet many governments seem to ignore it.
- **Smallholders versus commercial farmers:** Several participants expressed concern that the comparative advantage of smallholders, especially in Sub-Sahara-Africa, in food production is being increasingly threatened by larger commercial farms. Interesting proposals were made how farmers can be supported in the necessary adaptation, including both intra-agricultural adaptation as well as transition to non-agricultural sources of income.
- **Role of technologies – high-input versus organic agriculture:** Contributions related to the choice of technology and farming system covered perhaps the largest ground in the

contributions of this Forum. A relatively large number of them stress the considerable advantages of organic agriculture and the non-sustainability of high input agriculture based on fossil energy. Some go so far to claim that organic agriculture can produce the same yields. Personally, I conclude from these contributions that there is a clear need to undertake more comparative assessments of all forms of farming systems considering both positive and negative externalities and to recognize that sustainable agriculture may use a multiplicity of technologies based on site-specific solutions. The aim of research involving the farmers themselves should be to conserve, protect and enhance the productive capacity of the natural resources on which agriculture depends (soils, water, biodiversity) and develop farming systems that combine yield growth with truly sustainable resource use.

- **Responding to the growing concentration of power:** There is a widely shared fear that the growing concentration in the food and agricultural system throughout the food chain will further marginalize the smallholders and reduce their bargaining power. One participant expressed this as follows: 'The core trends in the food system that dominates today have been driven by developments in the OECD countries, with saturated markets and the type of farming there. This is a fossil-fuel based, industrial and intensive approach, based on competition amongst and between the food system actors –input suppliers, traders, processors, retailers and caterers – for who makes what money out of the food system, which has squeezed both farmers and workers and aims to create new needs and demands amongst consumer for more profitable – or “value added” – products. Within each of these areas, we have seen a growing economic concentration of power. We have also seen a progressive deterioration in the terms of trade for rural people and farmers, the squeezing out of smaller farmers, the replacement of detailed local knowledge and labour using practices with broadly adapted varieties and breeds requiring fertiliser, pesticides and veterinary drugs to ensure productivity in more mono-cultural farming systems'. Several participants called for deliberate action in terms of rules and regulations, including a review of intellectual property legislation. Effective action must also include better empowerment of rural people to enhance their market position in this process.
- **Responding to climate change and expansion of biofuels:** Both these new challenges represent additional risks to food security. A major effort is needed to help countries in the Southern hemisphere adapting to the extraordinary risks resulting from climate change through research, development assistance and compensation for carbon sequestration. Regarding the rapidly expanding use of agricultural food commodities as feedstocks for biofuels, several participants called for action to minimize the competition between food and fuel for scarce land and water resources.
- **Importance of institutions:** There was a clear call for stronger institutions, which provide social services and extension for poor families on ways to help themselves (health, education, farm extension, nutrition); provide social safety nets for those who can temporarily or permanently not help themselves, ensuring the realization of human rights, including the right to food, meaning that everybody has physical or economic access to a minimum level of food, water, health services etc. Effective institutions are a particular feature of good governance. Priority will need to be also given to institutional reforms which enable all members of society, rural and urban, men and women, producers and consumers throughout the food chain, including the vulnerable and food insecure, to be adequately represented so that they have an effective voice in the policy process.
- **Political will:** Participants called for a more effective mobilization of political will of governments to take action to eradicate hunger and malnutrition and ensure sustainable supply growth. Some underlined that one reason for lacking government action could be silent/ineffective voice of the poor and food insecure (mostly rural populations in low income countries) in the political process. In fact, I believe this is an important point. Whatever can be done in terms of peaceful means of awareness raising should be undertaken to make governments of concerned countries aware that they have an obligation to respect, protect and fulfil the right of every human being to have access to adequate food, that enough is known how to reduce hunger and that even poor countries have various options of changing priorities in public policies and reallocation of public budgets. The key challenge is obviously to find effective ways of mobilizing political action without encroaching on countries'

sovereignty. One participant proposed the creation of a global multi-stakeholder platform. In the same context, another participant stressed explicitly the need for effective global governance of food security and called for a reform of the FAO Committee on World Food Security (CFS), claiming that 'if it is to contribute effectively to feeding the world now and in 2050, the CFS must be given a very clear mandate to address the above types of global issues and to ensure that timely action is taken on them'. In the meantime, the CFS has adopted a rather far reaching reform agenda which will hopefully achieve much of the goals expressed in the FSN Forum.

- **The International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD):** Several participants referred to the comprehensive appraisal of the state and perspectives for food and agriculture contained in the IAASTD report. Many echoed implicitly the IAASTD position, supported by four hundred scientists, that business-as-usual is no longer an option and that action towards sustainable progress for the coming half century must be based on localised solutions, combining scientific research with traditional knowledge in partnership with farmers and consumers. The IAASTD Report and calls for a systematic redirection of investment, funding, research and policy focus toward a system of agriculture which is 'biodiversity-based' and aims for a reduced reliance of small farmers on purchased and patented external inputs.

To conclude, I believe that more details can and must still be learnt from more research assessments of success (and failure) stories. However, I do not think that there is a lack of knowledge about the overall direction of the right policies and strategies to eradicate hunger and malnutrition immediately and to ensure a sustainable growth of food availability to meet future demand. The ingredients include absence of conflict, human rights-based good governance, investment in income earning opportunities for the poor, mainly, but not exclusively in agriculture and rural areas (source of livelihood for the majority of the hungry), sustainable management of natural resources, institutions which provide social services for the poor and give them a voice in the political process and access to social safety nets for the neediest. Immediate access to food and longer term income growth must have equal priority in public investments and institutional reform ('twin track strategies'). Over the last ten to fifteen years, FAO and other Organization have presented these main ingredients to success in numerous publications. And in fact, many countries have applied the principal recipes and managed to reduce absolute numbers or at least the prevalence of hunger.

Unfortunately, the rising number of hungry and malnourished people in the world is evidence that many governments do not seem to have the political will to follow the examples of the successful countries. It is time to remind them and the international donor community that action against hunger and malnutrition is not only a moral imperative and a contribution to social justice, and not only a very good investment, but that in accordance with the UN Charta it is also an obligation to respect, protect and fulfil the most vital basic right of every human being, the right to adequate food.

As the moderator of this particular FSN Forum I wish to thank the organizers for involving me in this interesting platform and all participants for their most valuable contributions.

Hartwig de Haen