Global Forum on Food Security and Nutrition

Climate Change and Food Security: setting the track for the HLPE

Collection of contributions received

Discussion No 71 from 14 June to 7 July 2011

CFS Committee on World Food Security

HLPE High Level Panel of Experts

Global Forum on Food Security and Nutrition

http://km.fao.org/fsn

TABLE OF CONTENTS

Introduction to the topic

Food and nutrition insecurity and climate change are, more than ever, the two major global challenges humanity is facing. These challenges are inextricably linked, and so should be the world's responses.
For these reasons, the Committee on World Food Security (CFS) requested its High Level Panel of Experts on Food Security and Nutrition (HLPE) to conduct a study on climate change to facilitate and inform the policy decision-making of CFS members.
In particular the aim of this study is to: "review existing assessments and initiatives on the effects of climate change on food security and nutrition, with a focus on the most affected and vulnerable regions and populations and the interface between climate change and agricultural productivity, including the challenges and opportunities of adaptation and mitigation policies and actions for food security and nutrition."

Final findings are to be presented at the CFS Plenary session in October 2012.
The HLPE hereby invites you to provide your views on the proposed scope of the study.
This will be used by the StC to finalize the terms of reference of the HLPE Project Team that will prepare the study and policy recommendations.

In the scope outlined we identified these main focus areas: Assessing direct and indirect impacts of climate change on food security and nutrition; Identifying vulnerable regions and populations; Adaptation and mitigation options for food security and nutrition; Recommendations for policies and actions.

1. Do you think the scope is appropriate?
2. Have important elements been omitted or should any of the elements outlined be left out?
3. In your opinion, what would be the main aspects that the report should emphasise?

Please be as specific as possible

We look forward to your kind response.

Yours sincerely,

On behalf of the Chairperson of the Steering Committee of the HLPE

Contributions Received

1. Saima Raza from the United Kingdom

Dear Sir/Madam,

I am DPhil student in the UK investigating climate migration and International Law. I would suggest the following additions/adaptations:

- Utilise the term 'food sovereignty'
- Indigenous and Tribal populations and food (vulnerable populations)
- Agro-ecology
- Right to food in times of Conflict and/or Natural disasters
- Climate Refugees and effects on food systems
- Within the Climate Change context: Drought, Famine and Food

Best,
S. Raza

2. Gabrielle Kissinger from Lexeme Consulting, Canada

Dear UN Committee on World Food Security members,

Thank you for the opportunity to offer comments on the proposed scope of the HLPE study on climate change.

1) I would like to alert you to one area that I believe deserves mention, and is currently missing, from Section 4: Climate Change Mitigation. This section should be broadened to include linking agricultural adaptation to mitigation strategies engaged by reducing emissions from deforestation (REDD+). Agriculture is the largest driver of forest clearing globally, and current national-level REDD+ mitigation plans greatly understate the need to fundamentally address agriculture, and to link mitigation plans to future adaptation plans (especially affecting a) WHERE future agricultural production is best suited given climate change impacts, b) productivity of agricultural systems in a changed environment, and c) economic factors that will influence land use decisions.

Please find here a paper I authored on this topic, which was published last week during the SBSTA meeting in Bonn as a partnership between the CGIAR Climate Change, Agriculture and Food Security (CCAFS) research programme and Lexeme Consulting.

2) I would advise broadening "Section 2: Identifying Vulnerable Regions and Populations" to include greater emphasis on direct economic impacts stemming from climate change impacts described in Section 1. This is hinted at in the current sub-section a), but I believe deserves to be separated out as a sub-section of its own, with specific mention of:

--Summary of current estimates of economic impacts on agriculture due to climate change: It is anticipated that for developing, non-temperate countries, total net cereal volume will need to increase 45-50% by 2050 relative to the year 2000. On top of that, price increases are expected to increase 20% in the short- to medium-term. Source:
Hoffman U. 2011. Assuring Food Security in Developing Countries under the Challenges of Climate Change: Key Trade and Development Issues of a Fundamental Transformation of

Agriculture. UNCTAD/OSG/DP/2011/1

--Specific assessment of key crops and agricultural products: analyze how to promote substitutions for the most at-risk crops, such as wheat, and how to promote increased production of the most tolerant and adaptive crops that increase food security and lower costs, especially for marginalized populations.

Thank you again for the opportunity to offer comments. Please let me know if I may provide anything else.

Best regards,
Gabrielle Kissinger

3. Thinlay Baap from the Department of Agriculture, Ministry of Agriculture Bhutan

1) Do you think the scope is appropriate?

Yes, provided data are available to link food insecurity and agricultural productivity with climate change variables in developing countries. It would also depend on whether governments in developing countries are willing to cooperate to conduct such studies or provide necessary information.

2) Have important elements been omitted or should any of the elements outlined be left out?

Most elements are covered, but the problem I see is connecting those elements to arrive at conclusion. For instance, food insecurity or poor nutrition in many countries is not directly related to climate change parameters but to poorly managed institution or bad governance systems.

Although the relationship between agricultural productivity and climate variables are well studied under controlled conditions, but extrapolating finding from small scale experiments to larger areas or production system runs into risks of many unknown responses.

3) In your opinion, what would be the main aspects that the report should emphasise?

It should emphasis whether vulnerable countries are adequately equipped to deal with unexpected climate change effects; If not then what and how rich countries or UN systems (e.g. FAO) could help developing poor countries.

4. Emily Ojoo-Massawa from UNEP, Kenya

Dear Moderator,

I find the scope appropriate. I do however believe there should be a portion that deals with the impacts of the other environmental contaminants on the nutritive value of the foods.

Sincerely,

Emily Ojoo-Massawa

5. Suman K A from Change Planet Partners, India

Dear Moderator

Thank you for this important and timely post.

Sections 1 through 3a seem appropriate for the presented scope of study.

Further the scope needs an appropriate framework for the CC - FSN research problem(s), options/solutions/recommendations , cross-cutting themes characterization...

What this implies is that food and nutrition security, climate change - two distinct problems need to be deconstructed with their critical and then an appropriate global, local multi criteria decision framework applied to arrive at policy/action recommendations.

More importantly, the climate change and its impacts on crop yields, food trade , food supply chains, nutrition security need closer attention in the study scope.

Cross cutting themes such as gender, health, sanitation, agriculture infrastructure investments et.al , while being valid, take the attention away from the core problem and can potentially lead to different set of options and at different scales. In my view, the scope must delineate such boundary themes to keep the focus on CC-FSN issues at stake.

I do hope the inputs prove useful.

Best regards
Suman K A.,
Founder, Change Planet Partners
India

6. Étienne Benoist from France

Dear Sir or Madam,

Linking food security/nutrition with climate change (CC) is a very constructive and smart approach
As we know, CC is affecting and will most likely continue to affect our ecosystems
And food directly comes from those natural ecosystems and depend on their equilibrium
So we understand very easily that any brutal change in those equilibrium due to increasing climate instability will affect the country's food sources, food security and thus their population's diets
The need for adaptation to those future changes is pressing and any future food policies should take these adaptation challenges into account.

Adapting to CC is good but adapting and mitigating at the same time is even better. One solution exists to tackle nutrition issues while providing powerful CC mitigation and adaption tools: it lies in the drastic downsizing of livestock and replacing its byproducts by better alternatives.

This is based on a 2009 comprehensive study by the Worldwatch Institute:
http://www.worldwatch.org/node/6294
This study enriched the 2006 FAO report "Livestock's long shadow" and shows that livestock is responsible for half of greenhouse gas emissions.

By cutting down livestock and replacing its products by low-carbon alternatives that offer similar taste and are healthier, governments could "kill two birds with one stone": reducing GHG emissions and providing healthier food sources to its population.
These alternatives are meat and dairy analogs based on soy, seitan, rice, etc. These analogs are less expensive, less wasteful, easier to cook, and healthier than livestock products.
Food security would be improved because arable lands used for livestock could be used for legumes, cereals and grains. Most developing countries (vulnerable to CC) have soy, wheat or rice in abundant quantities on their soil so they would be less dependent on the other countries.
Since processing would be easier and shorter than for livestock products, prices would be lower, which would further improve access of poor populations to food and overall nutritious needs would be satisfied.
Many recent reports, including from the UN, have urged a change in our current diets to feed a growing population, towards fewer livestock products. This article sums it up:
http://planetgreen.discovery.com/food-health/un-urges-a-vegan-diet-to-feed-a-growing-population.html

When devising your plans for the Committee on World Food Security CFS, I hope the panel HLPE will include this solution. This is a triple-win action, providing (i) poverty alleviation, (ii) greater food security and nutrition and (iii) CC mitigation and adaptation efficient tools.

Thank you

Best regards,

Étienne BENOIST
Environment and climate change specialist

7. Iljas Baker from the Mahidol University, Thailand

I would recommend making an addition to the scope of work of the HLPE.
I would make explicit the task of looking at what is already being done in some areas to deal with the effects of climate change on food security and assessing their replicability, i.e. identifying what it would take politically, socially, financially, and in terms of institutional development to replicate these types of interventions in other areas.

Sincerely,

Iljas Baker

8. Edward Mutandwa from the Rwanda Development Agency, Rwanda [1st contribution]

Dear FSN Moderator and Colleagues,

The topic on climate change and food security comes at the most opportune time when the World is seeking for tangible answers to this global socio-economic anathema. I have promptly responded to this topic because incidentally I recently witnessed a sad situation where 14 people were buried in a landslide in the Northern Province of Rwanda due to excessive rains. It is clear that the amount of rain being received in this region has dramatically increased over the years.

I have gone through the proposed study on climate change and food security. My first impression is that it has comprehensively attempted to touch on most pertinent issues on climate change and food security. I however feel that there is need to be explicit about forced migration due to climate change under the section on Vulnerable populations. In actual fact, migration could be considered an adaptation strategy for the poor. In some regions, it has been observed that many rural poor households tend to migrate temporarily or permanently because of climate change problems.

The other issue which I would like to raise is related to "methodologies" to be used to assess the impacts of climate change on food security. Because of the stochastic nature of food security, the issue of attribution is very important. As such, I think there is need to really focus on the analytical frameworks which can be use to assess impacts. This is especially important for the developing world where many researchers are trying to tackle issues in this domain without the requisite tools or equipment. Usually, they underestimate the impacts of climate change. Since climate change impacts are so diverse, it will be interesting to see how regional experiences will be highlighted.

Thanking you,

Edward Mutandwa,
RDA, Rwanda

9. Joan P Mencher from The Second Chance, USA

I think the relationship between climate change and the type and methods of agriculture being pursued need to be included. By this I refer to methods to absorb CO2 and Methane. Along with this, local methods for dealing with possible or expected climate change which in turn also impact on the type of agriculture also need to be included, for example, types of water harvesting that if done ahead of time can prepare a small and medium farmers to deal with drought, or changes in crops grown which in turn lead to more water being absorbed into the soil when it does rain, so as to improve ground water. These all are involved in climate change issues.

10. Juan José Grigera Naón from the Universidad de Buenos Aires, Argentina

Dear Moderator,

I think the scope is appropriate and comprehensive. I wish to emphasize that studies must be based on up-to-date sound scientific research carried all over the world taking into account local agricultural practices. Recent studies have rendered previous reports, such as Agriculture Long Shadow FAO 2006, obsolete. This approach will reduce uncertainties and misleading recommendations that may bring about serious consequences to the world food supply.
Yours sincerely,

Dr. Juan José Grigera Naón
Facultad de Agronomía
Universidad de Buenos Aires
Argentina

11. Kay Muir Leresche from South Africa

A quick note to agree with Thinlay Baap -- we really do need to look at the mechanisms of how the rich countries--and those responsible for most of the impact -- can assist countries in adaptation and mitigation. Is there potential to direct some carbon trading system to address these issues? It would need to be a mechanism which looked at directly assisting communities, who would in turn take on responsibilities. It may be expensive to implement and monitor systems that are not government based - but it would be worthwhile if it really empowered communities to invest in local adaptation and mitigation strategies and provided them with real trading power.

In their analysis the HLPE also need to consider the impact on biodiversity and agrobiodiversity in particular and the long term food security issues.

Thanks very much for an interesting forum.

Kay
Kay Muir Leresche
South Africa

12. K V Peter from India

In the name of development of infrastructure like 6 lanes road, there is cutting of well established trees providing shade to pedestrians and greening the surroundings. Pollution level is souring up in urban areas. Incidence of lung diseases, cancer and skin diseases are souring up. It has to be mandatory, that a tree is cut only after establishing another tree to a reasonable age. Garbage disposal is another disturbing fact in India. Climate change may be disastrous to tropical agriculture but may be boosting productivity of temperate agriculture. The total global production of agriculture may remain unaffected but the developing countries in tropics may suffer. The strength of tropics like vast human power, water resources, soil resources and above all the potential market need to be tamed to advantage.

K V Peter

13. Roy Stacy from the USA

Dear Moderator,

This is indeed a complex subject and the climate change/food security intersect will play out very differently in diverse locations. There will be winners and losers when it to agriculture, for instance areas of Canada and the Soviet Union. For others adaptation, particullarly farming systems, will be a major challenge and one that demends international help. As much as climate change is a concern, in the more immediate future it is climate and rainfall varability that has been accelerating for the last 60 years that pose the biggest challenge to grain producers. In Ethiopia for example, perhaps the most famine threatned country in the world, FEWS NET and the USGS have published assessments that show a pattern of widening varaibility in seasonal rainfall, but when the good and bad years are averaged out, there has been an annual decline of some 5.8 millimeters of rainfall over the major grain producing areas. In a country of 70 million people, where 97 of grain production is rainfed, this is a serious threat. We are told that for longer term climate change, it is still uncertain what will transpire in the Horn of Africa, wetter or drier? But we know what rainfall varability is doing right now. When mixed with the global grain price volatility of recent years, and rthe enhanced short term food security threat is worrisome.

With such a large and complex world, I believe that the focus of the climate change/food security work should be focused those areas already threatned, like the Horn of Africa and the Sahel, with adaptation of farming systems to varability a main adaptive feature. Work in Niger, for instance, has shown that community based natural resource management, and the planting and protection of nitrogen fixing tree species (acacia albida) in farm fields can increase yields and raise groundwater tables. Water spreading techniques, well advised due to periodic downpours that accompany rainfall variability, has enabled many farmers to retain sufficient soil moisture for second crop of short-cycle beans or peas.

Roy Stacy

14. Puerwiyatno Hariyadi from the Bogor Agricultural University, Indonesia

Dear Moderator;

Topic of "Climate Change and Food Security" is very timely to be discussed now. Every time I involve in discussion on food security; first thing come to my mind is about "food crisis". Food crisis has been reviewed and discussed many time; but I never understand exactly; what does "food crisis" really mean. I have not found any working definition on "food crisis". What indicator(s) -if any- that can be used to 'determine" or to "understand" the situation of crisis in food. At what stage, do we can declare stage of crisis?

I think it is very important to agree on the indicator(s) on stage of food crisis. Otherwise; food crisis is simply political term; which difficult to be understood and executed at grass root level.

Regards,

Puerwiyatno Hariyadi
Professor of Food process Engineering
and Director
Southeast Asian Food and Agricultural Science and technology (SEAFAST) Center
Bogor Agricultural University

15. Kanchan Lama from Wocan, Nepal

Dear Moderator,

This is a very interesting topic; My views are given below about the scope for the study ..

1. Scope of study can also cover (in developing countries) the differential impacts of climate change on indigenous population (especially women and children), including the already existing local knowledge and skills of adaptation to climate change impacts. I prefer to join with the former participants to emphasize that the study needs to examine the growing trend of migration of the males as an affect of climate change leading to increased number of female headed households facing difficulties to cope up with climate change affects. Besides lesser food availability, the market price of food has grown to 73% in Nepal in the recent months causing in low food intake at household level adding to lowering nutritional progress. Additionally as an impact of male migration, increased labour and time involvement of the rural women managing agricultural production compel them to leave land fallow. These are some areas that can be added to the scope of study.

Will be continuing.

Regards

Kanchan Lama
Nepal

16. Benjamin Addom from the International Resource Group, USA

I totally agree with the point raised here by Prof. Mencher. A study I conducted in Ghana during the second half of 2009 with support from FAO confirms this argument that approaches for climate change mitigation should include local methods and strategies, at least within the agricultural sector. Local farmers have extensive experience, knowledge and observations about their environment and could be rich resource for sustainability. Most of the time, they only need "facilitation" to be able to use their local resources supplemented by the new technologies and innovations for effective and efficient management.

Thanks

Ben

17. Pradip Kumar Nath from the National Institute of Rural Development, India

Dear Sir,

The scope has been very comprehensive and can be elaborated at one's own choice.
Thank you very much for touching almost all issues.
One thing I would like to emphasize is proper documentation of the adaptive measures successfully undertaken by different stakeholders in different parts of the Globe.
First documenting the same and then disseminating the same for others to emulate with specific changes to cater to spatial variation & local needs.
In Indian context there have been significant climate adaption measures as demanded by the observed changes in certain climatic parameters (precipitation, temperature etc).
People have started adapting to changes in reduced rainfall days or extraordinary rise in temperatures.

Many of the Flagship programmes (like Mahatma Gandhi National Rural Employment Guarantee Scheme:-- MGNREGS) have taken ample care to accommodate these changes. And we have observed significant changes in the behavioural pattern of forced migration reduced in a larger manner.

Pradip Kumar Nath
Centre for Agrarian Studies & Disaster Mitigation
National Institute of Rural Development,
Hyderabad, INDIA

18. Denis Lee Oguzu from the West Nile Rural Development Agency, Uganda

I've been a keen follower of discussions on this forum for over a year now, but never contributed to any of the discussions on this forum. I take this opportunity to thank all previous discussants for enriching my knowledge of global food security issues. I would like to propose that the captioned study should pay particular attention to assessing environmental impact of activities

of multinational tobacco companies such as BAT whose activities have continued degrade the environment thus escalating food insecurity situations in their respective areas of operation. Efficacy of tobacco growing as a way of alleviating poverty should be also be studied as well its impact of impact on food security in the light of this article:
http://allafrica.com/stories/200908130222.html

Cheers!
Denis

19. Adrian Muller from Sweden

Dear Madam, dear sir,

please find below some comments on the scope of this study:

Yours sincerely, Adrian Muller.

GENERAL:
1) Do you think the scope is appropriate?
yes, but see comments
2) Have important elements been omitted or should any of the elements outlined be left out?
see comments below
3) In your opinion, what would be the main aspects that the report should emphasise?

All the specific topics are important, but I think that in particular, it should emphasize the importance to address the topic not only with a focus on the agricultural production sector.

Due account to all drivers of land use and land availability for agricultural production has to be given. Consumer behaviour (e.g. regarding food wastage or meat consumption) and policy developments regarding bioenergy are globally important aspects which directly affect land available for human nutrition provision and the efficiency how this land is used. These issues should be addressed.

MORE SPECIFIC:

Ad 1c) add explicitly "Potential tipping points/regime shifts in agro-ecosystems" to the list

Ad 3 a) Adaptation in agricultural contexts is not only about adjusting cropping patterns and varieties, assuring irrigation, etc. (measures which are clearly very important!), it can also mean fundamental shifts in livelihoods, even away from farming to other livelihood bases, beyond certain tipping points of climate change impacts. The possibility of such fundamental transformations should be covered as well. -

Ad 4b, bullet point 1: Be aware of the fact that mitigation in agriculture goes well beyond the sectorial boundaries. Consumer behaviour can play a crucial role, for example, given the reduced meat consumption would be one very effective mitigation option, or as reducing food wastage in industrialised countries (30-40% of the final produce!) would considerably reduce emissions and pressure on land use and productivity. A similarly mitigating effect would have the reduction of storage losses in the South (also 30-40%). The whole food chain has to be included in the assessment. Also, bioenergy developments have to be closely monitored when talking about food security, climate change and agriculture.

20. Alberto Saldamando from the International Indian Treaty Council, USA

There are many related themes with regard to Climate Change and Food Security. I would suggest the following: water and false market solutions.

There is no doubt that global warming has caused flooding, drought, the melting of glaciers and other water related phenomena that affect the production of food and food security, most directly and immediately felt by Indigenous Peoples (such as the Caribou, Reindeer, and other species relied upon by Indigenous Peoples of the North). Effects of climate change on rainfall, flooding and drought on subsistence are also a major concern not only on Indigenous Peoples but local subsistence communities throughout the world.

The affect of climate change on the world's water and its relation to food production and distribution is surely soon to be felt by urban cultures. Previously rare storms and tornados are already being felt in food production in the mid-west of the United States, the so called "farm belt."

False "market solutions" are related to the theme of water and food security. The production of bio-fuels, as an example, are already affecting the availability and access to food and contributing to food insecurity throughout the world.

False solutions such as carbon trading and carbon offsets also negatively affect the ability of Indigenous Peoples to provide for their own subsistence, particularly those close to greenhouse gas carbon emitters in so-called "developed countries". Allowing these industries to continue producing greenhouse gasses and to encouraging the increase of their output of these poisons severely affect the environment and abilities of subsistence cultures and their food security in "developed" countries such as the United States and Canada (e.g., tar sand development in Alberta, Canada, severely affecting groundwater, rivers and streams. These polluters also have a severe effect on fishing and hunting, relied upon by many Indigenous Peoples.)

Alberto

Alberto Saldamando, General Counsel
International Indian Treaty Council
2940 16th Street, Suite 305
San Francisco

21. Rudolf Hermes from the Andaman Sea Fisheries Research & Development Center, Thailand

Dear Colleague,

From a fisheries point of view, an uncertainty which could be added is the impact of acidification on resources (and habitats – corals).
In addition, though coastal people and fishers are mentioned on page 2, please make sure that the differences of the fisheries sector (in particular, marine capture fisheries) to the agriculture sector are well covered.

Cheers
Rudolf

Dr Rudolf Hermes

Chief Technical Advisor
Bay of Bengal Large Marine Ecosystem Project (BOBLME)
c/o Andaman Sea Fisheries Research & Development Center
Thailand

22. Abdoulaye Soma from FIAN Burkina Faso

[French original]

Merci pour votre thème, il est très intéressent même si, bon nombre de personnes ne font pas un lien entre les changements climatiques et le droit à l'alimentation et la sécurité alimentaire.

En effet, la réalisation du droit de l'homme à l'alimentation dépend de la disponibilité des moyens de production comme la terre et surtout d'une bonne pluviométrie**.** Or, les changements climatiques entraînent des conséquences drastiques notamment avec les inondations aux dégâts incalculables, la sécheresse causée par une faible pluviométrie et donc détruisent les moyens de production des paysans et paysannes, entravant ainsi la réalisation de leur droit à l'alimentation. Ainsi, au Burkina Faso, de graves inondations ont causé pendant ces dernières années d'importants dégâts matériels, notamment la destruction des plantations, des terres arables, des greniers contenant le mil qui ont même été emportés dans certaines localités. Elles ont aussi empêché la production agricole puisque l'eau avait envahi les espaces cultivables. A titre illustratif, dans l'Est du Burkina Faso, 5900 personnes ont perdu leurs maisons et leurs plantations à la suite des fortes pluies du mois de juin 2007 et dans l'Ouest du pays, les pluies ont détruit 732 hectares de cultures au mois de juillet de la même année ; à Ouagadougou, les pluies diluviennes du 1er septembre 2009 ont fait 150 000 victimes. Au regard de ces faits, il apparaît urgent que les autorités prennent en compte les droits humains en général et plus spécifiquement le droit à l'alimentation dans les politiques de luttes contre les changements climatiques. Il apparait clairement qu'une solution urgente doit être trouver par tous les pays, surtout les pays industrialisés qui sont les gros pollueurs, pour ralentir les changements climatiques afin que le monde puisse se nourrir décemment.

Bonne compréhension

[English translation]

Thank you for your presentation, it is very interesting, even though quite a few people do not make a link between climate changes and the right to food and food security.

In fact, fulfillment of the human right to food depends on the availability of the means of production, like land, but most of all on rainfall. Indeed, climate changes carry serious consequences, in particular floods, which cause countless losses, and drought caused by insufficient rainfall which destroys the peasant families' means of production, hindering the fulfillment of their right to food.
Thus, in Burkina Faso, severe floods during the last years have caused serious material losses, in particular the destruction of plantations, of cropland, and granaries containing millet, which have even been swept away in some places. The floods have also made agricultural production impossible because water has flooded cultivable areas. As an example, in East Burkina Faso, 5900 people have lost their houses and plantations after the heavy rains of June 2007 and in the west of the country the rains destroyed 732 hectares of crops during July of the same year; in Ouagadougou the torrential rains of 1st September 2009 caused 150,000 victims.
In view of these facts, it seems urgent that the authorities take into account human rights in general and in particular the rights to food, in the policies for the fight against climate changes.

It seems clear that an urgent solution must be found by all countries, especially the industrialized countries which are the big polluters, to slow down the climate changes so that the world can feed itself adequately.

I hope for your good understanding!

23. Guiadoma Ludovic Prosper Arsène Yigo from Burkina Faso

[French original]

Bonjour et félicitation à toute l'équipe !!!
Dans le cadre de mon mémoire de fin de cycle d'Ingénieur Agronome Socioéconomiste, j'ai mis en œuvre une action de recherche sur la planification des réponses pour l'adaptation du secteur de la sécurité alimentaire au Burkina Faso.

Les changements climatiques, qui vont modifier le régime des précipitations (augmentation de la variabilité des précipitations, de la fréquence et de l'intensité des évènements extrêmes), induire des modifications négatives de l'environnement, sont donc de nature à exacerber l'emprise du climat sur la sécurité alimentaire. Aussi, désormais les conditions d'une sécurité alimentaire durable au Burkina ne peuvent être envisagées sans apporter des réponses pertinentes aux effets projetés des changements climatiques.

Cette étude que nous avions conduite de manière participative avec les acteurs en charge de la sécurité alimentaire au Burkina Faso, est une contribution originale à l'émergence d'une gouvernance agricole en réponse aux changements climatiques au Burkina Faso.
Toutefois, des questions de recherche demeurent certes je suis confronté à des difficultés de bourses pour une thèse de Doctorat.

Guiadoma Ludovic Prosper Arsène YIGO
Élève Ingénieur Socio-Économiste du développement rural en stage de fin de cycle à Ouagadougou.

[English translation]

Good morning and congratulations to all the team!
As part of my final thesis for matriculation as a Socio-economic Agronomist, I have set up an investigation into the planning of measures for the modification of the food security sector in Burkina Faso.

The climate changes, which will modify precipitation patterns (increased variability of precipitation, the frequency and intensity of extreme climatic events), bring about negative environmental changes and are thus exacerbating the impact of climate on food security. Consequently, the circumstances for an enduring security of food supply in Burkina cannot be foreseen henceforth without developing an appropriate response to the forecast effects of climate changes.

This study, which we have conducted in participation with the officials in charge of food security in Burkina Faso, is an original contribution to the emergence of a managed agricultural structure in response to the climate changes in Burkina Faso.
Whereas, of course, some questions remain to be investigated, I am confronted with financial difficulties for the undertaking of a Doctoral thesis.

Guiadoma Ludovic Prosper Arsène YIGO
Student socio-economist engineer in rural development, in final internship in Ouagadougou

24. Danka Thalmeinerova from the Global Water Partnership, GWP, Sweden

Dear Moderator:

The scope is appropriate and very timely. Agriculture is highly sensitive to climate variability and weather extremes, such as droughts, floods and severe storms. At the same time, it is obvious that many of the anticipated impacts of climate change will operate through water. Therefore, I would like to add an element of this "medium". Water is the primary medium through which climate change will impact people, agricultural systems, livelihoods and ecosystems. Changing rainfall patterns can affect soil erosion rates and soil moisture, both of which are important for crop yields. Uncertainty about the shifting crop water requirements, intensification of droughts and floods make many regions and people more vulnerable.

In an effort to obtain food security in the face of climate change, water therefore is both part of the problem and an important part of the solution. Evidently, food insecurity may come as a result of crop failures due to drought or inadequate development of water resources for food production especially in regions where water resources are available. The flip side of the coin, too much water in the form of floods, exposes the poor to potentially devastating economic and health risks. Failure to manage water resources also leads to failure to secure other livelihoods such as fish for those populations who are defendant on fisheries.

Understanding the dynamics of current variability and future climate change as they affect water supply and demand and enhancing the capacity to respond through better water resources management to these dynamics are key to avert situations of food insecurity. Hence being the medium through which climate change impacts are felt, the central role of water in either increasing agricultural production or causing crop failures that finally determine food security or insecurity should clearly be demonstrated in the report. This will help to unlock the obstacles and solutions.

I hope you find the contribution of Global Water Partnership valuable.

Regards
Danka Thalmeinerova

25. Kimbowa Richard from the Uganda Coalition for Sustainable Development, Uganda

Thanks for initiating this discussion. I only want to point out some missing issues:

- Knowledge and technology transfer regime that supports investments in climate change adaptation and mitigation to respond to food and nutrition security and agricultural productivity, will need to be built. The current situation is heavily dependent on the market that unfortunately cannot satisfy everyone - most importantly the poor small scale farmers who cannot afford to access / buy improved varieties, irrigation equipment etc.

- In the same way public investment is needed to scale up information sharing, extension, education and awareness raising about climate change challenge the options and opportunities. Current dependence on the market seems to favor a few who can afford / access useful

information to the detriment of the poor small scale farmers who are actually the most vulnerable.

26. Ann Waters-Bayer from ETC AgriCulture, the Netherlands

Rather than looking only at "developing farm-level resource management innovations", I suggest to look at responses (and support to same) that involve "developing farm- and community-level capacities to innovate in resource management". It will not be any specific innovationS but rather the enhanced capacity to adapt that will ensure sustainability in the face of climate and other changes.

Ann Waters-Bayer
Prolinnova International Support Team
ETC AgriCulture Netherlands
www.prolinnova.net

27. Cecilia Murcia from the Universidad Cooperativa de Colombia, Colombia

The HLPE panel aims at identifying communities and vulnerable regions to climate change, adaptation and mitigation options for food security and nutrition. But I think there's a more important thing to articulate and is related to mining exploitation in fertile areas; this activities create negative impacts in the cultural, environment and agricultural tradition in the regions and many farmers change their activity to work as miners because of the expectation of a higher income.
The regions of Cajamarca and Combeima's canyon of Tolima, Colombia, are the agricultural pantry of several communities; these regions must be considered for the HELPE panel as vulnerable due to the great threat of the future gold exploitation in the Colosa gold mine , "the La Colosa porphyry gold project is located 150km west of Colombia's capital city, Bogota, in the district of Tolima. La Colosa is the second major greenfield discovery in Colombia. AngloGold Ashanti explored in the site in 2006, followed by initial JORC-compliant resource estimates in May 2008"(http://www.mining-technology.com/projects/la-colosa/). Also, it is said that this company has several mining titles on the Combeima canyon. This without including the environmental impact that it will generated to the future in the region; on this subject both you and the participants have to know the harmful effects of this economic activity that brings to the detriment of agricultural production, environment and the health of the people.
Other, important aspect is that in this region there are several sources of rivers and streams of fresh water; also these regions are earthquakes zones, so the Tolima's people is very scared and concerned for the potential danger that represent the exploitation gold with cianuro process.
The mining activity is unsustainable not only in terms of exploiting non-renewable resources, but also is leaving behind a destroyed environment and society, in most cases irreversibly (http://es.scribd.com/doc/17648023/el-impacto-social-y-ambiental-de-la-mineria), so the mining activity is dangerous for the production of food in fertile areas.
Please, FAO, also include in the panel HLPE the protecting the fertile areas in world food security

Thanks you very much

Cecilia Murcia

28. Hans Konrad Biesalski from the Universitä Hohenheim, Germany

Dear Moderator

The impact of climate change on food security addresses mainly quantitative consequences regarding future yield of staple foods. The quantitative view is based on market strategies, but with respect to hunger, that approach is not adequate. The fact that we need 2.200 kcl/capita is misleading because 2.200 kcal from grain-food might be theoretically achieved. However the quality of the diet, micronutrients as the food security indicators, is completely overlooked. If we discuss climate change we need to discuss effects of climate change on food quality and yield of grain and non-grain food with a higher quality. Grain-food has a poor quality with poor absorbable iron and zinc, a few water soluble vitamins and magnesium. The consequence is a worldwide deficiency of zinc, iron, vitamin A and D and further micronutrients. The impact of climate change on food quality is up to now only theoretically discussed. Real scientific data do not exist. The message of the Copenhagen consensus to supplement vitamin A and zinc to decrease hidden hunger is an approach which might help in the short term but without sustainability. If the discussion and research of climate change and food security will not address the impact on micronutrients, the problem of hidden hunger will increase even if yield can be optimized. Solutions like biofortification, gen-technology and further approaches to increase micronutrients in staple food will be one approach. To understand the impact of climate on the micronutrient concentration is essential to develop new strategies to ensure food security not only for developing countries.

Prof. Dr. H. K. Biesalski
Head of Dept. of Biological Chemistry and Nutrtition
Germany

29. Robynne Anderson from the International Agri-Food Network, Canada [1st contribution]

Hello,

Please find below some thoughts for consideration in the consultation.

- Reward resource-based productivity improvements as a direct contributor to Climate change effectiveness
- Encourage productivity improvements – in a sustainable way – on existing agricultural land to avoid additional land clearing and give priority to the rehabilitation of degraded agricultural soils.
- Recognize the positive contribution of sustainable land management practices through increased coordinated agricultural research.
- Include robust methodologies and field-testing to overcome uncertainties around measurement, reporting and verification.
- Provide incentives to farmers and other stakeholders which reward adoption of sustainable and responsible production systems, better performing technologies and the efforts of early adopters.
- Invest in capability sharing to encourage all farmers to play a role in climate change while safeguarding local and global food security
- Enhance capacity building to implement sustainable land management policies and programmes.
- Create a dedicated adaptation fund for agriculture accessible to farmers' organisations in developing countries.
- Foster agricultural extension and advisory services that will help farmers adapt and will also be able to report on-the-ground experiences of farmers.

Robynne Anderson

Secretariat to the International Agri-Food Network

30. Joweria Nambooze from Laos

I would like to concur with Mr. Benjamin Addom about involving local methods in mitigating effects of climate change on food security. I recently carried out a research on the impact of Typhoon Ketsana on Household food security in Southern Laos and from this research, I realised the extensive knowledge that local people had in mitigating impacts that had been brought by the typhoon Ketsana. Most coping strategies were community based and included inter household food reciprocity and small subsistence coping strategies. I think use of focus group discussions to find out how the local people, who are usually the basis of agricultural production, mitigate climatic changes would be a good step.

Joweria

31. Kodjo Dokodjo from the Ministry of Agriculture, Livestock and Fisheries, Togo

Dear Moderators,

The scope proposed is on the right track, but some burning issues at stake are omitted and should be considered. Industries, as well as agriculture are also contributing to climate change. However, wood industry for example is changing tick forestry into desert, contributing by so to climate change and mining industries are leaving thousands of hectares carelessly, contributing to destroy the ecosystem.

The report should emphasize mitigation options in agriculture as well as wood and mining industries.

Kind regards
Kodjo Dokodjo

32. Sonja Vermeulen from the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), Denmark

Dear FSN Moderator

On behalf of all of the partners working in CCAFS (the CGIAR Research Program on Climate Change, Agriculture and Food Security), congratulations on picking up on this critical challenge for humanity.

A first message is that there is considerable overlap between the subject proposed and the content of our ten-year multi-partner global research program (http://ccafs.cgiar.org/).

Many other organisations and networks are also working on these major questions. For some parts of the proposed study, there are already excellent reviews and materials – at the end of this message are some examples.

To move to your specific questions:

1) 1) Do you think the scope is appropriate?

Yes

2) Have important elements been omitted or should any of the elements outlined be left out?

There is good overall coverage. There may be value in including or distinguishing the following areas:

- Different kinds of adaptation, such as:
    - planned versus reactive or autonomous adaptation, or indeed mal-adaptation
    - adaptation to current climatic risks (e.g. through better delivery of seasonal climate forecasts, access to credit and insurance, appropriate local or regional food reserves, more accurate and timely forecasts for food crisis response) compared to adaptation to progressive climate change over periods of decades (for which it makes sense, given long lead-times in research and development, to get going now with interventions such as farmer-led crop breeding to adapt to future climates)
    - adaptation at different scales and magnitudes – as other commentators have pointed out, farmers and consumers can make their own good decisions about how to adapt, but could benefit from better institutional support in the form of e.g. information, while in some places transformational changes in ways of farming and eating may be needed, e.g. switching from crop-based to livestock-based systems, which will need greater levels of institutional support
    - non-agricultural adaptation, for example adaptation in diets and food safety

- All of the major foods that people use to achieve nutritional security, including wild products, agrobiodiversity, fisheries
- All of the stages of food systems and supply chains, including transport, storage, processing, trade (from local rural markets through to global), retail
- Both the synergies and the trade-offs that emerge among food security, adaptation and mitigation – this area is currently being explored by FAO and partners under the rubric of "climate-smart agriculture"
- The incentives, institutions and governance needed to support appropriate change (e.g. the outline mentions the under-deployed agency of the private sector – what incentives and systems can harness this better?)
- Links between nutrition and broader human health under climate change
- Realistic options to connect currently disparate policy processes on climate change and on food security at all levels – from the level of the UNFCCC linking to the UN Committee on World Food Security through to local community initiatives to secure their own nutritional needs and values under climate change

The final section of the outline seems to pre-propose some policy recommendations ahead of the analysis – it may be better to keep these completely open for now.

Other than that, the only reason to omit any of the current elements is to keep the task manageable. In that case omit elements that have already been well covered in other studies (see below).

In your opinion, what would be the main aspects that the report should emphasise?

As mentioned, there has already been considerable research and review in this broad and important subject. Most focus has been put on the interactions between climate change and agriculture. Therefore it may make sense for the new study to emphasise the forward links from

agriculture to food security: how food systems deliver nutritional security, the current and future interactions of food chains and climate change, and what can be done in future to both adapt and mitigate in the non-agricultural components of the food system. Of course agriculture is the foundation of food security. But there is great scope for progress on managing food security under climate change if we address not only food production but also issues like post-harvest losses, food waste, uncoordinated reserves and trade, and inefficient distribution to those people and places most at risk from food insecurity and poor nutrition.

This analysis could usefully cover the political economy as well as the technical side – questions like how well different social groups are able to access food, and how well they are able to influence markets or other important institutions as they are affected by climate change (e.g. men/women, rural/urban, rich/poor, net-food-buyer/net-food-seller, Annex 1countries / Annex 2 countries).

- The following major studies cover substantial ground:
- Foresight 2011 - Global Food and Farming Futures report and background papers
- IAASTD 2009 - Agriculture at a Crossroads
- IFPRI 2009 - Climate Change: Impact on Agriculture and Costs of Adaptation
- IFPRI 2010 - Climate change: Impact on Agriculture and Costs of Adaptation and Food Security, Farming, and Climate Change to 2050
- INRA/CIRAD 2011 - Agrimonde: Scenarios and Challenges for Feeding the World in 2050
- IFAD 2011 - Rural Poverty Report
- FAO 2011 – State of Food and Agriculture – Closing the Gender Gap
- Millennium Ecosystem Assessment 2005 - Ecosystems and Human Well-being
- National Academy of Sciences 2010 - Toward Sustainable Agricultural Systems in the 21st Century
- Royal Society 2009 - Reaping the Benefits: Science and the Sustainable Intensification of Global Agriculture
- FAO 2009 - Food Security and Agricultural Mitigation in Developing Countries: Options for Capturing Synergies
- The Hague Conference on Agriculture, Food Security and Climate Change 2010 - Chair's Summary
- CCAFS 2010 (for The Hague Conference) - Agriculture, Food Security and Climate Change: Outlook for Knowledge,Tools and Action
- FAO 2010 (for The Hague Conference) - "Climate-Smart" Agriculture: Policies, Practices and Financing for Food Security, Adaptation and Mitigation
- World Bank 2010 (for The Hague Conference) - Opportunities and Challenges for a Converging Agenda – Country Examples
- World Development Report 2008 - Agriculture
- World Development Report 2010 - Climate Change
- FAO
- World Food Program 2009 - Climate Change and Hunger: Responding to the Challenge
- Worldwatch Institute - State of the World 2011: Innovations that Nourish the Planet
- Meridian Institute 2011 - Addressing Agriculture in Climate Change Negotiations

Again, on behalf of CCAFS, wishing you all the best going ahead with this agenda

Sonja Vermeulen
Head of Research
CGIAR Research Program on Climate Change, Agriculture and Food Security
ccafs.cgiar.org

33. Patrick N. Muiruri from Kenya

Dear All

This is indeed a very important aspect that cannot go ignored for long. The scope is adequate and appropriate.

We need to critically look at the link between climate change and water availability. In most of Sub Saharan Africa, water for irrigation of the staples is an important aspect. This affects most of the four dimensions of food security. Without the right quality of water at the critical moments means little or no food production. Thus the need to adapt and mitigate on climate change is even greater. Water management will remain key in attempts to feed the 840 million plus hungry people today.

Warm regards.

Patrick N. Muiruri

34. Elisabeth Pitteloud from the Swiss Development Agency, Switzerland

Bonjour,

Si les aspects politiques et techniques sont mentionnés, il me manque dans les recommandations proposées (point 5) la prise en compte des producteurs (small farmers), hommes et femmes, et l'accent essentiel à mettre sur la formation (professionnalisation), l'accès à l'information, aux systèmes de suivi et d'alerte, aux nouvelles technologies (de communication et agricoles, d'utilisation de l'eau).

Les organisations de producteurs doivent être associés et sont au centre des changements, ce sont elles qui produisent, s'adaptent déjà depuis des décennies (en Afrique de l'Ouest, les paysans disent volontiers qu'ils n'ont pas attendu que la question des changements climatiques soient sur tous les agendas politiques pour adapter leurs pratiques, ce qu'il font depuis des décennies !). Les petits producteurs ne doivent donc pas être au bout de la chaîne, à prendre ce qu'on leur proposera ou imposera, aucune chance de succès si on procède ainsi !

Kind regards,
Elisabeth Pitteloud
Swiss Development Agency
Food Security, DRR and Water

English translation

Hi
Although political and technical aspects are mentioned, it seems to me that the proposed recommendations (item 5) do not take into account producers (Small Farmers), men and women, and the necessary emphasis on training (professionalization), access to information, to monitoring and warning systems and to new technologies (agricultural and communication technologies, use of water)

Producer organizations must be involved and are the focus of the changes; they are the ones who produce and they have been adapting for years (in West Africa, farmers often say that they did not wait for the inclusion of climate change in all the political agendas to adapt their

practices, they have been doing it for decades!). Small producers should not be at the end of the process, waiting for a proposed or imposed solution…..If this is the way things will be done, it will be a complete failure!

Elisabeth Pitteloud
Swiss Development Agency
Food Security, DRR and Water

35. Ignatius Onimawo from the Ambrose Alli University, Nigeria

Dear Moderator,

My main concern on this discussion on climate change and food security is in the areas of some developing countries with poor weather forecast and meteorological services. Many developing countries still largely depend on rain fed agriculture. In fact in some cases the farmers who are used to planting their crops in a particular month of the year which corresponds to the onset of rains have not understood the problems of climate change. These farmers still plant their crops expecting the rains to come but have found that the rains simply refuse to come during such months. When eventually the rains come they come in torrents leading to heavy flooding. All these have serious adverse consequences both on food and nutrition security of many farming households. This is particularly true in Nigeria. There is the need to emphasize early and timely dissemination of information on weather forecast to farmers as part of the extension system. The extension workers themselves need to be trained in order to effectively disseminate such information.

Prof Ignatius Onimawo
President Nutrition Society of Nigeria
Ambrose Alli University, Ekpoma, Nigeria

36. Raymond Erick Zvavanyange from the National Chung Hsing University of Taiwan, Taiwan Province of China

Dear Moderator

The scope is appropriate.
I partially agree with the contribution from Alberto Saldamando in which the contributor briefly touched on effects from industries. This is a silent issue which cuts across several themes that this forum has addressed (and will address in future). Seen in another way, it's industries on one side and local communities on the other. The objective is obviously not to replace one system by the other but possibly to have a leveraging point. In my opinion putting emphasis on the recommendations from available funded and non-funded studies which focused on climate change and food security in the vulnerable regions and people can form a good foundation for drafting of effective policies.

37. David Steane from Thailand

Dear Sir,
May I suggest that the study looks at the implications for livestock production systems and breeding programmes given that the feed crops available, crop residues and their bi-products will change in different areas and also the animal breeding programmes will need to take such changes into account in order to provide security. The integration of all aspects will surely

provide difficulties but is crucial if politicians are to be guided to realize that there are no silver bullets,

Kind regards,
David Steane

38. Gladson Makowa from the Story Workshop, Malawi

What I observed, and scientists do agree is that the vegetation and some land features were made well suited to the amount and intensity of rains which an area receives. Where we have high intensity we had very big canopy to encourage infiltration. Since we have damaged some of these features, hence the Climate change is felt in the hard way. I think we can bring in innovations in order to have sustainable food security. We should think of conserving non-arable land, to plant trees and in many cases just allow regeneration, and not what others are doing clearing natural vegetation to plant exotic tree in the name of conserving. Secondly let's concentrate on soil fertility replenishment and intensive farming. Small holder farmers should harvest enough from reasonably small land and leave the other to regenerate. They should manage to add manure for soil replenishment and water harvesting. I think after damaging the natural canopy, we need to seriously think of water harvesting, using appropriate technologies and not the plastics. I mean simply stopping water to soak into the soil, and reduce runoffs which are resulting into erosion and latter flooding. Simple structures like contour ridges, pits, manure, mulching and others can harvest water and do the magic in times of droughts and reduce flooding significantly. Remember where there are more canopies there was so much manure made from the leaves which was also making our soils porous, but all this is damaged. In Malawi we have a saying, "Rivers fill up and floods with the water coming from small streams in the foot paths and streets". Therefore, these same methods will make irrigation a possibility. They need investment in the same way western farmers do on their farms, that is if we are to mitigate and adapt very soon to climate change. Because farmers are aware of effects and sign of climate change, now is the best time than ever before.

Gladson Makowa

39. Marja-Liisa Tapio-Bistrom from FAO, Italy

1. Assessing direct and indirect impacts of climate change on food security and nutrition

My first reaction to this chapter 1. was that the disagregation of data and analysis on gender, income strata, region, rural/urban would be important but you deal it in chapter 2.

c – Uncertainty issues:
Here you have only mentioned bio-physical uncertainties

2. Identifying vulnerable regions and populations

b –The most affected and vulnerable populations

Identifying vulnerable populations by assessing impacts, including socio-environmental vulnerability, of climate change on different socio-economic groups: woman, infant, elder

Add: income strata, rural, urban

c- Uncertainties

Many of the world's poorest people are rural women in developing countries who depend on subsistence agriculture to feed their families.

Add: migration, refugees

3. Adaptation to climate change

Title: Responses to climate change
Starting by stating the need to stop dangerous climate change, integrating food security and agriculture into UNFCCC process, in order not to jeopardize food security further.
Transformation of work food systems into climate smart recognizing the need to attain the multiple goals of food security, adaptation and mitigation. In agriculture it is difficult and mostly not meaningful to separate adaptation and mitigation since most of the climate smart farming practices have synergies between these two while increasing productivity. After this type of introduction one could discuss as below specific aspects of adaptation and mitigation.

a – Observed adaptation for food security and nutrition

Developing and assessing the adaptation responses

You have only agronomic responses here what about livelihood strategy responses including diversification of income sources, labour migration, remittances

5. Recommendations for policies and actions

How to design and implement good overall development policies and programs? Linking policy on climate change and food security, and taking an integrated response to addressing food and nutrition security, agricultural productivity and climate change.

Here one should talk about multiple goals and integration of policies, intagraion of climate issues into sectoral polices like agriculture but also complementary financing mechanisms for reaching multiple objectives

Marja-Liisa Tapio-Bistrom
Senior officer
Climate, Energy and Tenure division
Natural Resources Management and Environment Department
FAO

40. Marielle Dubbeling from the RUAF Foundation, the Netherlands

The proposed study seems to focus on rural food security and nutrition. Though not denying their importance, it is underestimating urban food insecurity. Most of the population will live in cities by 2050. In many African, Latin American and Asian cities already a third to half the population live in informal or illegal settlements lacking adequate provision for water, sanitation, drainage, health care, schools….. and with their nutritional status compromised because such a high proportion of their income goes to paying rent, water vendors/kiosks, pay toilets (as they have no toilets in their home), keeping children at school (often having to send their children to cheap private schools because they cannot get them into government schools), private health care (cannot get public health care…) transport (especially for those that live in peripheral locations) (personal comment David David Satterthwaite- IIED).

Cities are highly vulnerable to the disruption in critical (food) supplies and climate change exacerbates this vulnerability. Urban economies will suffer as rural agricultural production is adversely affected by storms, floods, shifting seasonal patterns, droughts or water scarcity. Potential food shortages will result in further increasing food prices and directly affect the urban poor.

The extent to which climate change will affect urban food security and vulnerable urban populations does merit more attention in my view.

On the other hand, many of these urban poor practice some form of food production to diversity their food and income sources. Urban agriculture also helps green the cities, reduce the urban heat island effect and helps enhance storm water infiltration. Urban agriculture is increasingly recognized as one of the strategies for community adaptation to climate change. However, for urban agriculture to play its role, it should itself also become more resilient to climate change. RUAF is currently involved in an assessment on urban agriculture and climate change led by START and implemented in 9 cities in Africa and Asia. Innovations in urban agriculture could be documented and also referred to in your study.

Marielle Dubbeling
Senior Advisor ETC AgriCulture
Global Coordinator RUAF Foundation (www.ruaf.org)

41. Jikun Huang from the Center for Chinese Agricultural Policy, China

Overall, the proposal covers major issues on the effects of climate change on food security and nutrition. However, I also have a few comments.

1) The approach used in this study assumes that there are sufficient knowledge from existing literatures on the impacts of climate change on food security and nutrition and that the current knowledge from the existing assessments will be able to generate recommendations for policies and actions listed in section 5. While I agree that the review of literature may provide some answers to questions raised in sections 1-4, I also believe that the review will raise more questions than the questions for which you have answers. Policy implications should be generated with serious cautions. Related to this concern, recommendations in section 5 may include identifying major issues that need further study.

2) Direct and indirect impacts of climate change on food security and nutrition should be clearly indicated in the proposed study.

3) While the definition of food security comprises 4 key dimensions (availability, stability, access, and utilization), it is not clear how climate change affects “access” and “utilization”.

4) More attention should be paid to water issue when assessing the impacts of climate change on food security.

Jikun Huang
Director and Professor
Center for Chinese Agricultural Policy, Chinese Academy of Sciences
Institute of Geographical Sciences and Natural Resources Research

42. Tim Williams from the University of Georgia, USA

I would like to suggest that missing from the scope of the proposed HLPE is the idea of determining the most cost-effective solutions, and the areas where the greatest priorities lie.

When faced with the cost of responding to climate change nations may take more urgently the alternative option of preventing that change. Ideally we should have costs of both options.

Can we estimate the cost of rolling back carbon dioxide relative to the cost of developing technologies to address the consequences of global warming?

Very clearly, addressing climate change is very expensive and perhaps will take much longer than innovative new solutions to get control of atmospheric carbon dioxide. I think in terms of strategy to have alternatives might be more effective than presenting the world with a bill for one option only.

Good evening,
Tim Williams

43. Edward Mutandwa from the Rwanda Development Agency, Rwanda [2nd contribution]

Dear FSN Moderator,

I would like to corroborate with the views of Prof Ominawo from Nigeria who emphasizes the need for an effective early warning system on climate change. Obviously, many smallholder farmers are at the mercy of the climate change problem because they often to do not have prior information about what could happen in terms of flooding or drought. Changes in climatic patterns will impact on the types of crops to be grown, the farming methods to be used, and ultimately the yield obtained, nutrition and food security. I have observed in some parts of East Africa that farmers are now using short season varieties as a way of adapting but many of these varieties do not really fit into farmers' tastes. Unfortunately, the predictive power of these models is not 100% due to the interaction of so many other determinants of climate change. We need to focus on the current methods/techniques as an adaptation strategy for early warning in the proposed literature review, their merits/de-merits and suitability in different contexts.

Thanks,

Edward Mutandwa,
RDA, Rwanda

44. Sarah Ayeri from the Centre for Development Research, Kenya

Dear Moderator,

I appreciate the insights from various scientists and I must say, am encouraged by all these suggestions. However, pertinent issues need to be solved pertinently! My worry is, that we often forget the would be users or target groups we are working for to solve issues of climate change and food security. These are the farmers whether in a rural setting or urban setting. We all know that they would be the most affected by the impacts of climate change and since most of them in Africa are still dependent on rainfed agriculture, I would suggest that we involve them in this. While we are all aware of how science has defined climate change, we are not aware how

farmers define climate change, and how farmers definition of climate change will affect food security; this is very important, if we are expecting real impact on farmers' livelihoods. We need to give climate change and food security a farmer face, then it is easier for us to make recommendations that best suits them. By us involving them in all crucial stages, we are ensuring that they become part and parcel of decision making.

45. Ipate Judith from the Romania Academy, Romania

I think the main areas of interest are well chosen areas

1. The direct and indirect impacts of climate change on food security and nutrition
2. Regiunile vulnerable - Identification and population
The effect of climate change is felt through an increase in intensity and frequency of extreme events and, consequently, no area is not fully protected by the floods.
Over 900,000 Romanians live in high flood risk areas, and over 88,000 homes could be washed away at any moment, according to data Ministry of Environment in the National Strategy for Flood Risk Management of term medium and long.
In June 2011 there were 33,500 hectares of damaged farmland, 22,500 hectares of pasture and meadow, 5,700 acres of forests,
In Europe, climate change negatively affects all regions: increased risk of floods, drought, increased erosion due to heavy rainfall and rising sea levels, melting glaciers in the mountains, an index of precipitation fell as snow, species extinction and degradation of natural habitats lack of drinking water, reducing the risk of fire and natural resources plant.
Climate change will lead to increased natural disasters such as floods, droughts, melting glaciers, raising sea levels, changing ecosystems, hunger, lack of drinking water, spread of disease.
Romanian and European findings are identical - if over the last century the average temperature in Romania increased by 0.5 degrees south of the country "benefits" of 0.8 degrees plus. The rains are increasingly rare - in some places, such as "Sahara Oltenia", not even a drop of water falls on increasing periods of time. Moreover, drought is present in these places at least one year in three, and more meager sleind canvas ground, who, in addition, and very deep. a real debate on this delay to occur, although we are told, for 2015-2025, the sands would threaten the entire southern Romania: Dobrogea, southern Moldova, Muntenia, Oltenia and Banat's southeast.

3. Option the adaptation and mitigation for food security and nutrition;
Climate change leading to the terrible recession in history.If we reduce the pollution that affects the greenhouse effect, the losses would be much smaller. Half of rising food prices will be the direct effect of climate change, so must be made robust studies and research to find ways of producing plants to accommodate specific temperature regions It is important to disseminate research results to farmers to know what plant varieties and animal breeds that can produce optimal production in certain climate condition. Old breeds, example the podolian cattle have gene for valuable thermal stress resistance. Researchers can insert this gene in highly productive breeds. Also other varieties and animal breeds have this quality, so we have to maintain biodiversity of species because they represent a valuable reservoir of genes that we can save in extreme circumstances.

4. Recommendations for policy and action
I appreciate the initiative of the World Bank,, which decided to support farmers and food producers in the fight against volatile prices by allocating a significant amount of direct and indirect actions to counter climate change
In my opinion the report should emphasize the development of strategies on short, medium and long term to mitigate the direct and indirect impact of climate change on food safety and security.

Dr. Ipate Judith
Romanian Academy
expert HLPE Romania

46. Carol Thiessen from the Canadian Foodgrains Bank, Canada

Thank you for the opportunity to respond to the proposed scope of the HLPE study on climate change. I think the scope is acceptable.

I do have a few comments to make about specific sections.
1 a) There seem to be a lacuna of studies on the impact of climate change specifically on humanitarian assistance needs as a result of climate change--both the scale of demand in future, the demographics of need vis-a-vis climate migration (destination countries/regions), as well as the impacts of changes in production patterns for local procurement etc.
1 c) Uncertainty issues: A further issue to consider is the relationship between climate change and the El Nino/La Nina effect, and the impact on food security.
3 a. Observed adaptation for food security and nutrition: Beyond looking at new crop varieties, it is also important to look at low external input farming practices that respond to climate change, such as conservation farming, soil conservation practices such as Sloped Agriculture Land Technology (SALT) and water conservation practices such as drip irrigation.
3 c) The role for public and private sectors in adaptation: This section only mentions the role of private sectors. There will remain--and quite likely demand an increased--role for public sector support for adaptation, through increased agricultural budgets, capacity development to effectively utilize climate change financing etc. Please include discussion on the integral role of public sector support for agriculture in adaptation.
4. d) The multi-objective policy for climate change mitigation: It will be imperative to consider the impacts on most vulnerable peoples (in particular, smallholder farmers) when considering climate change mitigation policy for agriculture, including current UN climate change negotiations.

Thank-you.

Carol Thiessen
Public Policy Advisor
Canadian Foodgrains Bank

47. Moses Aisu Okurut from SAFE, Uganda

Dear All,

I was referred to this email to contribute of cases of climate change effects on nutrition through food insecurity where i had communicated through facebook posting.
Find here my write up show casing Tororo and eastern Uganda.

Yours,
Moses Aisu Okurut
Director
SAFE

48. Gabriel Grimsditch from UNEP DEPI, Kenya

Dear All,

I work on marine and climate change issues at UNEP-HQ in Nairobi and I am happy to see that the effects of climate change on food security are being taken seriously. Please find here a report produced by UNEP on ocean acidification and food security, an emerging threat. I hope this can be useful for informing your study.

Thank you and best regards,
Gabriel Grimsditch
UNEP DEPI Marine and Coastal Ecosystems Branch

49. Democracy Icawalo from the Philippines

Sir/Madam,

In response to your invitation to contribute some information on climate change and agriculture, I am submitting here something on bamboo which to me is the best solution to the would be catastrophic problem if not solved as soon as possible as this will result in the melting of ice caps and the chain reaction would be the adverse effects on agriculture and food.

The best solution in my opinion is the miracle plant bamboo. Please open the attachment to know the reasons.

Yours for a better world and happier people,

Democracy "MR. 8" Icawalo

50. Henk Eggink, Ministry of Economic Affairs, Agriculture and Innovation, The Netherlands

Dear Moderator,

Following your request on input for the public consultation on the scope of the HLPE study, I would like to send you the following comments.

The scope of the study is appropriate and very timely. The linkages between agriculture, food security and climate change are crucial for the development of green growth policies in the face of hunger, climate change, economic and financial crises and the growing competition for the use of natural resources.

To stimulate international policy development and identifying concrete actions linking agriculture-related investments, policies, and measures with the transition to climate smart growth, the Netherlands with partners Ethiopia, Mexico, New Zealand, Norway, Vietnam, the World Bank and the FAO have organised the Global Conference on Agriculture, Food Security and Climate Change in The Hague Netherlands from 31 October – 5 November 2010.
The Conference resulted in a Roadmap for Action on Agriculture, Food Security and Climate Change, which presents an understanding of the challenges and solutions and initiatives on i) policies and strategies for climate-smart agriculture, ii) tools and technologies and iii) financing for transformational change (available on http://www.afcconference.com/final-roadmap-for-

action). This document and roadmap contains very useful elements with regard to the scope of the HLPE study which should be taken into account.

For us, elements of the study and policy recommendations should focus on:

- How to increase agricultural productivity in a more efficient (less input, more output) and sustainable way on existing agricultural lands and thereby reducing pressure on forest and ecosystems;
- Development of climate smart agriculture through increased resilience (drought, heat-, flood and salt resilience) and mitigation;
- Sustainable land-use planning and watermanagement which is crucial for agricultural production;
- Reducing food losses (reducing post harvest losses, sustainable consumption, food-chain approach);
- Research and innovation: how to foster innovation in the production system (both private and public) with efficient extension systems to farmer levels. Effective knowledge systems;
- How to develop inclusive finance mechanisms which increase the access to financial services by farmers.
- How to come to effective implementation.

The proposed scope of the HLPE study on climate change covers most essential elements as outlined above, but we would suggest a few additional elements for further inclusion/reflection in the study which are not clearly reflected at this stage:

- The impact of changing diets (trends, new developments?) on demand for food and food security.
- Attention to livestock: developments, adaptation and mitigation potential.
- Attention to fisheries (fish stocks affected by climate change), fishermen in coastal zone areas and aquaculture.
- Specific focus on watermanagement and land use (vulnerability of land/water),
- Role of financial mechanisms, access to finance

Best regards,

Henk Eggink

Henk Eggink (ir. H.J.)
Ministry of Economic Affairs, Agriculture and Innovation,
DG Agriculture
The Netherlands

51. Natasia Belc, National Institute for Food Bioresources, Romania

Dear FSN Moderator,

I am sending several ideas concerning the subject discussed.

1) Do you think the scope is appropriate?

yes

2) Have important elements been omitted or should any of the elements outlined be left out?

The general approach is good. It should also have a perspective for entire food chain, concerning food security, from the land (including animal) to the consumers.

There are several aspects considering food security:
- availability of food to all people: available market, available price;
- nutricious food, according to people needs;
- safety food.

3) In your opinion, what would be the main aspects that the report should emphasise?

A major issue is sustainability general concept: defining sustainability, understanding and promoting it and educating people about sustainability concept in terms of production, processing and consumption of food.

Energy saving through new technologies in producing, processing and distribution food has to be considerate as an adaptation issue in this context.

Taking into account the recent "*Visions*" elaborated in this subject by different initiatives and organizations showing that more people and less resources for the next 30 years will be, risk/benefit assessment concerning using of agricultural (arable) lands to produce biofuel is necessary to be done being an issue which affect food security.

Best regards,
Nastasia Belc

Nastasia Belc
Director General
R&D National Institute for Food Bioresources,
Bucharest, Romania
www.bioresurse.ro

52. P V S Sarma from Express Weather, India

Regarding climate change, there are many limitations like the fact that ground observation data and historical data of different locations are not available for research. Hence all of us, especially the metrological departments of all countries, should come forward with the historical data for all possible weather parameters and also the ground observations so that a global forecasting system or a global early warning system can be developed as far as climate changes is concerned. In this way precautionary measures could be taken on a time bound platform for natural calamities.

53. Stephen Adejoro from Zartech Ltd, Nigeria [1st contribution]

Dear Moderator

Our experiences in the West Africa sub region on the effect of climate change on Animal protein food security have become a major concern in the poultry industry of the region.
Our recent interrupted rainfall pattern and long dry spell have affected the quality and storage of feed raw materials with subsequent contamination of cereals and oil seeds with mycotoxins

Five major mycotoxin of importance that include Aflatoxin Bi DON Fuminoxin Ochratoxin Zearalenone and T2 tox or Trichothecelex have been variously identified as causing serious problems of hatchability.
Ecoli and Salmonela precipitation in intensive poultry management along with repeated vaccination failures to Mareks Disease and New castle diseases of poultry
Case studies conducted in the intensive poultry region of the south west of Nigeria proved evidences of Aflatoxin contamination of feed in flock that recorded failures to Marek vaccination and New castle diseases.
Flock check of such farms showed poor response to ND vaccination with %CV often higher than 45%.
Implications of mycotoxin endemicity is characterized by poor liveability that had compromised full capacity utilization of the installed capacity of the industry, studies conducted by this author equally showed that less than 70% of installed breeder and commercial layer capacity of the industry is achieved, currently the price of Day Old Chicks, Table egg and frozen chicken are on the increase and the demand for replacement stock is on the high side such that it takes the farmer a long waiting time to book and replace old stock.
Antibiotic resistances and heavy water contamination further complicate treatment trials on the feed thereby resulting in high cost of medication by poultry farmers of the region. Recently the USDA initiated a seminar in Accra Ghana on good practices for breeding farms and Hatchery operations in the region in anticipation of healthy DOC for the anticipated E-ATP cross border trade in day old chicks for west Africa.
Vertical transmission of Mycotoxin from the Upstream through hatchery to the commercial downstream production and early mortalities were exhaustively discussed . This author presented two papers on consequences of mycotoxin on health status of the DOC in the region and the Litter management of Day Old chicks arriving at farm.
With the persistent and lingering effect of mycotoxin, this region will continue to face limitation in full capacity utilization and serious decline in Table eggs and Broiler meat production for the region.
Nigeria currently produces 50% of west Africa 80 million commercial layer production and her 1,344,000 metric Tons of frozen chicken which is been threatened by climate change effect through mycotoxin problems.
Available Toxin binders have proved limitation in binding larger molecule toxins and most have not captured broad spectrum ness to the most critical Toxins that all have detrimental effects on immunomodulation of poultry in this region .West Africa poultry egg consumer presently consume less than 3kg of table egg per head per annum and less than 4kg of poultry meat per head per annum.
With this signal of threat to protein food security it is suggested that new generation nanotechnology Toxin Binders will find useful role in the region to manage the threat of imminent poultry protein food security in the region.

Dr Stephen Adejoro is an independent poultry consultant presently on contract as Head of Research and Marketing for Zartech Ltd Nigeria

54. Lizzy Igbine from Nigerian Women Agro Allied Farmers Association, Nigeria

Thank you moderator for this important topic.
Over the years from the inception of man, man has enjoyed good relationship with God and the earth. Man has lived exploiting the good earth to make his livelihood.
The Climate therefore was conducive, friendly and productive. Change in Climate is therefore an issue, a threat and a scientific challenge.
Let us go back to science. Science provided insight into living organisms, non living things and atoms molecules etc.

Science compounded our case by not having answers to all human problems. The issue of climate change gives a scenario of great challenge to science, as we look up to the following questions.
What is Climate change; it is the change in CLIMATE and ATMOSPHERE which prompts change in weather conditions that affects the earth and its activities.

What is the cause of Climate change; over the years man has exploited the earth without recourse and replacement of damaged molecules, atoms etc no wonder the adverse change.
What can we do; YES we can; by being environment friendly, helping the earth to replace lost glory, by The following, MITIGATION, ADAPTATION STUDIES and ECOFRIENDLY. I will not go into explaining all this.

What is Food Security; this in common parlance means ability to feed moderately with all the required nutrients in three squares a day.
Who produces food; Food is produced by farmers through Agriculture. Agriculture is done most profitably on land with the help of good and nurtured soil. Therefore Climate is important to food production and availability.

Climate change is an issue in food security as food production and yield is hinged on weather conditions. Recently, climate change has either brought about heavy rains that wash away farmlands, or heavy rains that prevented farmers from going to work in their farms. Food production is really under threat and something fast must be done.

Man needs Science and Science should help in discovering new ways of food production. Science should also help in reducing food wastages occasioned by lack of proper storage.

In conclusion climate change is a determinate of food production and we are facing great challenges of being able to avert its effects and be able to meet food security excerpt by concerted actions, programmes, knowledge of what it is and by mitigation positions.

Lizzy Igbine (Mrs)
National President
(NIWAAFA) Nigerian Women Agro Allied Farmers Association

55. Noah Owusu-Takvi from African Farming Families Foundation, Ghana

Dear Moderator,

I have been monitoring the contribution been made about climate change and food security and i must say I am learning a lot. I am thinking that the solution to this challenge will be the adaptation of agrofestry. Thus we in the agriculture sector will have to encourage farmers to practice agroforestry thus growing tree along side food stuff by so doing we are solving the problem of food security and at the same time climate change.
We have to design a sustainable education and training that will change the mindset of the farmers to practice agroforestry as a way of solving climate change and food security. If we as research, lead agencies and agriculture service providers are able to train the farmers of the proper farming practices we will be able to recover the forest cover and also improve yield. I propose the use of agroforestry as a means of solving these challenges.

Dr. Noah Owusu-Takyi

56. Patricia Tendi from FAO, Rome

I'm forwarding a url link to a BBC Science and Environment news article on an FAO initiative on tree planting in arid zones, to complement the comments of a couple of earlier FSN contributors on the trees/climate change/food security nexus. Comments on this issue have already been made by: K.V. Peter India (12) Roy Stacy USA (13); Gladson Makowa, Malawi (37);

UN (FAO) Project shows how trees help desertification:
http://www.bbc.co.uk/news/science-environment-13767255

Some excerpts from the article are copied below:
Globally, an estimated two billion people depend on ecosystems in dry land areas, 90% of whom live in developing countries....The UN says that about 30% of dry lands are degraded, with particular susceptibility to desertification. In Africa alone, it is feared that two thirds of arable land is expected to be lost by 2025.

- UN Secretary-General Ban Ki Moon:

The management, conservation and sustainable development of dry forests are central to combating desertification... the greening of the Sahel and other success stories around the world show that degraded lands can be reclaimed by agro-forestry and other sustainable practices. We need to scale up these interventions and disseminate their results widely."

- FO ADG Forestry, Eduardo Rojas:

People do not often associate forests with arid areas, yet they are critical in terms of soil protection, mitigating climate change, maintaining biodiversity. ...Forests and trees in arid zones are central to understanding the process of desertification.- they provide local communities with sustainable livelihoods and also fodder livestock, fuelwood, medicine, timber, resin and gums. They are also invaluable for carbon storage and for the provision of clean water and for soil protection."

- UN Desertification Expert Luc Gnacadja is quoted as saying the inaugural Africa Drylands Week had ended with a very simple, yet stark, message: it was essential to convince international donors to ensure arid zones would "no longer be 'deserts' of investment"

Thank you and regards,

Patricia Tendi
FAO, Rome

57. Stephen Adejoro, Zartech ltd, Nigeria [2nd contribution]

Dear Moderator,

Thank you for giving me the opportunity to contribute to the editing of the scope for this study The study is very much of necessity in view of the escalating effect of climate change on food security.
I think this scope is good but can we add the following?
- The vulnerability of livestock farmers to climate change;
-The effect of climate change on livestock farmers' livelihood and the appropriate Technical interventions to protect and rebuild their livestock assets;
- The degree of livestock vulnerability to climate change and recommended coping strategies.

Thanks

Stephen Adejoro
Zartecjh ltd Nigeria

58. Jorge López, OSPESCA, El Salvador

[Spanish original]

Global Forum on Food Security and Nutrition:

Soy Jorge López, Asistente Técnico de la Organización del Sector Pesquero y Acuícola del Istmo Centroamericano (OSPESCA, organización gubernamental), miembro del PaCFA y parte del Sistema de la Integración Centroamericana); tengo a mi cargo el tema del Impacto del Cambio Climático en la Pesca y la Acuicultura. Entre otras, participamos de las siguientes actividades:

a) Aplicaciones del Foro del Clima (organizado por el Comité Regional de Recursos Hídricos, –CRRH-), a la seguridad alimentaria y nutricional en el área de pesca y acuicultura. El trabajo consiste en tomar los pronósticos trimestrales de las oficinas meteorológicas de la región centroamericana, reunidos en el Foro y elaborar una perspectiva de como la pesca y la acuicultura serán afectados (positiva o negativamente) y que repercusiones tendrá en la seguridad alimentaria y nutricional, así como en los sectores productivos.

b) Estudios específicos como: "Impacto de la pesca y la acuicultura en la seguridad alimentaria y nutricional a nivel familiar y comunitario en Centroamérica", "Desarrollo de productos de la pesca y la acuicultura destinados al combate de la inseguridad alimentaria y nutricional".

Los antecedentes citados muestran la modesta experiencia que tenemos en el manejo del tema. Basados en esa experiencia podemos responder a sus preguntas:

1. El alcance es adecuado, en la región centroamericana, las poblaciones transfronterizas se sitúan entre las más vulnerables

2. Los elementos presentes son los adecuados, son grandes temas que admiten desagregación donde pueden incluirse subtemas.

3. En la Región centroamericana trabaja el Programa Regional de Seguridad Alimentaria y Nutricional (PRESANCA) en el Marco del Sistema de la Integración Centroamericana (SICA) financiado por la Unión Europea que apoya el foro de aplicaciones ya antes descrito, analiza los impactos del Cambio Climático en sectores como: Salud, alimentación, agua (potable y saneamiento), turismo, prevención de desastres, energía, entre otros.

En la parte de Políticas que incluyen el Cambio Climático la Región Centroamericana cuenta con: 1) Política de Integración de Pesca y Acuicultura en el Istmo Centroamericano; 2) Estrategia Regional Agroalimentaria y de Salud (ERAS)"; 3) Estrategia Regional de Cambio Climático (ERCC), todas en el marco del SICA.

También OSPESCA con la colaboración de otras Secretarias del SICA ha conseguido que el tema del impacto del Cambio Climático sobre la pesca y la acuicultura sea reconocido al nivel de ministros del área; lo que significa, entre otras cosas, que el tema será incorporado en los Planes Operativos Anuales en las instituciones de pesca y acuicultura del Istmo Centroamericano.

En mi opinión y particularmente sobre pesca y acuicultura, hay gran cantidad de documentos que contienen información teórica o resultados de trabajos de modelación, pero hay muy pocos

trabajos de campo con datos reales y verificables, por lo tanto creo que es necesario la creación de línea base que sirva de referencia en las acciones de mitigación y adaptación.

Por otra parte los trabajos sobre cambio climático se sitúan a nivel de expertos y técnicos, los sectores productivos no participan en esos estudios. OSPESCA incorpora a pescadores y acuicultores en los estudios y trabajos relacionados con el tema.

Atentamente

Jorge López

[**English translation]**

My name is Jorge Lopez, Technical Assistant in the Organization of Fisheries and Aquaculture Sector of Central America (OSPESCA, governmental organization), member of the PaCFA and part of Central American Integration System (SICA). I am in charge of the climate change impact on fisheries and aquaculture. Among others, we take part in the following activities:

a) Implementation of the Climate Forum (organized by the Regional Committee for Water Resources-CRRH-) in the food and nutrition security in the area of fisheries and aquaculture. The work consists in taking the quarterly forecasts of the meteorological offices in the Central American region, gathered by the Forum, and prepare an outlook about the impact (positive or negative) on fishing and aquaculture and the impact on food and nutrition security, as well as on the productive sectors.

b) Specific studies as: "Impact of fisheries and aquaculture on the food and nutrition security at household and community level in Central America" and "Development of fishery and aquaculture products intended to fight food and nutrition insecurity".

This background shows our limited experience in managing the issue. Based on this experience we can answer your questions:

1. The scope is appropriate, in the Central American region, transboundary populations are among the most vulnerable

2. The elements presented are adequate. These are major issues that admit dissagregation and the inclusion of subtopics.

3. In the Central American Region we have the Regional Programme for Food and Nutritional Security (PRESANCA) in the framework of the Central American Integration System (SICA) funded by the European Union. The EU supports the above mentioned implementation forum, analyzes the impacts of Climate Change in sectors like health, food, water (drinking and sanitation), tourism, disaster prevention, energy, among others.

Regarding the Policies including Climate Change, the Central American Region has:

1) Integration Policy for Fisheries and Aquaculture in the Central American Isthmus, 2) The Regional Agri-Environmental and Health Strategy (ERAS) , 3) Regional Climate Change Strategy (ERCC), all of them under the SICA.

Besides, OSPESCA -in collaboration with other SICA Secretariats - has succeeded in that the issue of impact of climate change on fisheries and aquaculture has been recognized in the region at ministerial level, which means, among other things, that the issue will be incorporated into the

Annual Operating Plans in the fisheries and aquaculture institutions of the Central America Isthmus.

In my opinion, there are -particularly on fisheries and aquaculture-, plenty of documents with theoretical information or results of modelling work, but there is little field work with real and verifiable data, so I think it is necessary to create a baseline as a reference for mitigation and adaptation actions.

On the other hand, work on climate change is at expert and technical level: productive sectors do not participate in these studies. OSPESCA incorporates fishermen and fish farmers in the studies and works related to this topic.

Yours

Jorge Lopez

59. Doreen Stabinsky, College of the Atlantic, USA

Comments on FAO scoping document for HLPE study on climate change

In general I agree with the comments made by Sonja Vermeulen from CCAFS. In particular, it is true that there is an abundance of studies on the intersection of agriculture and climate change. What is particularly needed at this juncture, and what the CFS is arguably uniquely positioned to contribute, is an analysis that leads to better understanding the food security impacts of climate change, particularly with regard to the most vulnerable populations. Yesterday I heard Carlo Scaramella of the World Food Programme speak – his comment with regard to near-term climate change impacts on rainfed agriculture in Africa and food security implications for dependent populations was that the situation is "well beyond ringing alarm bells." This is where the FAO CFS could most productively contribute its analysis.

1. assessing direct and indirect impacts of climate change on food security

There is a growing body of scientific analysis, led in part by researchers affiliated with the Stanford Program on Food Security and the Environment, on regional climate impacts in Africa to understand food security implications.

One conclusion of the research is that temperature may play a much more important role in yield loss than changes in precipitation – as temperatures increase so do the number of days where extreme temperatures exceed crop physiological thresholds, with the consequence that significant processes such as pollination and grain filling are affected. Moreover as average temperatures rise, soil water moisture decreases more rapidly over the growing season, even in years of average rainfall. In rain-fed agriculture, soil moisture content during the growing season is a principal determinant of the length of the growing season. More regional and local knowledge about both temperature-soil moisture interactions and the gradual increase in the number of extremely hot days are essential to understand food production challenges with slow-onset temperature rise in rain-fed areas – whether in Africa or Oklahoma.

These sorts of studies linking regional climate modeling with crop yield modeling need distribution and further replication. An assessment of the direct and indirect impacts of climate change on food security should include a review of ongoing relevant scientific research and identify gaps in knowledge, and more importantly, knowledge distribution.

3. adaptation to climate change

I agree with the CCAFS comments regarding looking at adaptation in finer detail. There are urgent adaptation needs to current climatic risks that should be prioritized. As well, work towards adaptation of farming systems for future climates of 10-20 years from now must begin now, and I agree with the emphasis in this context on farmer-led crop breeding.

The adaptation options considered should mirror and prioritize the vulnerable regions and populations identified in the previous section.

Successful, people-centered, cross-cutting models of adaptation, such as the MERET program in Ethiopia, should be reviewed and highlighted. Agroecological models in particular provide numerous adaptation benefits and should be prominently considered.

Adaption responses must integrate meteorological information. The Global Framework for Climate Services promises to coordinate generation and distribution of climate information globally, including early warning information relating to seasonal precipitation availability, but a key challenge is to make such information available at regional, national, and most importantly at local levels for access by pastoralists and small-holder and subsistence agriculturalists. Knowledge gaps and coordination and information distribution gaps should be identified.

4. climate change mitigation

Given the severity of current and future food security threats posed by climate change, agricultural mitigation strategies should be a much lower priority for review by the HLPE than adaptation strategies and options. Numerous other bodies are conducting work on mitigation, not least the IPCC and the UNFCCC, but also the Global Research Alliance on Agricultural Greenhouse Gases. The FAO CFS should focus its attention on food security, vulnerable populations and adaptation.

5. recommendations for policies and actions

Actions need to be prioritized. There are very significant imminent climate change threats to food and nutrition security, particularly in exceptionally vulnerable regions such as sub-Saharan Africa.

Regards,

Doreen Stabinsky
Professor, Global Environmental Politics
College of the Atlantic
Bar Harbor, ME USA

60. Gerhard Flachowsky, Institute of Animal Nutrition, Germany

Dear Moderators,

I would like to add some comments/remarks to contribute to sustainable FOOD SECURITY, also under consideration of expected CLIMATE CHANGES and to ask one question.

TOPIC: Potentials to produce high amounts of high available/digestible phytogenic biomass under consideration of natural limited and unlimited resources.

OPENING: My name is Gerhard Flachowsky. I am an animal nutritionist and I am the retired Head (since May 2009) of the Institute of Animal Nutrition, Friedrich-Loeffler-Institute (FLI), Federal Research Institute for Animal Health, Bundesallee 50, 38116 Braunschweig, Germany

BACKGROUND: It is my understanding that plant breeding and cultivation are the focal points for global feed and food security in the years ahead. High yielding plants with stable yields and with low external inputs of limited resources, such as arable land, water, fossil fuel, phosphorus etc. should be one of the main goals of plant breeding in the future. This should be also the main aim under consideration of various (specific) geographical regions and various climates resp. climate changes.
So-called "Low Input Varieties" should use unlimited resources such as sunlight or sun energy, nitrogen (N2) (like legumes) and carbon dioxide (CO2) as plant nutrients from the atmosphere to the highest possible level and should use the limited resources as effectively as possible (see Table 1 below). On the other side there is an extremely large gene pool by microorganisms, plants and animals. Apart from traditional plant breeding, plant biotechnology seems to have a potential to contribute to the objective of "Low Input Varieties".

QUESTION: Resulting from the statement above and under consideration of some international documents (e.g. SCAR 2008; The Royal Society 2009), I would like to ask, "Why is the international community not able (or not willing) to concentrate all research capacities (Public research) in this direction to solve sustainably the global feed/food problem?" The Royal Society recommended already in 2009 such a way for the UK. The scientific knowledge could be available worldwide, but mostly protected by patents in private hands. It seems to me that the sustainable solution of food security is less a scientific problem and more a socio-political problem.

References:
SCAR (EU – Commission – Standing Committee on Agricultural Research; 2008): New challenges for agricultural research: Climate change, rural development, agricultural knowledge systems. The 2nd SCAR Foresight Exercise; Brussels, Dec. 2008, 112 p.

The Royal Society (2009): Reaping the benefits: Science and the sustainable intensification of global agriculture. RS policy document 11/09, issued Oct. 2009, RS 1608, ISBN: 978-0-85403-784-1

Table 1 - Potentials to produce phytogenic biomass and their availability per inhabitant under consideration of the increase of population
(↑ Increase, ↓ Decrease, ↔ no important influence)

Plant nutrients in the atmosphere (N_2, CO_2)	↑↔
Sun energy	↔
Agricultural area	↓
Water	↓
Fossil Energy	↓
Mineral plant nutrients	↓
Variation of genetic pool	↑

Best regards

Gerhard Flachowsky

Prof. Dr. G. Flachowsky
Institute of Animal Nutrition
Friedrich-Loeffler-Institute (FLI)
Federal Research Institute for Animal Heallth
Germany

61. Geoff Evans, Humane Society International, USA

Dear members of the Steering Committee of the HLPE,

Humane Society International (HSI) applauds HPLE's efforts to study the relationship between climate change and food security, specifically the opportunities and challenges various climate change mitigation and adaptation policies pose to food security and nutritional health. Further, we appreciate the opportunity to provide input to this important work during your public comment period.

While HSI appreciates the overall breadth of the scoping paper, the paper omits consideration of the welfare of animals raised for food. The approximately 67.5 billion animals raised for food annually both impact and are impacted by climate change, and climate change policies. Support for high-welfare farming practices—as opposed to low-welfare intensive confinement systems—is more likely to support food security, small-holder farmers (including women farmers), rural development, and environmental sustainability.

Surveys of public opinion clearly indicate that consumers worldwide care for the welfare of animals raised for food. Climate change policies must consider effects on farm animal welfare.

HSI requests the HLPE to take into account the climate change and policy impacts on the welfare of animals raised for food, and recommend policy solutions that support high-animal-welfare farming systems.

With specific regard to the scoping paper, section 1(a) should, in its evaluation of climate change impacts on food security, include an evaluation of climate change's impacts on farm animal welfare, such as heat-stress-related death. Section 1(c)'s evaluation of the limits of agricultural resources should account for the relative inefficiency of producing animal products, including impact on global grain resources. Worldwide, more than 97% of soymeal and over 60% of barley and corn go to feed farm animals. Section 4(b)'s analysis of agricultural mitigation options should also evaluate these options for their impacts on animal welfare, which dovetails into section 4(d)'s multi-objective policy approach to mitigation. Some of the proposed mitigation options in animal agriculture have the potential to lead to wide-scale, negative welfare impacts. For example, increasing production efficiency in farm animals has led to some of the worst animal welfare effects. And providing financial subsidies to large-scale anaerobic digesters incentivizes operations that not only severely compromise animal welfare, but harm the environment and food security, as well. Small-scale biodigesters, however, should be pursued. Thus, evaluating the animal-welfare impacts of agricultural mitigation options would feed directly into a multi-objective policy approach to mitigation. Section 5 should take the foregoing welfare considerations in the aggregate and promote high-welfare systems, which are more wont to simultaneously support food security, the environment, and economic development goals.

Though food security is often used as a justification for the inhumane confinement of animals on industrial farm animal production facilities, in reality, the industrialization of animal agriculture jeopardizes food security by degrading the environment, threatening human health, and diminishing income earning opportunities in rural areas. With proper support from governments and international agencies, a more humane and sustainable approach to agriculture can ensure equitable and adequate consumption and utilization of nutritious plant and animal source foods throughout the developing world.

HSI is happy to provide additional research support and expertise relating to farm animal welfare, as the HLPE study is developed and finalized.

Thank you again for the opportunity to provide input on the scoping paper for the HLPE study on climate change and food security.

62. Robynne Anderson, International Agri-Food Network, USA [2nd contribution]

International Agri-Food Network - Private-Sector Focal Point for CFS

In conjunction with the Farming First coalition, the International Agri-Food Network provides the following points for inclusion in the work of the HLPE study:

1. Safeguard natural resources
• Protect natural habitats by avoiding deforestation and land clearing by sustainably improving yields on existing arable land.
• Protect the integrity of watersheds, wetlands and pasturelands to preserve ecosystem services and biodiversity.
• Invest in technologies and techniques to promote water-use efficiency, such as improved irrigation systems, conservation agriculture and better water allocation systems.
• Build up soil organic matter and prevent erosion by applying techniques such as conservation tillage, nutrient management and the use of reclamation varieties 1.
• Facilitate drought-preparedness and mitigation through appropriate technologies, including use of remote sensing, local weather forecasting, drought-tolerant crops, early warning information systems, irrigation technology and the building of resilience in rural communities.

2. Share knowledge
• Encourage education in locally-relevant agricultural practices and technologies which significantly increase carbon sequestration, reduce GHG emissions and improve agricultural productivity, particularly in developing countries.
• Create international programmes which share best practice and build capacity for the efficient application of existing climate-friendly technologies by making them more affordable and efficient in use as well as more accessible to farmers.
• Foster energy-efficiency improvements and emissions reductions in nitrogen fertilizer production by helping producers of all sizes to adopt best practice techniques.
• Reduce livestock-related emissions through rapid education and dissemination of improved efficiency of grazing systems, manure management, methane capture for biogas production and enhanced feeds and feed additives.
• Use Integrated Crop Management (ICM) best practices (notably by deploying the right nutrient source, at the right rate, right time and in the right place to improve nutrient use efficiencies) and apply Integrated Pest Management (IPM) to optimise pesticide effectiveness.
• Recognise and support the development of synergies between resilience and mitigation through the inclusion of improved farm management practices in research programmes.

3. Build local access and capacity

• Mainstream and co-ordinate funding for climate change and agricultural programmes, in ways which address grassroots needs and reach all levels of farming.
• Encourage improved cropping systems (e.g. the use of cover crops and appropriate crop rotation methods, such as nitrogen-fixing legumes), cultivation practices (e.g. by limiting fallow periods and reducing cultivation) and soil quality practices to increase overall resource productivity.
• Invest in infrastructure-building and related training programmes.
• Provide training to existing extension networks to increase the efficiency and effectiveness of farm inputs (e.g. fuel, mineral and organic nutrient sources, seeds and crop protection).
• Invest in bioenergy to achieve energy security and rural development through sustainable local production.
• Secure access to land and water resources, especially for women farmers.
• Provide risk management tools to support farmers in managing weather and market variations.
• Localise the application of agronomic knowledge, pest identification and meteorological information.
• Facilitate the use of modern varieties which are resistant to pests and diseases and decreasing the need for tilling.

4. Protect harvests
• Reduce emissions by minimising pre- and post-harvest losses.
• Support efforts to enhance food quality and safety and to reduce waste along the food chain through to endconsumers.
• Improve safety testing for food-handling and processing equipment, as well as storage techniques, cold-chain systems and transportation infrastructure.

5. Enable access to markets
• Channel new and additional funding for climate change mitigation, adaptation and technology transfer directly to the agricultural sector.
• Reward all responsive farmers using sustainable agricultural practices through positive incentives which acknowledge their vital role in providing ecosystem services.
• Develop innovative financial mechanisms for the transfer of technologies in order to support farmers in developing countries.
• Support farmers' organisations, enabling them to operate as aggregating agencies bringing together individual farmers to improve access to financial mechanisms, funding and carbon markets.
• Mainstream climate change related efforts into market development.

6. Prioritise research imperatives
• Invest in R&D aimed at scaling up a broad range of new mitigation and adaptation technologies and practices addressing diverse climate needs.
• Develop climate information services and early warning systems, as well as best possible estimates of weather and climate impacts on crop or forage production, at a temporal and spatial scale useful for vulnerable rural communities.
• Promote partnerships between farmers and scientists to develop adequate and fit-for-use technologies as well as land and water management tools where they are most needed.
• Improve scientific insight into the role of GHG emissions from methane (CH4) and nitrous oxide (N2O). Increase research on areas of potential savings in order to include them in any future monitoring and accounting rules determined through the Copenhagen process.
• Improve the capacity of a broad range of crops to grow in harsher climates, developing locally-adapted drough- tolerant, salinity-tolerant and heat-tolerant varieties.
• Instigate a system for monitoring GHG emissions from agriculture, including developing performance indicators for agricultural practices that reduce emissions.

63. Raziq Kakar, SAVES, Pakistan

Dear All,

I am keenly interested in the subject of climate change and food security. I have been looking at the discussion. I was thinking for some feedback but for the reason of some unavoidable circumstances, I could not do that earlier.

I am an applied animal scientist and have been working with livestock breed issues in the context of food security and climate change. Climate change is affecting and will affect (worsen) livestock breeds and production systems. Every year new diseases enter the disease register of livestock species. Last year a fatal respiratory camel disease was reported from many quarters of Asia. The disease was linked to the dryness in the desert because of no rains.

On the other hand, introduction of exotic high yielding livestock breeds in the dry lands of the globe is a useless and wasteful exercise. Such breeds need very high inputs. While providing a favorable environment a lot of energy and water are needed. Grain feeding, high veterinary inputs, need for skilled human resources and others are limiting factors of such breeds.

Local/indigenous livestock breeds are very important and play a pivotal role in food security and livelihoods of the livestock keepers in the world. Such breeds need very low or even zero inputs. They rely on marginal lands, not suitable for agricultural activities. Local breeds are highly resistant to the climate change effects, diseases, feed/water scarcity and droughts.

Unfortunately, there is political and industrial backing for the introduction of exotic breeds. Local livestock breeds are always neglected while formulating policies for food security and livestock production. The local livestock farmers are also neglected and never participate in policy formulation. Such circumstances make it difficult to achieve the goals of food security, especially in the climate change context. LIFE Network has introduced the idea of livestock keepers' rights.

http://www.pastoralpeoples.org/docs/Declaration_on_LKRs_with_initial%20signatories_6.pdf

Also climate change issue is always dragging politically. Carbon credits, methane gas production etc, all are considered as the produce of animals, especially livestock. In this context thousands of Australian camels are proposed to be killed/shoot for carbon credits. Such methodologies are unacceptable and cannot help in reality. The same camel can be used as food aid and food security in the drought affected areas, once those camels are provided to Asia, especially Afghan people.

In short local livestock breeds can be the best tool to combat the effects of climate change on one hand and to reach the goals of food security on the other hand.

Best regards,

Raziq PhD Abdul Dr
President: Society of Animal, Vet. and Environmental Scientists (SAVES)
Organizer: Camel Association of Pakistan (CAP)
Coordinator: LIFE Network Pakistan
LEGS: Trainer of Livestock Emergency Guidlines and Standards LEGS

64. Kaisa Karttunen, Senior Agriculture Consultant, Finland

Dear Moderator,

The HLPE study on climate change is most welcome and timely. The proposed scope of the study is well thought covering most of the climate change-related important elements. Nevertheless, I would like to emphasize the need to identify measures for agriculture that simultaneously tackle both mitigation and adaptation challenges, without compromising food security objectives. In addition, the proposed adaptation tools should address the potential problems induced by both short-term climate variability and long-term climate change. At least, the short-term adaptation measures, often related to disaster risk management, should not harm the long-term adaptive capacity and resilience of the production systems. I would also like to emphasize the need for a community based approach in adaptation, which engages local people, men and women, and their communities in problem identification and evaluating and piloting alternative solutions to improve the acceptability and sustainability of the interventions. Agriculture and rural income diversification deserve adequate attention as potential solutions to adaptation needs. The climate change-related policy making and the concrete execution of field-level activities will both benefit from a two-way flow of information.

kind regards

Kaisa Karttunen
Senior Agriculture Consultant
Finland

65. Pravat Mohapatra, Sambalpur University, India

1) Do you think the scope is appropriate?

Yes.

2) Have important elements been omitted or should any of the elements outlined be left out?

Iron nutrition of rice is likely to become more erratic under aberrant pattern of rainfall. It should be given more attention in the programme.

3) In your opinion, what would be the main aspects that the report should emphasise?

Change of climate is likely to cause more damage to rice production in the tropics and sub-tropics. Rice is the precious food for the poor people living in the densely populated countries of south and south-east Asia. The report should highlight the impact of climate change on rice production and the impact of low iron rice on rice consumers.

Dr P K Mohapatra PhD (Adelaide)
CSIR Emeritus scientist
School of Life Science
Sambalpur University

Jyoti vihar
India

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

Esteemed Chairman & Members of the Steering Committee of the HLPE, and FSN Members,
Good Day!
First of all, I must say that the scope of the study is appropriate and very timely.
It's my pleasure to put forth the following points for consideration regarding the topic of climate change vis-à-vis food security strictly in my personal capacity and not in Official capacity:

- Agriculture today is facing an unequal competition for good quality lands and water resources from domestic and industrial sectors so much so that future agriculture will increasingly be pushed to marginal environments—this area need immediate attention.
- Water will be a major constraint and with more and more use of poor quality waters, area under salinity and waterlogging will continue to increase. We, therefore, need to develop cheaper and eco-friendly options for use of urban/peri-urban waste waters.
- With increasing cases of diabetes, which has been linked to Zn deficiency in many studies, there is need to stress multi-nutrient especially micronutrient deficiency.
- Biodiversity-climate change-food security nexus need to be focussed.
- Carbon sequestration vis-à-vis soil protection need more stress.
- We need to evolve suitable varieties of crops, particularly of rice, to suit the changing cropping pattern and soil-water deteriorations under changing climate.
- Encroaching pasture and food growing areas by food grains and cash crops have put enormous pressure to livestock farming especially with respect to fodder and feed availability and or cost. Climate change has aggravated the problem of pasture land productivity in many areas which is directly related to decline in soil productivity and less water availability. This needs attention immediately.
- Agriculture-based income generating activities such as bee keeping, mushroom production and silk worm rearing need to emphasized in view of climate change.
- We need comprehensive technology packages for climate change adaptations.
- For coastal areas, we need to develop low cost integrated farming of crop-fish-animal husbandry suitable for marginal farmers for adaptations under changing climate. Also there is a need for restoration and conservation action plan for mangroves in coastal areas.

Also I do feel that we need to create a sound social framework to address climate change vis-à-vis food security which will ultimate sensitise policy makers and general people for its urgency.

With warm regards,
Sincerely,
Pradip Dey

67. Lim Li Ching, Third World Network, Malaysia

Third World Network (TWN) Comments on the proposed scope of the HLPE study on climate change

Thank you for the opportunity to provide comments on the proposed scope of the HLPE study on climate change. I am submitting the inputs below on behalf of the Third World Network.

1. Assessing direct and indirect impacts of climate change on food security and nutrition

- The magnitude of the food security challenge is enormous; for example, 650 million people depend on rainfed agriculture in Africa, where according to the IPCC, yields may decrease by 50% in some crops and in some areas within 10 years. This is the appropriate framing for the HLPE study. What are the global responses needed – immediately and in the context of long-term sustainable development pathways – to protect the most vulnerable?

- The above is also cognizant with a right to food approach, which should help frame the HLPE study. The most vulnerable groups who are the hungry are smallholders, landless labourers, pastoralists, fisherfolk and forest users, and the urban poor. Adverse climate change impacts on these groups are likely to lead to further denial or violation of the right to food.

- The assessment of impacts should also take into account synergistic effects of multiple stresses that are linked to climate change, e.g. mediated via the relationship of water and temperature.

- Worst-case scenarios should be part of the analysis. The IPCC AR4 tends towards averages rather than worst-case scenarios. However, for food security policy-making in the face of uncertainty, policy-makers must have an understanding of the full range of possible futures to expect.

3. Adaptation to climate change

- Given the severity of the climate threat – at this very moment – in very vulnerable, already food-insecure regions, this section on adaptation should have highest priority. The HLPE and CFS should focus its attention on food security, vulnerable populations and adaptation.

- Agroecological approaches, particularly with respect to improving soil structure, water-holding capacity and fertility, conserving and sustainably using agricultural biodiversity, and traditional water harvesting and water management practices should be essential elements to be reviewed under possible adaptation responses. Concurrent positive impacts for productivity and food security should be highlighted.

- Focus should also be given to small-holder and subsistence farmers, not only because they are more vulnerable, but also because their local knowledge and practices have adaptation value. Mechanisms to reach small-holder and subsistence agriculturalists with information about seasonal weather changes generated through early-warning systems are essential.

- The public sector has an important role to play and it should actually be given much more prominent consideration than the private sector. Consideration should also be given to public sector adaptation strategies that can ensure the food security of the most vulnerable, including safety nets and risk management strategies.

- There is a need to review agricultural research needs for long-term adaptation challenges.

4. Climate change mitigation

- Agriculture is a major source of GHG emissions. The IPCC reports are the starting point and the work need not be duplicated.

- The IPCC has reviewed mitigation options. What should be looked at in more detail is the IPCC finding that there is little mitigation potential for methane and nitrous oxide reductions. There is need for more critical assessment of this conclusion that takes into consideration: 1) the potential for agroecological approaches to reduce use of synthetic nitrogen fertilizers; 2) the possibility for changing consumption patterns to shift demand from cattle to less GHG intensive animals such as sheep, pigs and chickens; and 3) methane emission reductions that can be

achieved by avoiding industrial animal production facilities dependent on liquid manure management.

5. Recommendations for policies and actions

- We agree with other commentators who have said that the recommendations should come after the study and that the conclusions that will emerge from the investigation should not be precluded or prejudged.

- One very clear need is for international coordination of responses to climate impacts on food security and consideration of the role that the CFS could/should play in this coordination.

- The recommendations for policies and actions should be prioritized. They could also be differentiated and clustered into recommendations for national, regional and international levels.

Lim Li Ching
Third World Network
Malaysia
www.twnside.org.sg

68. Carlos G. Borroto, National Program of Agricultural Biotechnology, Cuba

Dear Moderator,

I think the scope is appropriate and comprehensive and the various useful inputs received could improve it.

It is in fact urgent to summarize available knowledge on climate changes related to Food Security, and encourage decision makers to take actions on the recommendations regarding this critical issue.

Please find below some additional comments of topics that I consider should be emphasized:

1. Promote productivity improvements on a sustainable way (sustainable intensification).

2. Avoid deforestation and soil degradation

3. Address not only food production but also postharvest management and diet patterns

4. Focus more the analysis on the impact and mitigation measures favourable to the most threatened regions and populations

5. When promoting the development of new crops, highlight the importance of plant resistance to biotic and particularly abiotic stress.

6. Not only new crops are needed but also farming systems more adapted and with less impact on climate changes. New crops that favour these farming systems should be also prioritized. The equivalent approach in animal husbandry should be promoted

7. Integrated control management of plant and animal pests and diseases contribute to mitigate climatic changes and to have less negative impacts on it too.

8. In the dynamic policy approach, is important to promote and to implement financial mechanisms to perform appropriate research activities, focus to solve practical constraints of the most threatened regions and populations groups.

Regards,
Carlos G. Borroto
National Program of Agricultural Biotechnology
Havana, Cuba.

69. Rudolph C. Ryser, Center for World Indigenous Studies (CWIS), USA

Climate Change and Food Security must be considered in the light of the Convention on BioDiversity in addition to ongoing negotiations of the Climate Change treaty under the UN Framework Convention on Climate Change.

Unaddressed points in the Climate Change and Food Security discussion to include for consideration by the Global Forum on Food Security and Nutrition (FAO):

1. Discussion and policy should emphasize the relationship between people and the land - namely experience with plants and animals over time.

2. Scale of focus must include "micro-climates" where changes due to the adverse affects of climate is immediately observable and the affects on populations are most directly apparent.

3. Adaptation strategies at the "micro-climate" level may ensure a greater chance of human survival and integrated into global, continental scales. Agreements must be at the micro-climate level first, and though this is more complicated the process will lead to a fully accountable agreement at the local, regional, continental and global levels.

4. Micro nutrient levels of foods must become a major focus with particular attention to essential fatty acid availability particularly mono glycerides and omega 3,6 and 9.

5. Re-localization of food production while advancing the infrastructure for local food distribution.

6. "The only way to protect and preserve wild plants and animals is to leave them in the care of indigenous communities that have cultures directly connected to the continuity of those things," (quoting Rudolph Ryser) This approach ensures biodiversity while maximizing effective strategies for responding to the adverse effects of climate change.

70. Danilo C. Cardenas, PCARRD, Philippines

The scope as outlined is very appropriate – assessment of impact on food security and nutrition, identification of most vulnerable regions and populations, response mechanism (adaptation and mitigation) in the agriculture sector, and policy. However, we would like to suggest the following:

- that the study look into sectoral details such as crops, livestock and even fisheries. These sectors are affected differently and they pose different responses to the effects of climate change. We can look at the trends in the productivity of crops and livestock and the

occurrence of climate-sensitive pests and diseases, adjustment in the cropping/farming systems, etc.;
- understand the science behind climate change including adaptation and behavioral science as big portion of adaptation depends on the socio-economic condition of the people;
- examine the technologies available and can be transferred to target beneficiaries;
- explore other cross-cutting concerns such as knowledge and capacity building of the different stakeholders and sustainability plan;
- action planning – keeping in mind that we are not starting from zero so after knowing the result of the study, we have to answer the question – what needs to be done where and by whom? timeline? how?

Thank you for the opportunity to participate in this consultation.

Dr. Danilo C. Cardenas
Deputy Executive Director for R&D
Philippine Council for Agriculture, Forestry and
Natural Resources Research and Development (PCARRD)
Department of Science and Technology (DOST)
Los Baños, Laguna, Philippines

71. Tara Shine from the Mary Robinson Foundation - Climate Justice, Ireland

The **Mary Robinson Foundation – Climate Justice (MRFCJ)** welcomes the initiative to examine the impacts of climate change on food security and nutrition – including the challenges and opportunities of adaptation and mitigation policies.

An overall observation is that the scope of the proposed study is very broad and that perhaps some refocusing of scope to a narrower set of issues might be appropriate. An initial literature review could identify areas where recent work has been completed and could address some of the issues identified. For example UNEP's *Green Economy Report* , which has a useful chapter on agriculture, Oxfam's *Growing a Better Future*, FAO's *Save and Grow* initiative and recent initiatives by IFAD the CGIAR Centres.

The focus in section 2 on identifying vulnerable regions and populations, these most at risk and most in need of support, is critical. Again there is existing work to draw on and this section could focus on vulnerability from a climate, food security and nutrition perspective. This is the only section to highlight the gender dimensions of the proposed study – it correctly states that men and women are affected differently by climate impacts, shocks and extremes. However, given the significant role of women in agriculture and in feeding their families – we believe that the gender dimension should be strengthened and mainstreamed throughout the study.

In assessing responses to climate change there are real opportunities to identify win-win policies and actions which have adaptation and mitigation benefits as well as nutrition and food security benefits. A focus on these synergies could help to focus the outcomes of the study. Likewise there are numerous ongoing activities to be learned from as well as priority projects and activities identified by communities and governments in policies and plans which should inform the study and provide useful lessons learned.

Under section 3 on adaptation, sub-section (b) on cost-benefit analysis could go on to look at ways and means of paying for adaption actions. The role of international climate finance, development assistance, micro-finance and private sector flows could be examined. In addition, the proposed work on risk management in sub-section (d) could be strengthened to look at the role of disaster risk reduction and risk transfer mechanisms in building resilience to climate change.

Section 4 on mitigation could include an assessment of opportunities for the rural and agricultural sector through, for example, REDD+ and even REDD++ which could include soil carbon and agricultural land. Again there is research being carried out by numerous organisations in this field which could be drawn on. There could also be a stronger focus in both the adaptation and mitigation sections (3 and 4) on the role of technology and opportunities for improving access to affordable and appropriate technologies.

Finally in section 5, on recommendations for policies and actions – there should be a focus on win-win opportunities, paying particular attention to the needs of the most vulnerable and integrating a risk reduction approach.

There must be a recognition throughout of the role of communities and countries in providing leadership and setting their own agendas. Solutions to the climate change problem will not be uniform across countries and a country-led approach is critical, with international support and the sharing of information, knowledge and technology.

We look forward to hearing more about the study as it progresses.

72. Ellasy L. J. Mujillah from the Ministry of Natural Resources and Tourism, Tanzania

1) Do you think the scope is appropriate?

- Yes, the scope of the HLPE study on Climate Change is appropriate, as it covers most of the important issues for assessing the effects of climate change on food security and nutrition.

2) Have important elements been omitted or should any of the elements outlined be left out?

- I think all important elements have been considered and it will be worthy if all these aspects are studied and findings are revealed.
- I think some elements which are associated with climate change adaptation and mitigation may be included. These include: Studies on the contribution of Forestry sector on the Food Security and Nutition, where affected people may survive by gathering forest food such as fruits, vegetables, roots and tubers, honey and many others as an adaptation measure;
- Also, under Climate Change Mitigation – Forests play an important role in climate change mitigation. As we are aware, Forests acts as a Carbon sink especially forests containing broad leaves. This occurs when the forest trees are actively growing, when they increase the uptake of CO_2 from the Atmosphere. They absorb CO_2 and release oxygen into the atmosphere through the natural process of photosynthesis in which CO_2 is converted into carbon and stored into the woody tissue of the plant.

- The importance of forests on food production and food security is crucial, as they provide vital services such as conserving soils and water sources which may be used for agricultural irrigation, ameliorating climate, hence improving agricultural productivity and attracting rainfall which in turn increases crop production, provides wild food and many other services.

3) In your opinion, what would be the main aspects that the report should emphasise?

- The report should put emphasis on researching on climate change adaptation and mitigation. These findings may be helpful in overcoming the effects of climate change on food security and nutrition.

I submit.

Ellasy L.J. Mujillah
Ministry of Natural Resources and Tourism
Forestry and Beekeeping Division
Dar es salaam
Tanzania - East Africa

73. Maria Pizzini from Save the Children, UK

Dear Moderator,

Thank you for the opportunity to contribute to the consultation on the scope of the UN Committee on Food Security and Nutrition High Level Panel of Experts study on climate change. Save the Children UK is deeply concerned about the negative impact of climate change on agriculture, food security and nutrition and the consequences for children and vulnerable communities - particularly those who contribute to and depend on ecosystem-based livelihoods.

The proposed scope of the study is appropriate and welcome. Climate change impacts on the availability and stability of food supply as well as its accessibility and utilisation. Therefore the broad scope assessing direct and indirect impacts, the vulnerabilities of particular regions and populations as well as climate change adaptation and mitigation approaches is correct. However, Save the Children UK would like to take this opportunity to highlight elements that have been omitted in the scope of the study and recommendations on further assessments.

Save the Children UK recommends that the relationship between climate change and the following themes are also analysed:

- Rising food prices – the study should explore adaptation and mitigation approaches to minimise the threats related to high food prices experienced by poor communities vulnerable to the many impacts of climate change such as rainfall patterns, cropping seasons and water stress on agricultural productivity. High food prices are a major obstacle to the poor's access to a nutritious diet and the study should factor in rising food prices in its assessment of the direct and indirect impact of climate change on food and nutrition insecurity.
- Emergencies – the study should explore how climate change is predicted to bring about an increase in fast-onset extreme weather events and slow-onset chronic emergencies; the impact of climate change on the severity, scale, magnitude and geographical distribution of emergencies and what impact this will have on overall food insecurity, as well as the capacity of the current system (both early warning & response) to deal with

such an increase in short-term fluctuations (climate variability) as well as longer-term climate impacts.

- Social Protection – The study could incorporate a cross-country vulnerability analysis that helps to classify countries as high-medium-low risk to climate change and be able to improve the geographical targeting and prioritization of social protection policy and programmes.
- Socio-economic risks and vulnerabilities - the study should specifically explore such vulnerabilities that have a cumulative impact on production, stability, access to and utilisation of food, both in rural and in urban areas.
- Displacement to urban areas - Climate change is a push driver of displacement to cities and the urban poor are particularly vulnerable to food insecurity. The study should assess urban and peri-urban agriculture (UPA) as a strategy for climate change adaptation for ensuring food security in the city due to its benefits of enabling adaptive capacities, enhancing environmental sustainability, reducing climate risks in urban areas, enhancing food sovereignty in the city and enhancing innovation and learning.
- Early warning and monitoring systems – such systems should be the cornerstone of "climate proof" food security strategies. The study should help to further the understanding on how monitoring and early warning systems can collect, analyze and disseminate timely information on the formation, development, persistence of climate-change induced emergencies like droughts, to the users and decision-makers. In light of the climate uncertainty, the study should further the understanding on how can these EWS systems be flexible and adapt to incorporate the various components such as the most updated meteorological information, agricultural information, production estimates, drinking water availability and household vulnerability. The study should also explore the important role such information systems play in mitigation to climate-related threats and risks as well as their role in long term planning.
- Equity issues - When identifying the most vulnerable populations and defining recommendations, the study must consider equity issues and the particular vulnerabilities experienced differently by different segments of the population. Climate change overwhelms the adaptive capacity for the groups that are the already the most vulnerable – including children and women - and it is important that adaptation does not exclude or further marginalize such groups.
- Livelihoods- The study should include evidence-based research and analysis that incorporates a longitudinal mapping of vulnerabilities, livelihood resources and climate risks. Tried and tested methods like the Household Economic Approach and Cost of Diet methods developed by Save the Children could be useful tools for such an analysis.

Save the Children UK recommends that the study also include assessments of the following issues:

- The different threats and risks of fast onset impacts such as heavy rainfall or floods and slow-onset events such as droughts. This distinction between current climatic variability and long-term qualitative changes in climatic conditions are relevant to understanding how climate risks are prioritized and systematically addressed.
- The "twin track approach" of direct nutrition interventions and safety nets combined with longer term promotion of climate-resilient nutrition-friendly agriculture, social protection schemes, livelihood diversification and disaster risk management.
- A multi-sectoral approach to adaptation and mitigation, which focuses on building long term resilience at the local level by integrating disaster risk reduction, social protection, natural resource management, agriculture and water.
- Approaches to integrating mitigation and adaptation measures, considering how they can be linked and integrated for instance though integrated agro forestry and silvo-pastoral systems as well as nutrition-friendly agriculture.

- Relationship between climate change adaptation and mitigation strategies and food security and nutrition initiatives at the global, regional and national levels, including CAADP, the GAFSP and the Scaling Up Nutrition initiative.

74. Martha Chouchena-Rojas from CARE International, UK

CARE International welcomes the High Level Panel of Experts on Food Security and Nutrition (HLPE) study on climate change and food security. CARE commends this study's focus on climate change and food security recognising that climate change impacts affect all four dimensions of food security and that tackling the threat climate change poses to food security requires thorough analysis and unprecedented collective efforts. CARE believes that climate change adaptation and food security are mutually supporting approaches and has been proactively integrating them in its programming and policy advocacy priorities. CARE's Poverty, Environment and Climate Change Network (PECCN) pays particular attention to the interface between climate change and food security, and has developed methodologies and tools for understanding and acting with communities to address differential vulnerabilities to the impacts of climate change.

In response to the scope of the HLPE study CARE would encourage the following considerations:

A greater emphasis on gender equality and women's empowerment in the HLPE study

Gender inequality, poor governance and climate change are recognised as drivers of food insecurity and undernutrition. CARE's work with highly vulnerable communities has shown us that long-term, sustainable solutions to climate change and chronic food and nutrition insecurity require deliberate and conscious empowerment of women. Women possess a wealth of knowledge about low-risk farming, sustainable water management, agro-ecology and family health and nutrition and must be placed at the centre of solutions. CARE's SHOUHARDO program in Bangladesh, which integrates women's empowerment interventions into an approach that considers disaster risk reduction, the use of social safety-nets, improved water, sanitation and hygiene, and maternal and child health, shows a reduction under 5 stunting by 30 percent (compared to a global average of 12 percent for USAID programs) for those households where women had participated in empowerment activities. This demonstrates that transformative activities that promote equity, women's empowerment, rights and appropriate governance increase the chances of households of achieving food security and climate resilience. It will thus likely enhance the HLPE study if a stronger focus is ascribed to gender analysis and the role of women's empowerment.

A greater focus on gender equity in addressing climate change adaptation

CARE supports the focus on climate change adaptation and particularly encourages the HLPE study to focus on gender-sensitive approaches to climate change. A gender-transformative approach to adaptation will strive for women and men to have equal rights, resources and opportunities to adapt to climate change. In most contexts, women's empowerment is a key strategy to achieve this. CARE's work has shown that tackling the underlying constraints on women's power in Bangladesh has helped to improve women's participation in community organisations and local government institutions. In northern Ghana, strengthening women's and women's organisations capacity to advocate for their rights is reducing systemic inequalities that prevent them from fully contributing to the resilience of their households and communities. This participatory approach allows women to make informed household decisions. Their adaptive capacity is thus improved and there is greater likelihood of increased resilience to shocks and stresses.

Context specific community based adaptation approaches

The interactions between the climate and the food system are complex and vary greatly based on local circumstances. Therefore, both the climate change impacts and their consequences need to be analysed at the local level in order to plan appropriate interventions. CARE would encourage this study to recognise the role of community based adaptation which draws on traditional knowledge combined with innovative strategies, to build local capacity for adaptation to accelerating climate change.

A focus on marginalised groups

CARE supports the proposed scope of the study in identifying populations at greater risk of food insecurity and would encourage a particular focus on food insecure smallholder farmers and in making agricultural systems more equitable. With analysts suggesting that 50% of the world's hungry people live on small farms, CARE believes investment in smallholder farming and other food insecure marginal groups such as pastoralists and fisherfolk, is a vital tool to reduce food insecurity and malnutrition in the longer term. This study should have a focus on agricultural systems that produce nutritious food and enhance ecosystems, increase resilience to climate change and diversify rural livelihoods while ensuring that livelihoods, rights and interests of smallholder and poor farmers are protected and promoted.

CARE believes that the climate change and food security discourse will only be effective when set in context – and in particular in the context of the lives of ultra poor women. Driven from a gendered analysis of extreme poverty, opportunities and pathways to food and nutrition security and resilience begin to look very different. Women's empowerment and gender equality are key to building vibrant and sustainable food systems, and resilient households and communities, in the context of increasing urbanization/shifting migration patterns, competition and conflict over natural resources, and climate change. CARE would thus urge the HLPE study to have a strong focus on these issues.

75. Noel O'Connor from the Department of Agriculture, Fisheries and Food, Ireland

Dear Moderator,

In response to your request for input into the public consultation on the proposed scope of the HLPE study on climate change I would like to thank you for the opportunity to provide input into this important work. From the outset let me point out that we agree with your overarching view that food security and climate change are, more than ever, the two major challenges facing humanity today.

As we approach the timeline for a successor agreement to the Kyoto Protocol, the importance of reconciling the dichotomy between increasing food production in a sustainable manner and rising GHG emissions has never been greater. Ongoing and planned research will undoubtedly play a strong part in the rollout of future adaptation and mitigation measures. The need to find scientific solutions towards increasing food output without a knock on rise in GHG emissions is urgently required.

The Global Research Alliance on Agriculture Greenhouse Gases, officially launched in Rome on 24 June 2011, is a positive development towards reconciling the dichotomy of delivering more food without growing GHG emissions.

Scope of HLPE study:

1. Do you think the scope is appropriate?

   Yes generally. It covers most essential elements. However further consideration of research, innovation, the risks of carbon leakage and mitigation options/best practice for the agriculture sector may provide for a more rounded approach.

2. Have important elements been omitted or should any of the elements outlined be left out?

   An important element of the study and policy recommendations should be on how to increase agricultural productivity in a more efficient and sustainable way thereby reducing pressure on forests and ecosystems and effective knowledge and implementation systems.

3. In your opinion, what would be the main aspects that the report should emphasise?

   Sustainable intensification of agriculture to meet global demand for food, adaptation and mitigation best practice, carbon food profile information, realistic joined up policy approaches towards food security/climate change, dissemination of best agriculture practices and further co-ordinated/targeted research.

Department of Agriculture, Fisheries and Food.

Ireland

76. Rogier Schulte from Teagasc, Ireland

Dear Sir, Madam,

On behalf of Teagasc – the Irish Agriculture and Food Development Authority – I am pleased to avail of the opportunity to provide feedback in relation to the scope of the proposed study on climate change by the High Level Panel of Experts.

Overall, we welcome this initiative and subscribe to the proposed objectives and scope of the study. Teagasc has built up considerable R&D expertise on Agriculture, Greenhouse Emissions and Climate Change, which is coordinated by its Working Group on Greenhouse Gas Emissions. Recently, this Working Group has produced a comprehensive review on the same subject matter for the Irish Government, which I have attached to this email.

We would like to draw your attention to Chapter 3 in this review - "Abatement strategies for global agricultural GHG emissions", which should be of specific relevance to your study. In this chapter, we review the challenge of simultaneously meeting the twin objectives of Food Security and combating Climate Change, and in this respect we highlight the importance of using the correct metrics at global level to quantify GHG emissions from agriculture. We demonstrate how the application of absolute metric (emissions per country) can inadvertently result in:

1. Carbon-leakage (displacement of GHG emissions across boundaries), which may result in an increase in global GHG emissions if emissions are displaced to regions with lower carbon efficiencies;
2. Adoption of counterproductive mitigation measures, i.e. measures that reduce reported emissions in the national inventories, but lead to an increase in global emissions.

On foot of these findings, we recommend the use of relative metrics to quantify GHG emissions, i.e. emissions per unit product, which is in line with current best practice in research publications.

We would recommend that the scope of your report is extended to include a review of this same subject matter at global level. Teagasc has significant research and technology transfer expertise in the area of agricultural GHG emissions, and we would be pleased to discuss opportunities to share this expertise and to contribute to your initiative.

Please do not hesitate to contact me, meanwhile I remain,

Yours sincerely,

Dr Rogier Schulte

Chair of Teagasc Working Group on Greenhouse Gas Emissions
Head of Environment, Soils and Land Use Research
Work Package Leader of the EU Joint Programme Initiative on Agriculture, Food Security and Climate Change
c/o Teagasc – the Irish Agriculture and Food Development Authority
Johnstown Castle
Wexford, Ireland

77. Thomas Ryan from the Irish Farmers' Association, Ireland

Introduction

The Irish Farmers' Association (IFA) is the largest national organisation representing the interests and views of farmers in Ireland and the majority of farmers in Ireland are members of the IFA.

Climate Change is an important challenge facing the global population and the response to this challenge requires detailed consideration, because efforts to solve the climate challenge may inadvertently lead to increased greenhouse gas emissions and increased food poverty.

Scope of the Study

The scope of the study is appropriate.

Each day 200,000 more people are added to the world's food demand and the global population is projected to increase by almost 40% to 9.2 billion by 2050. Least Developed Countries in regions such as Africa will experience the most rapid population growth, while in Sub-Saharan Africa the poverty rate currently remains constant, at around 50%.

The *perfect* food-poverty storm is emerging. Demand for food is continuing to rise, driven by rising global population, dietary shifts and reduced resource availability. This study is an important opportunity to lead an international food security debate to ensure that the response to climate change does not further diminish the ability of emission efficient regions such as Ireland to meet increasing world food demand and need.

Other Elements for Consideration

Regions such as Ireland are emission efficient, when producing food. This low carbon model of food production is derived from the grass based model of food production and increase efficiency.

The study should consider the impact on international emissions, if a reduction in output is imposed on emission efficient regions, such as Ireland.

Main Aspect that the Report Should Emphasise

The main aspect that the report should emphasise is the intrinsic link between addressing climate change and its impact on food security and nutrition. It should consider the negative impact which policy measures that reduce output in emission efficient regions will have on developing counties.

Jer Bergin
IFA Regional Vice-President &
Climate Change Project Team Chair

Thomas Ryan
Executive Secretary
National Environment Committee

78. Shambhu Ghatak from Inclusive Media for Change, India

Dear all,

I would like to share the following links on the association between climate change and food security:
http://www.im4change.org/environment/impact-on-agriculture-54.html;
Betsy Hartmann on Climate Change Politics and Overpopulation Propaganda, Newsclick, 20 January, 2010 : http://www.newsclick.in/international/betsy-hartmann-climate-change-politics-and-overpopulation-propoganda;
Climate Chaos: Christian Parenti's New Book Exposes How Global Warming Could Lead to Global Warfare, Democracy Now, 30 June, 2011 :
http://www.democracynow.org/2011/6/30/climate_chaos_christian_parentis_new_book.

Also, check the final article (on related topic) titled *'Revisiting Malthus and his critiques'*:

Best,

Shambhu Ghatak
Inclusive Media for Change
www.im4change.org
Centre for the Study of Developing Societies (CSDS)

79. Bhubaneswor Dhakal from Nepal

Dear Moderators and members of the Food Security and Nutrition Forum,

The aim and scope of the study are very relevant and appealing to the current context. The HLPE has attempted to cover issues of many aspects. However, I found insufficient work on some strategically important areas in the report. I have presented the issue of mitigation policy and

actions to enhance food security, particularly in resource (pasture, forest and water resource) - based poor rural communities.

Environmental and other business agencies claim that the mitigation policies and actions have potential to achieve win-win (multiple objectives in the HLPE report) outcomes particularly for environmental conservation and poverty alleviation. The mitigation policies and actions might contribute to reducing the rate and magnitude of climate change and contextual vulnerability of food security on the long run. However, the tangible outcome of the policies and actions is not certain. Furthermore the policies and actions reduce availability of resources and opportunities for adaptation to the climate change problem of the affected and vulnerable communities. In fact people of food-scarce and vulnerable regions have inadequate access to livelihood-supporting resources. The resources available in their communities are currently underutilized, a condition due to various reasons. The resources have high potential to produce more benefits from other uses and contribute to food security more than if used for mitigation. The resources can be more economically utilized in the near future as resource scarcity and climate change problems are growing in the world. Mobilization of the resources for leveraging local economic activities is important not only for food security but also for bringing demographic balance and helping elderly and children in disadvantaged communities with extreme rates of active labour force migration, such as that in rural Nepal.

Currently, environmental and other business agencies are convincing communities and policy decision makers to sell the mitigation service of the land resources and get more benefit than from existing uses. The agencies have greater influence in institutionally weak regions and communities where food security problem is growing. In addition the development package for addressing climate change and other problems of the vulnerable regions are directly or indirectly driven primarily to contribute to mitigation. Once the resources are used for mitigation purposes, the situation creates institutional complexities and locks the resources and future development opportunities for food security and other benefits from local communities for the near future. For example, environment conservation agencies had made similar claims (win- win outcomes) while changing community use of forests to protect areas and establish forestry plantation in community pasturelands in developing countries such as Nepal, India and China. Now the policies and programmes have worsened local food security and further marginalized the resource-based poor people. Many complexities (path dependency situation) are created for the management of resources for the best benefit of disadvantaged people and local communities. It is going to be a similar situation in REDD (+) program areas. People have not understood the hidden interest in the package of development supports and the possibility of it affecting their future opportunities, including food security. In fact the poor people of institutionally weak and vulnerable regions are being deceived. The policy decision makers are not serious about such critical social problems and strategic opportunities due to weak institutions and bad governance. The professionals and decision makers of many development support agencies have understood the dysfunctional political and social institutions in the regions, and the likely future problems of the poor people but they do not want to bring up the facts due to personal interest and benefit. I do not know whether the HLPE also purposively gave little attention to such strategically important issues. If the review team dug up such strategic issues the value and weight of the report would increase a lot.

If you would like to make any comments or want further specific examples on my points or claims you are welcome to reply to me.

Thank you.

Best Wishes,

Bhubaneswor Dhakal

80. K R Viswanathan from the Embassy of Switzerland, India

Dear Colleagues

Warm greetings. We went through the terms of reference with considerable interest, as the subject is not only very close to our heart, but we are dealing with it in substantial terms in official capacity also. We wish to provide a response to the questions as indicated below.

1. Do you think the scope is appropriate?

Yes, we would very much think so. The interface and interaction between climate change on the one hand and food security/sustainable agriculture on the other are very very intense as well as complex. Under the circumstances, the draft of the terms of reference for the High Level Panel of Experts are apt and appropriate. Further comments are provided under the response to questions No. 2 and No. 3.

What I like most is the fact that apart from considering different potential scenarios relating to climate change, the report will indeed consider actual situation on the ground (which for us is important as climate variability is perceived as important, especially in the immediate future, with regard to food security and sustainable agriculture).

2. Have important elements been omitted or should any of the elements outlined be left out?

It is honestly felt that all the crucial and key aspects related to climate change and food security have been covered well, also in accordance with their priorities. However, a few suggestions are provided for your consideration by way of feedback:

- It would be important to look at issues of food security at the regional (countries of the region), national, sub-national, provincial (in India, say at the State Government level), community as well as at the family level. Highlighting one at the exclusion of the other will not do justice to the whole subject.

- While cross cutting issues like gender, issues of disempowered groups (eg. the elderly, young children, socially disadvantaged) have been dealt with in fairly adequate detail, aspects relating to governance and decentralization would require additional focus and emphasis, as decentralized production, storage, strategic reserves, processing etc. are considered extremely crucial. Similarly, the role of various stakeholders (government, public, private, civil society, community etc.) becomes very important not only in providing various services, key among which are extension, climate information, agricultural advisory services etc. It will also be important to consider the declining investment (especially by the public sector) in agriculture.

- The omission of 'ecosystems' (especially 'provisioning services' and 'supporting services' under the Millennium Ecosystems Assessment) seems to be very conspicuous. In this context, apart from other things, conservation, utilization and commercialization of agro-biodiversity (plus traditional knowledge) will need to receive attention.

- On the same note, the utility and usefulness plus the key role played by approaches for area development (watershed development + ecosystems protection, management and development) seem to be missing, which is a very important point to consider, especially when dealing with climate change and food security, wherein the objectives under each of the broad themes (climate change and food security) need not necessarily converge and at times could be mutually conflicting.
-

3. In your opinion, what would be the main aspects that the report should emphasize?

This has already been covered under question 2 above

Thanks and with kind regards

K R Viswanathan
Senior Advisor - Climate Change
Embassy of Switzerland
Climate Change and Development Division
New Delhi

81. Jacques Loyat from CIRAD, France

[French original]

Bonjour,

Le changement climatique est un processus planétaire et pour une large part d'origine anthropique. L'agriculture est identifiée comme l'une des causes majeures de ce processus. L'épuisement annoncé des réserves en énergies fossiles, la croissance démographique et le développement rapide de certains pays très demandeurs d'énergie (Chine, Brésil, Inde...) entraînent des comportements aggravants. L'émergence des bioénergies comme nouveau débouché agricole majeur et le phénomène d'appropriation des terres sont autant de témoins et d'amplificateurs des raretés qui affectent la sécurité alimentaire et l'environnement –et au delà la stabilité même des sociétés et les grands équilibres planétaires - et viennent compléter les menaces liées au changement climatique.

C'est pourquoi, en termes de sécurité alimentaires, il convient de faire le lien entre ces différents aspects. Par exemple, on peut imaginer que les prairies et les forêts deviennent des réserves de carbone et que le développement des biocarburants limite l'usage des carburants fossiles. Encore faut-il en mesurer les effets en termes de sécurité alimentaire.

Les systèmes de production traditionnels des agricultures paysannes sont souvent basés sur des stratégies anti-risques, ce qui contribue à leur résilience. Les innovations techniques de type « Révolution verte » ont certes accru la productivité de certaines cultures *(du moins dans les milieux favorables)* mais ont fréquemment accru les risques techniques et économiques lors d'aléas climatiques forts, lesquels deviennent de plus en plus fréquents.

La contribution des agricultures paysannes à la lutte contre les changements climatiques est un sujet relativement complexe, dans la mesure où il est difficile d'identifier les pratiques traditionnelles ou nouvelles d'adaptation ou d'atténuation, et surtout de quantifier leurs effets.

Pour information.
L'association AVSF (Agronomes et Vétérinaires Sans Frontières - *www.**avsf**.org*) a lancé une étude pour apporter un éclairage à la réflexion sur l'adaptation des agricultures paysannes aux effets du changement climatique, en analysant les itinéraires d'adaptation développés par les communautés paysannes sur les terrains d'intervention de l'association. L'étude est volontairement ciblée sur les pratiques de gestion paysanne en vue de la lutte contre les conséquences du réchauffement (adaptation). Elle a pour ambition d'identifier, parmi ces

pratiques, celles qui sont susceptibles de contribuer à l'atténuation du changement climatique – et de proposer des pistes futures de recherche/action dans ce domaine.

Bien cordialement

Jacques Loyat

[English translation]

Climate change is a global process and, to a large extent, it is the result of human activities. Agriculture has been identified as one of the major causes of this process. The predicted exhaustion of fossil fuel reserves, the demographic growth and rapid development of certain high-energy demanding countries (China, Brazil, India ...) lead to exacerbeted situations. The emergence of bioenergies as the new opportunity for major agriculture and appropriation of land phenomenon are witnesses and also the boosters of shortages that affect food security and the environment - and beyond that, the very stability of societies and world balance – such are the threats associated to climate change.
Thus, in terms of food security, it is important to establish the link between these different aspects. For example, one could imagine that grasslands and forests could become carbon stocks and that development of biofuels limits the use of fossil fuels. Still, it is also necessary to measure the impact in terms of food security.
Traditional subsistence farming production systems are often based on risk adverse strategies, thus contributing to their resilience. Technical innovations like "The Green Revolution" have certainly increased the production of certain crops (at least in favorable environments) but have often increased the technical and economic risks of climatic hazards, which have become more and more frequent.
The contribution of subsistence farming to the struggle against climate changes is a relatively complex topic, in that it is difficult to identify the traditional practices or ways of adaptation or mitigation, and above all to quantify their effects.
For information: The AVSF Association (Farmers and Veterinarians Without Borders) www.avsf.org) has launched a study to throw light on thinking about the adaptation of peasants crops to the effects of climate change, by analysing the adaptation route developped by the peasant communities on the intervention land provided by the association. The study has deliberately targeted the practices of peasant management in the fight against of global warming consequences (adaptation). The aim of the study is to identify among those practices which contribute to climate change mitigation and to propose future sources of investigation and research in this field.

Sincerely
Jacques Loyat

82. Christina Yancheva from the Agricultural University of Plovdiv, Bulgaria

Dear Moderator,

The proposed study is well structured and defined. I would like to add some points that could be emphasized:
1. How will climate change be integrated in educational programs in schools and Universities?
2. More attention needs to go towards the relationship between climate change, animal stress and milk and meat production.
3. Climate change and effects on plant genetic resources.
4. Developing support services at all levels for climate change, agriculture and food safety.

Assoc.prof. Christina Yancheva
Plant Science Department
Agricultural University-Plovdiv
Bulgaria

83. Dianne Katscherian from the Environmental Health Directorate, Australia

Hi,

Although the assessment of vulnerability considers environmental, social and economic considerations, I felt this was not explicit with respect to infrastructure. I might be useful to consider both existing and future infrastructure issues such as requirements during food production, transport and distribution, whether these may be affected by climate change and therefore whether there then would be flow on effects for receiving populations.

Hope this is useful.

Regards

Dianne

Dianne Katscherian
Manager Health Impact Assessment
Environmental Health Directorate| Public Health Division

84. Mamadou Khouma, Agronomist, Senegal

Dear Moderator,

My contribution is related to uncertainties related to rainfall prediction in the Sahelian region. So far, models are contradictory and I think that the Food security forum should address the issue of having reliable rainfall projections if we want to build sound adaptation strategies to cope with climate change and food security. As far as temperature is concerned, there is good agreement on projections. As water management is central to any adaptation strategy in agriculture, having a clear picture of future evolution of rainfall is of the utmost importance.

Best regards,

Dr Mamadou Khouma
Agronomist
Senegal

85. Kiflemariam Amdemariam from International Federation of Red Cross and Red Crescent Societies, Kenya

Dear Moderator,

The scope of the study is very good. My comments are indicated as follows:

Under 2b, the study is focusing on smallholder and subsistence farmers, pastoralists, traditional societies, indigenous people, costal population and artisanal fisher folk, as populations at greater risk of food insecurity. What about the urban poor that are also affected by the consequences of climate change? This study has to also look into the urban poor.

Under point 5, I propose this action to be included: establishing a database for climate change adaptation best practices from different countries and promoting them to wider climate change affected countries.

Best regards,

Kiflemariam Amdemariam, PhD
Global Food Security Coordinator

86. Sajan Kurien from Kerala Agricultural University, India

Dear Sir,

Here is the reflection of my thoughts on the subject.

Climatic change and food security are the two major problems within the whole realm of agriculture which the humanity faces. When both of these concerns are handled together *i.e*. one in relation to the other or more correctly food security concern as a consequence of climate change the impending alarming situation really gets maximum focus and emphasis.

The basics of crop husbandry or crop management begin with the environment and as everyone is aware the environment has two dimensions: the soil and climate. Climatic conditions determine the congeniality, suitability or adaptability for crop cultivation. Within this broad term for each specific aspect like temperature the limits of adaptability is governed by the critical limits – the maximum and minimum limits. When shifts or deviations occur on either the maximum or the minimum in a place (locality) at a given point of time (season), we can call it as Climate change.

The Climate change the globe is facing can be traced to global warming and global warming is a consequence of many factors such as burning of fossil fuels (mostly for production of electricity), the halocarbon or more emissions of CFC resulting in the thinning of the ozone layer and thereby more UV radiations, the pumping of gasses – 'Green house effect', more CH_4 production under submerged cultivation or dams etc. Analysing the causes per *se* is not the intention of this paper and so I leave this point here as food for thought for the readers.

The growing population, urbanization and changing lifestyles point to the direct unavoidable fact that Climate change is here to stay or this phenomenon is a reality which will become more expressed in the days to come. Then what is the need of the hour? Many educationalists and planners have brought in courses and curriculums in this direction. So then comes the second question: is it an academic exercise?

The real answer or the ways and means to address climate change and thus usher in an era of enough food productivity and thereby food security is by **identifying and promoting Climate change as a major research thrust**. The impact and effects of climate change are experienced in the whole gamut of agriculture, be it the field crops, horticulture, Animal husbandry, Fisheries, Dairy and allied line departments. In crop production it is an immediate necessity to identify the vulnerable areas or locations . The coastal areas and the low lying areas become susceptible to

flooding ("*El nino* and *La nina*" effects) and thereby vagaries of the monsoon which directly affect rainfed agriculture as well as flows and levels of dams. The high ranges known for the cool climate are marked by a spurt in the maximum temperature. Again, temperature rise has led to low productivity of milch animals and low catch of fish harvest along the coastal line. The direct effects of climate change are realized on the thermometer and the barometer but its after effects or manifestations begin to question the very existence of humanity.

Having realized and accepted Climate change as a continuing phenomenon, the research thrust should not just be focused on aspects or causes responsible for the same but more importantly on Mitigation studies. The first and foremost aspect demanding attention is the studies on adaptability of important crops – a location-specific requirement, for example in low lying areas the problems can be floods or saline intrusions, in the high ranges it could be cold resistance or in identifying low chilling required varieties, and in plains the requirement will be to have thermo-sensitive varieties. This will involve both short-term and long-term pursuits (like breeding for specific requirements).

Secondly, research is to be stepped up with renewed vigour on abiotic and biotic stress with special reference to productivity – on crops, cattle livestock, small animals, poultry and in aquaculture.

Thirdly, large scale deforestation, particularly in high ranges, has to be addressed by systematic afforestation programmes so that both land and nature are protected in order to sustain productivity. Lifestyle changes by reducing the number and use of automotives can also reduce gaseous pollutants. Another major requirement is forewarning signals which have to be taken up at regional, national and global level for which an apex controlling advisory service has to be thought of at the WMO or UN level which gives frequent **updates and also gives alerts or alarm bells** as and when necessary.

Last but not least is to increase public awareness. This can start from the school syllabus to advanced centres of postgraduate and research studies and training of the public. To achieve this purpose environmental planning and monitoring agencies have to be set up at the root levels, particularly in fragile environments. It is equally important to drive in every human mind the basic concept of ecology.

"An imbalance anywhere is an unbalance everywhere".

Prof. (Dr.) SAJAN KURIEN
Assoc. Director of Research (Planning)
Kerala Agricultural University

87. Simon Taylor from Global Witness, UK

I am pleased that you are looking at the links between food security and climate change. The primary concern is food security, but the focus appears to be on how climate change is impacting on food security. I just wanted to mention though that if the high Level panel is concerned about food security, it also should examine the potential impacts on food security of an oil supply crunch – a point where oil supply will be unable to meet demand, and may well decline significantly. In the immediate term (by that I mean the next say 4-6 years), a highly likely oil-supply crunch will have a much greater impact on food security than climate change during that period - **not** that I am at all belittling the climate change impacts, more that I see their greatest impacts as yet to materialise – ie we have not seen anything yet!

Doubtless the HL panel with look to organisations like the IEA for projections. Unfortunately, the IEA has done a terrible job over the past decade and this has left the world community with

little clarity around the extent to which oil supply can be sustained and increased to keep up with increased world demand. In a few weeks, Global Witness will publish a document which will provide further details in this regard and it will call on the IEA and its member governments to improve transparency around oil production capacity. But I think it is important to stress the key role oil plays in the current global food chain. And if we move to a world where global spare capacity is all but non-existent – and if Libyan oil production remains cut from the global market (as would appear likely until the end of the unrest in Libya – how long is that going to take?), usable global spare capacity is likely to fall to little more than 1 million barrels per day (=/- 0.5 million) by as early as next year, and this is likely to remain the situation (as things currently stand) right through until around 2015, at which point global spare capacity is likely to be all but non-existent! Even if Libyan production were to come back on-stream, spare capacity would still be all but non-existent by slightly later in 2015. The last time usable spare capacity fell to this level was between 2006 and 2008 where we saw world oil prices rapidly escalating to their record US$147 per barrel in mid 2008 – after which they collapsed with the global economy. In other words, by as early as next year, we could be back in the territory of negligible spare capacity and spiking prices. There are only a few ways out of this situation: Reduce global demand (we have scarcely made any inroads into coming up with alternatives); kill demand through another massive recession; or wave a magic wand to find new oil production projects that do not currently exist and get them into production within a matter of a few years.

I know this is not the main theme of your interest, but if the team is interested in food security, you must start looking at this issue otherwise you are going to draw insufficient conclusions around the imminent risks to global food security. By the way, I should stress our concern is not a call for producing more oil – quite the opposite. This is about managed and rapid change from the existing global energy system. The problem is that such a change is a multi-decade process and we have scarcely begun. And part of the reason for this, is that the political space has been hijacked. You have seen that around the climate change issue itself, where we continue to have policy framed around 2ºC as a safe target (when the science clearly shows this not to be the case), and we have our political leadership essentially preoccupied with rescuing a global economy back into the framework of the pre-recession years. Ie we are seeking to go back to unsustainable consumption and growth levels, predicated on a predominantly petroleum-based economy (oil is the most important of the hydrocarbons we are addicted to). This thesis is in turn predicated on the ability of global oil production to meet expanded demand – and this is where the IEA has played such a key role. Unfortunately, production data does not support this outcome – at least for not much longer. Our problem as a society is that we have virtually not started to do anything about needing to create a new global transportation system at anything like the pace required. There is not enough space to go into detail here as to why – but the issue boils down to 4 key problems:

1. Global discoveries of oil were at their highest in 1964 – since then annual discoveries have shrunk. Today we consume about 4 times what we discover. And not all discoveries are either of the quality or size that makes them economic to develop. You have doubtless heard about vast discoveries in the Brazilian off-shore. But their depth makes the Deepwater Horizon disaster last year of BP look like a Sunday picnic, and they are unlikely for the main to be producing much before another decade.
2. The annual loss of production from existing fields is now running at 4 million barrels per day. This is the same as having to put into production a new province the size of the North Sea every 15-16 months – just to sustain existing output.
3. Global demand increase is now back up to about 1.4-1.5% annually – the average annual increase since 1988 is 1.6%, so we cannot rule that out. On the current basis, this means that on top of the 4 million barrels per day we need to replace that is annually lost from older oil fields just to stand still, we also need an additional 1.25 million barrels per day to cater for increased global demand. Together this 5.25 million barrels per day is the equivalent of 58% of the entire current output of Saudi Arabia needing to be added every year.

4. There are not enough new oil-field development projects being produced to meet demand for more than a few more years. On this basis, if we include lost Libyan production, global spare capacity shrinks back to the level where we should expect price spikes and market instability as early as next year (don't forget the oil price is already high!) and spare capacity is likely to disappear altogether by 2015 latest.

If you go to the link below, you will see our report "Heads in the Sand", which we shared with WFP and others concerned with food security when it was launched in 2009. Though the projections it contains (or rather the comments about IEA projections from that time) are now slightly out of date, we have commissioned a new set of projections which we will be publishing within the next few weeks.

I hope this is of use. As a director of Global Witness, I am in the business of seeking solutions to this looming crisis. Part of that has to come from highest level politicians and others in key areas of responsibility that will be affected by these issues to rapidly get to grips with the extent of this crisis. Currently we do not have any appropriate leadership on this issue – more a political stance akin to pretending it is not there and wishing it will go away. Given the central role of oil across our global economies, and especially linked to issues like food security, not to mention the fact that oil has in one way or another been central to many major international conflicts since its predominance in the global economy, this is surely a grossly irresponsible situation to maintain. On that basis, I hope this is of help.

With best wishes,

Simon

The url for our report *Heads in the Sand* is: http://www.globalwitness.org/library/heads-sand-governments-ignore-oil-supply-crunch-and-threaten-climate

Simon Taylor
Director
Global Witness
www.globalwitness.org

88. Alka Awasthi, Centre for Community Economics and Development Consultants Society CECOEDECON, India

Dear FSN Forum,

I am working on climate change impacts on agriculture and food security in drylands of India. Based on my work with small holder farmers and pastoralists I have indicated some important points that have received lees attention in the proposed scope of the study. Please see attachment for comments.
Thanking you
Yours sincerely
Dr. Alka Awasthi India

Inputs on Scope of Study

Point 1a The direct and indirect impacts of climate change on food security

The contribution of livestock to food security is missing. In integrated livestock systems, livestock contribute directly to food security through drought power for cultivation & marketing, dung for manure, meat, milk for household consumption as well as market. Changes in crops and crop residues affect livestock health and productivity through changes in quantity of crop residues available and through nutrition content of crops grown. Livestock also serve as an insurance mechanism since they can be easily sold for cash to meet household requirements during crop failure or other emergencies. Therefore the impact of climate change on livestock productivity and fertility should be studied to assess impact of climate change on household food security.

2b The most affected and vulnerable populations

Populations at greater risk of food security may also include landless families in rural areas which depend on agricultural labour.

3 a Observed adaptation for food security and nutrition

Adaptation responses may also include downsizing herds, changing feed strategies and changing livestock composition in relation to feed availability or market demand for products.

3 d The comprehensive and dynamic policy approach

There is need to look at coherence of policies at national level; some policies may result in accentuating climate change impacts.

4 a Contribution of agriculture to climate change

It is important to review emissions during different stages of agricultural production viz., energy intensity of production of agricultural inputs, cultivation, food processing, and food distribution (including transport). This will clearly indicate where mitigation action needs to be undertaken in the agricultural system.

5 Recommendations for policies and actions

Policies and investments to promote agricultural growth, in particular small holder productivity (Include ' and farmers' incomes')

89. Sabiha Lageard, UK

Dear Moderator,

One can't over emphasize the link between climate/weather and food security. Throughout the globe due to erratic/freak climatic conditions people are experiencing food insecurity and in the foreseeable future this is likely to get worse unless we take drastic measures. Therefore the proposed study by CFS is timely and of commendable breadth. I feel however that the study could benefit by exploring various coping strategies that have already been adopted by individuals/communities living in vulnerable regions. These coping strategies can offer a platform for future policy recommendations on adaptation necessary in response to climate change. Reference should also be made to existing technological fixes to climate-related food shortages (e.g. HYV seeds, drought resistant crops, food banks etc) and their future applicability.

I hope my suggestions are of some use.

I look forward to reading the outcome of your study.

Regards

Dr Sabiha Lageard, PhD related to food security

90. Kamal Karunagoda, Department of Agriculture, Sri Lanka

Dear HLPE,

I think the scope is appropriate and the proposed structure has sufficiently covered the main areas of climate change and food security. In Sri Lanka, even with heavy investments on irrigation, regions with less rainfall could be more vulnerable to climate change related food insecurity. Many innovations such as agro-wells, solar powered micro irrigation techniques, cultivation in rain protected environment, etc. have been introduced to mitigate the negative impacts of climate change. However, many of such interventions have not succeeded due to various unexpected/unidentified causes such as lower capacities of farm households, building up of salinity, clogging of micro irrigation systems, and low capacity of irrigation network to withstand the effects of climate change (floods and drought). However, some regions, which are identified as low potential areas for agricultural production, show greater stability in food production. The production of these regions could be linked with the input (seed)/output (food) demand of vulnerable areas. Strong institutional development would be required to ensure sustainable land use for food production in these stable regions. Further, investments on research and development to improve land and labor productivity and development of irrigation facilities are identified as imperative investments for stable regions to mitigate negative impact of climate change in vulnerable regions.

I think the scope of the proposed study is appropriate and inclusion of following areas in would make it more comprehensive study.

– Uncertainty issues:

> The changes in the intensity and frequency of weather extreme events and adaptability of different agro-ecological regions to the climate change.

- Vulnerable regions:

> Identification of characteristics of stable regions may be useful in policy decisions such as future investments (eg irrigation, drainage, etc), conservation of these buffer zones, promote activities that support risk mitigation activities in other regions (eg seed production), etc.

-Cost benefits:

> Cost benefits and the sustainability of promoted/adopted methods to ensure food security of the effected population.

-The role for public and private sectors in adaptation:

> Assessment of risks and identification of investments needs for research and development to reduce the risks of climate change.

-The mitigation options in agriculture:

> Effectiveness of adaptations
> Traditional knowledge, innovations and practices

Many thanks
Best regards

Kamal Karunagoda
Senior agricultural economist
Department of Agriculture
Sri Lanka

91. Sergio A. Zelaya-Bonilla from UNCCD, Germany

1) Do you think the scope is appropriate?
Partially. Both food security and CC are supposed to be addressed over the recent past (the last years). It is not clearly stated why the study is a necessity. Of course the constrains are more political than technical. A diagnosis / assessment is needed on the outcomes of the recent summits (FAO 2009, G20...) and of the existing solutions/instruments as regards food security. For the scope to be complete, an assessment of dryland ecosystems is needed, their (1 or 2 billion) populations, vulnerable to climate change, biodiversity loss, water scarcity, migration patterns and on the urban-rural divide in a mostly urbanized world.

2) Have important elements been omitted or should any of the elements outlined be left out?
As mentioned above, vulnerability and resilience of populations affected (directly and indirectly) by desertification, land degradation and impacts of recurrent droughts, which are surprisingly absent or are not clearly addressed in fragile ecosystems such as drylands. Population livelihoods and ecosystem conditions in drylands is a must for this study. For food security purposes, the crucial link between food production and CC is through land and soil management, especially in the most vulnerable areas in the coming years: the dryland areas. Then, the official binding frame for all policy recommendations dealing with desertification, drought, drylands and SLM is the UNCCD. Synergy between UNFCCC and UNCCD processes has to be reviewed, assessed and strengthened maybe by coming up with innovative proposals for improvement. The UNFCCC Cancun agreements are heading in this direction (of addressing land issues within the context of the negotiation) in regards, among others, NAMAs. REDD+, Technology transfer and education, and on the development of adaptation measures. In fact, after Cancun, adaptation issues are in equal footing as mitigation, therefore SLM in drylands must be included / embedded in both angles of the policy proposals on CC.

3) In your opinion, what would be the main aspects that the report should emphasize?
The relationship of ecosystem functions, population livelihoods and climate change; then a special focus on the 41% of the terrestrial ecosystems could be made: the drylands. along this line, there is the need to review the existing inter-governemental instruments and strengthen the inter-linkages/possible synergy (UNCCD NAPs, UNFCCC NAPAs and NAMAs...).
The new institutions on adaptation that are to be created under the UNFCCC framework should include land / drylands issues as priority for food security, regarding the implementation of the objectives for which these new institutions / mechanisms are being created.
The study should pay attention, among others, on studies of this nature such as the latest report of the UN Special Rapporteur on Right to Food on Agro-ecology.

Sergio A. Zelaya-Bonilla
Coordinator
Policy for Advocacy on Global Issues and Platforms UNCCD Secretariat
www.unccd.int

92. Ron Bonnett and Claus Søgaard-Richter, from the Canadian Federation of Agriculture and the Danish Agriculture and Food Council, Canada and Denmark

On behalf of the Canadian Federation of Agriculture and the Danish Agriculture and Food Council, please find below comments to the consultation on the scope of the HLPE study on Climate Change and Food Security.

The scope of the study is appropriate and will shed light on the linkages between agriculture, food security and climate change.

The proposed scope of the HLPE study on climate change and food security covers the most essential elements of the subject, but we would suggest a few additional elements for consideration:

- the impact of changing diets on food security and the impact on global and regional crop and animal production patterns and intensities.
- food availability should be further enhanced in the study. Increased production will not efficiently address food security unless the important role of local and regional infrastructure is recognized and results in adequate investment. This will both improve domestic trade but also increase the availability of international trading opportunities.
- some focus should also be placed on infrastructures role on reducing food waste. Food waste is an important driver of food availability and security.
- the impact of urbanization on food security, both in terms of depopulation of rural areas, the resultant decrease in farm workers and the impact on sufficient food availability for vulnerable urban populations
- access to finance for both mitigation and adaptation
- a thorough analysis of effective models of adaptive risk management and crop insurance for farmers in developing and developed countries.
- the importance of efficient extension systems and the connection with farmer led cooperatives and organizations,
- The study should place increased emphasis on water security and the programs and policies needed to ensure agricultural resiliency in both scarcity and overabundance scenarios. This should include both the need for new crop varieties and production patterns but also financing for adaptive water management infrastructure.
- options to connect policy processes on climate change and food security on all levels

Our organizations feel it is essential that the study include the viewpoints and expertise of farmer led organizations throughout the world. Farm organizations have the ability to provide highly transferrable knowledge and expertise that can be effectively transferred to regions throughout the world. This type of knowledge sharing is essential if we are to effectively address food security and we offer our services to the HLPE in this important study.

Sincerely,

Ron Bonnett, President, Canadian Federation of Agriculture Claus Søgaard-Richter, Danish Agriculture & Food Council

93. Michiel Keyzer and Roelf Voortman from the Centre for World Food Studies (SOW-VU), VU University Amsterdam

The proposed scope of the HLPE study on climate change consists of 5 sections and for the purpose of the e-consultation answers to the following 3 questions were solicited:

- Do you think the scope is appropriate?
- Have important elements been omitted or should any of the elements outlined be left out?
- In your opinion, what would be the main aspects that the report should emphasize?

Overall, the proposed scope seems to have developed with care, and in our view it would seem to cover the subject rather well. Our point-wise comments below would aim to complement the list.

Our more general comments are as follows:

- The proposal remains rather vague as to the objectives of the study and the spatial and temporal scales at which recommendations can realistically be expected.
- There is no reference to the methods that will be relied upon to achieve the objectives. We appreciate that this will be a desk study but how deep will the team's be to the underlying studies and in particular to the outcomes of the general circulations models (GCMs).
- There is no reference made to adaptation through migration. We consider this element particularly important because of the major population flows that might be involved, and even more so in regions such as the Sahel where the flows might cross national borders.

Our point-wise observations refer to section 1 only but they have implications for the sections that follow as well.

ad 1a) The direct and indirect impacts of climate change on food security

The paper rightfully emphasizes the importance of paying due attention to already observed impacts of climate change, as opposed to possible future impacts. However, it should in our view be mentioned that this looking at the past is for validation purposes, to enhance the credibility of impacts as projected in a study. Studies on the impact of climate change are to a large extent always predictions, and hence of a "potential nature", nonetheless, for two main reasons:

- The outcomes from earlier and current GCM models differ widely, on variables such as change in rainfall. Some even project increases where others project reductions [1,2]. As a result of rising CO_2 levels the patterns of change also vary significantly over time. It will be difficult to summarize all this in unequivocal manner, particularly since all the GCMs cannot be right at the same time, and there is no probability measure available to compare their accuracy.
- The GCMs suffer from inherent methodological problems. They tend towards stability and will not produce sudden catastrophic events [3]. In our view this partly is because the numerical methods applied to approximate the underlying differential equations cannot fit to chaotic behavior that may even occur in the absence of any uncertainty (see below). Furthermore, their calibration to past data record is less than ideal.
- The modeling of the impacts of climate change on food production is, at global scale, still at its infancy, let alone of the institutional aspects involved.

Such limitations should be accounted for to qualify the ambitions of the study, particularly when it comes to arrive at spatially explicit predictions and conclusions.

As stated in the FSC-note, the challenges to meet future food and nutrition needs are vast. Addressing population growth and changing diets, combined with crop yields that only rise very slowly and gradually degrading land resources is already difficult enough.

Climate change, whether or not due to greenhouse gas emissions, is an additional difficulty, not so much at global and continental scale, where losses tend to be offset by gains, but locally, where the farm population of a negatively affected area gets no consolation from the fact that other farmers gain. These changes may trigger unrest, famines and outmigration to more attractive areas. In some cases these areas are likely to have been less populated before, because the climate was less favorable previously, but more often the outmigration will be to regions where others have already claimed the land, areas that provide "ground for conflict, more than for crops".

These difficulties are compounded by the prediction that climate change will even in regions where averages do not change much within a decade, significantly increase the variability of rainfall and temperature, and the occurrence of dry spells.

ad 1.c Uncertainties: Accounting for other drivers

Since climate change does not occur in isolation, other drivers have to be accounted for as well, including:

Growing scarcity of land and fertilizers, P and K and micronutrients in particular.

Higher prices of fossil fuels and ensuing for resources between food and energy crops. Water scarcity

Biodiversity concerns

Environmental degradation

More costly food for consumers

Higher price volatility

As the consensus is growing that the public debate on climate change has in the past too much been of a single-issue nature, it seems important that the proposed study puts climate change in perspective by accounting for its cross-connections with other drivers, also to enhance the coherence among the various contributions to the FSC.

Finally, we repeat our comment made in earlier FSC-consultations that the time-frame of the study seems far too short to meet the FSC's ambitions.

[1] Voortman, R.L., Sonneveld, B.G.J.S., Langeveld, J.W.A., Fischer, G. and van Velthuizen, H.T. 1999. Climate change and global agricultural potential; A case study of Nigeria. SOW-VU Staff Working Paper 99-06, SOW-VU, Amsterdam.

[2] Kirono, D.G.C. and Kent, D.M. 2011. Assessment of rainfall and potential evaporation from global climate models and its implications for Australian regional drought projection. International Journal of Climatology 31: 1295-1308.

[3] Valdes, P. 2011. Built for stability. Nature Geoscience 4: 414-416.

ad [1] Nigeria case study: results, adaptation options and vulnerable areas

The study was commissioned by FAO and conducted by the Centre for World Food Studies (SOW-VU), Amsterdam, and IIASA, Vienna. It presents a spatially explicit assessment of the potential impacts of the greenhouse gas effect on crop production potentials and land productivity in Nigeria. To this effect a large number of scenarios were used consisting of results

from experiments with General Circulation Models (GCM's) as well as sensitivity scenarios in which single variables were changed. Each scenario is characterized by level of increase of atmospheric CO_2, change of stomatal resistance and climate change in terms of temperatures, rainfall and radiation. The effects of such changes have been assessed within the framework of the agro-ecological zones methodology, which was adapted and expanded for the purpose of this study. Climate changes are applied to observed baseline conditions for the period 1960-1990 and simulated climate is used in combination with soil and landform conditions, use of inputs (fertilizers levels), plant physiological adaptations to elevated CO_2 and a number of sustainability criteria (e.g. input-level-specific fallow period requirements) to calculate crop production potentials and land productivity. Scenario outputs are compared with current conditions to asses potential impacts and sensitivity of agricultural production to global change phenomena. The main findings are the following:

1. The outcome of GCM's is highly uncertain and for the same location for instance changes of rainfall amount may even differ of sign and quite strongly so. Recent studies further highlight this issue.
2. Generally, in the long run at the highest CO_2 levels, production potential increases slightly (at identical input levels). Locally the potential of specific crops may decrease, but farmers can change varieties and/or crop species and maintain production levels (adaptation).
3. The slight production increases are negligible compared to the potential positive impacts of increased fertilizer use, which currently is very low: the impact of nutrient use indeed dwarfs the impacts of climate change.
4. Nevertheless, it was possible to identify conditions where impacts can be great:
    a. In the dry zones small decreases in rainfall duration may make agriculture impossible or may call for drastic changes in farming systems.
    b. The same applies to plateau zones where the production of temperate crops may become impossible.
    c. A third insecure condition is the coastal zone with a long but bimodal rainy season. Here both increases and decreases of rainfall may have important implications for crop selection.

However, whether such impacts will occur or not is not predictable with any precision or reliability.

The study is supported by numerous maps and tables and documents the methodological background and improvements made for the purpose of the study. The report is currently not directly accessible on the web, but we can mail a copy to those interested.

94. BERVIAC, Benin

[French original]

A l´attention de la HLPE,

Le champ de la recherche est convenable au vaste thématique du changement climatique et nous vous en remercions de solliciter des commentaires participatifs.

Nous souhaitons que, l´accent soit mis dans les différents domaines d´interventions sur : la gestion des réfugiés climatiques ou populations déplacées pour des raisons du changement climatique et leur sécurité alimentaire, le conseils direct aux populations paysannes potentiels victimes du changement climatique, leurs formations aux nouvelles techniques culturales afin

d´améliorer le rendement agraire, informer les agriculteurs (paysans) des variétés de cultures résistantes au changement climatique (variabilité pluviométrique, sécheresse).

La sensibilisation des gouvernants africains à mettre en œuvre les résultats de recherches scientifiques est indispensable à la maîtrise du changement climatique et de la sécurité alimentaire, enfin les fonds d´adaptations ne devraient pas être en majorité gérer par les gouvernements à travers des projets mais plutôt directement par les populations victimes ou par l´intermédiaire des Organisations Non Gouvernementales, bureau d´étude spécialisé, ou des institutions indépendantes aux gouvernants en Afrique.

Contribution de recherches scientifiques.

Titre : Changements climatiques et impacts sur la production agraire au Bénin à l´horizon 2025. (2005-2025)

Résumé :

La corrélation entre le climat et la production agricole au Bénin, en Afrique de l'Ouest, est élucidé à travers des simulations climatiques par le modèle **REMO** (**Mo**del **Ré**gional de simulation climatique à haute résolution) et celles de l'analyse de la régression multiple linéaire par le modèle statistique **MOS** (**M**odel **O**utput **S**tatistcs - modèle statistique de projection). L'objectif de cette étude est de déceler les anomalies du développement des rendements des produits agraires, lié aux changements climatiques dus à la croissance de la concentration des gaz à effet de serre et à la dégradation permanente de la couverture végétale jusqu'en 2025. Les résultats pratiques de cette étude sont d'une importance particulière et permettront de détecter les cultures vulnérables aux changements climatiques, donc de trouver des solutions d'adaptation, d'amélioration des rendements agraires et de mieux assurer la sécurité alimentaire au Bénin.

Le modèle statistique de projection de développement d'anomalies des rendements agraires MOS a permis d'établir, sur la base de données climatiques simulées du passé par REMO, et celles des rendements agraires obtenus de 1979 à 2003, une régression multiple linéaire entre les facteurs climatiques simulés sur les vingt cinq prochaines années et les données agraires du passé, afin de faire une projection (l´an 2025) du rendement agraire qui serait dû à un changement climatique. Le rapport statistique entre l'évolution du climat et le rendement agraire s'explique à plus de 50% pour tous les produits agricoles, et dépend à l'échelle interannuelle des variations climatiques, en particulier, la précipitation (mousson) et l'humidité relative de l'air qui sont les données prévisionnistes du rendement agraire.

Le climat futur du Bénin pourrait devenir plus sec et plus chaud accompagné d´une augmentation de la chaleur et des périodes de sècheresse pendant les saisons agricoles jusqu'en 2025. Une diminution significative des rendements de la majorité des produits agraires est identifiée par le model MOS. Cette réduction de rendement agraire pourrait se situer dans l'ordre de 5 à 20% impliquant de graves problèmes de sécurité alimentaire alors que la population croît sans cesse. De tous les produits agraires, seul les rendements du manioc et de l'igname (tubercules), aliments de base au Bénin, augmenteraient et pourraient résister aux changements climatiques.

Salutations distinguées,
BERVIAC http://www.berviac.com
(R. Bénin)

[English translation]

For the attention of HLPE.

The research field is suitable within the extensive thematic of climate change, and we are grateful for requesting participatory analysis.

We would like to see that the emphasis was placed on the different aspects of the intervention related to: the management of climatic refugees or displaced populations due to climate change and their food security; direct advice to rural populations that could be potential victims of climate change, their training on new farming methods which will improve crop yielding; inform the subsistent farmers on crop varieties resistant to climate change (rainfall variability, drought).

It is indispensable an awareness campaign among African governments to implement the results of scientific research to master climate change and food security. At the same time, the Adaptation Funds should not be managed mainly by governments through projects but, directly by the affected populations or with mediation of Non Governmental Organizations, specialized consultants, or independent institutions of African governments.

Contribution of scientific research

Title: Climate change and impact on agricultural production in Benin to the year 2025. (2005-2025)

Summary:

The correlation between climate change and agricultural production in Benin, West Africa, is elucidated through climatic simulations using the **REMO** (**Re**gional **Mo**del of climate change simulation at high resolution) model and those of linear multiple regression analysis of MOS **MOS** (**M**odel **O**utput **S**tatistics - statistical model of projection) statistical model. The study´s objective, up to 2025, is to reveal the abnormalities in crop yields' development linked to climate changes due to increase in greenhouse gases concentration and permanent damage to ground cover. The studies´ practical results are particularly important and will enable detect crops vulnerable to climate changes and therefore find solutions for adaptation, improve yield crop and, better still, ensure food security in Benin.

The statistical model projecting the abnormality development on crop yield, MOS, has allowed to establish, on the basis of simulated climate data given by REMO, and that of agricultural yields obtained between 1979 and 2003; a linear multiple regression between simulated climate factors of the next twenty five years and past agricultural data, designed to make a projection (to the year 2025) of crop yield which will be the result to climate change. The statistical report between climate evolution and agricultural yielding applies to more than 50% of agricultural products and depends on climate variations on year-on-year scale, in particular, rainfall (monsoon) and the relative air humidity, which are forecast date for agricultural yielding.

In the future, Benin' climate could become very dry and hotter, with a corresponding heat increase and drought periods during agricultural seasons until 2025. The MOS model has identified a significant decrease in the majority of agricultural crops yield. This reduction in agricultural yields could be between 5 and 20%, which will imply serious problems for food security while the population continues to grow. The yields of agricultural products, such as cassava and yam (tubers), staple food in Benin, are the only products that will increase and could resist climate changes.

Sincerely,

BERVIAC http://www.berviac.com
Republic of Benin

95. Shefali Sharma from the Institute for Agriculture and Trade Policy, USA

Comments from the Institute for Agriculture and Trade Policy

Please find the following input regarding the scope of the Climate and Food Security Study:

Broadly, we agree that the scope of the study is appropriate. We welcome the focus on food security, which will be an important complement to existing studies on agriculture and climate change. However it is critical that the study also examine the existing social, economic and political reasons for chronic hunger, access and availability of food and assess how climate change is likely to impact the existing drivers of food insecurity and how best these issues can be tackled. Specifically, we suggest that the following elements be addressed in the study:

- The Right to Food framework should be incorporated and utilized as a key tool of assessment throughout the report. Thus, not only is it important to assess climate change's direct and indirect impacts on most vulnerable populations, but also the impact of proposed policies and measures related to adaptation and mitigation. This should include an assessment of how adaptation responses by the public sector, the private sector and public-private initiatives are likely to impact food security and the right to food and identification of the key limitations and barriers therein. Currently, the outline emphasizes the role of the private sector.

- In the section on "Climate Change Mitigation", the impact on small producers and vulnerable populations should be assessed with regards to the various mitigation approaches reviewed, including in the sub-heading "cost-effectiveness" of mitigation measures. Because abatement cost-curves emphasize economic opportunity costs, they tend to put the mitigation burden on small producers and local populations as opposed to larger industrial processes. This, however, is a limited framework that excludes food security and equity concerns, as well as assessment of the main drivers of climate change that are not limited to agriculture alone. The report should go beyond collecting and summarizing mitigation measures and reviewing assessments of land use management options. The paper should assess food security and equity impacts of existing proposals for agriculture mitigation and highlight the existing data gaps and uncertainty associated with various options. The focus should remain on impacts on vulnerable regions and populations.

- The outline divides adaptation responses and mitigation responses. However, it is critical to assess whether mitigation and adaptation responses can be one and the same in addressing food security and climate change, as well as the resources that both responses require. Therefore, a key section of the paper should include a cross-cutting analysis about the tradeoffs and synergies involved in adaptation and mitigation measures. This should include an assessment of the financial, institutional and human resources required for both approaches in developing countries and analyze the impact

of these approaches on the most vulnerable populations, including small producers and their right to food.

- While the paper addresses "the role of public and private sectors in adaptation", the paper omits "the role of small producers" in adaptation. An assessment of the role of small producers in both adaptation and mitigation is key, since the impacts of climate change will most acutely be felt by them and they are the primary agents of adaptation on the ground.

Shefali Sharma
Project Officer
Institute for Agriculture and Trade Policy

96. Salif Toure, UNCCD, Mali

[French original]

Cher Modérateur,

Je pense qu'il est essentiel dans le cadre de votre étude de mettre suffisamment l'accent sur la gestion durable des terres qui est un processus incontournable pour assurer la sécurité alimentaire à long terme. Il n'est pas évident pour la plupart des communautés rurales en Afrique et dans d'autres régions pauvres du globe de faire un lien direct entre la sécurité alimentaire et le changement climatique. Cette insuffisance de perception ne favorise pas l'adoption de stratégies d'adaptation et peut même amplifier les problèmes de dégradation des terres dont les causes profondes sont d'ordre climatique mais aussi anthropique.

A contrario, ces communautés sont capables de lier directement la dégradation du substrat (terre) à la faiblesse de la production et de la productivité agricoles et de décider en guise de solutions palliatives de se déplacer si cela est possible. Cependant dans bien des cas ce déplacement pour installer des cultures vivrières peut générer des conflits intercommunautaires ou entamer les terres marginales et les forêts primaires. Lorsque la dégradation intervient, c'est un élément vital à savoir la terre qui ne pourra plus assurer la fonction vitale de production, augmentant par ricochet la vulnérabilité de ces communautés.

Il en résulte que la mise en œuvre des stratégies de développement agricole dont la finalité est entre autres d'accroître la production agricole et d'augmenter les revenus sera d'autant plus efficace qu'elle internalisera les risques de dégradation des terres.

L'élaboration et la mise en œuvre de Cadres Stratégiques d'Investissement pour la Gestion Durable des Terres (CSI-GDT) sont des réponses pour intégrer tous les domaines qui contribuent à la production agricole en vue d'assurer la sécurité alimentaire et le développement économique.

Salif TOURE
Mécanisme Mondial/UNCCD
Bamako Mali.

[English translation]

Moderator

I think that it is essential, as a part of your study, to put sufficient emphasis on sustainable land management, which is a process that can not be ignored to ensure food security in the long term. It is not obvious, for the majority of rural communities in Africa and other poor world regions, to make a direct link between food security and climate change. This perception deficiency does not promote the adoption of coping strategies and could even increase the land degradation problems, caused by climate and anthropogenic activities.

On the other hand, these communities are able to make a direct link between substrate (land) degradation and deficiency of production and agricultural productivity and, accordingly, take palliatives solutions to migrate, if that is possible. However, in a good number of cases, this migration to set new subsistence food crops could generate intercommunity conflicts or make use of marginal land or primary forests. When degradation takes place, it is vital to be aware that land will not assure vital production function, and will in turn increase community vulnerability.

As a result, the implementation of agricultural development strategies whose aims, among others, are to increase agricultural production and incomes will be even more effective and it will internalize the risks of land degradation.

The putting together and implementing Strategic Investment Program for Sustainable Land Management (TerrAfrica-SIP) are responses to integrate all aspects contributing to agricultural production with the purpose of maintaining food security and economic development.

Salif TOURE
World mechanism /UNCCD
Bamako.
Republic of Mali

97. FAO Food for the Cities Initiative, Italy

Along with climate change, urbanization is one of the other main challenges of our world. This is why 2011 World Habitat Day is dedicated this year to cities and climate change.

http://www.unhabitat.org/pmss/getElectronicVersion.aspx?nr=3108&alt=1

UN-HABITAT has released a report highlighting critical issues and proposing ways forward.

http://www.unhabitat.org/content.asp?typeid=19&catid=555&cid=9272

This report states that increasing urban population, that mostly rely on markets and food purchase, *"means greater demand for resources – including energy, food and water – and greater volumes of waste products"*. Besides, and as reported by many of the contributors to this forum, climate change will affect cities in many ways, particularly with regards to migration and internally displaces people (IDPs) as well as consumption patterns and changing lifestyles.

Urbanization processes and climate change have strong impacts often supplementing each others, at the local level, on the food systems, particularly on the urban-rural linkages that structure them. There will therefore be consequences on food and nutrition security (making sure to address food and nutrition together and not as separated topics) as well as on natural disasters (such as floods and landslide) and management of natural resources has considered

within FAO's climate change adaptation programme helping coherent and multidisciplinary actions. The most vulnerable populations living in cities will be particularly affected (market supply, access to clean water, disruption of small agriculture and livestock production).

Sustainable diets are being promoted by FAO in order to provide a comprehensive approach to achieving the right to food considering the environment, social and economical dimensions.

http://www.fao.org/ag/humannutrition/23781-0e8d8dc364ee46865d5841c48976e9980.pdf

Adaptation and mitigation policies regarding climate change need to consider the entire food system, from the producer to the consumers, including food processing, transportation, storage and retailers. It has to promote more resilient food systems with less green house gas (GHG) emissions and impacts on the environment. Besides, the food system, as it is strongly associated with the ecosystem management, can contribute to better adaptation of the city to climate change (green spaces in the city with urban and peri-urban agriculture and forestry, management of the watershed, preservation of biodiversity…). Preparedness, prevention, mitigation and adaptation are essential to save lives and to reduce costs of food and nutrition security

UN-HABITAT Executive Director Dr. Joan Clos said that "Urban planning is fundamental for effective climate change action both in mitigation and adaptation". A recommendation for policy and action would therefore to make sure that urban planning takes into account the food system and the ecosystem. Mayors and city councils must play a fundamental function in ensuring viable food systems for their cities. Moreover, the report should emphasize the fact that all stakeholders dealing with urbanization (local authorities and national governments, private sector, NGOs and civil society, etc.) need to be associated to design and implement policies addressing the challenges of climate change, food and nutrition security and management of natural resources. To be viable, urban and rural systems need to be considered jointly and to be managed as part of their broader natural ecosystems and not in isolation.

We would therefore propose regarding the question raised:

1) Do you think the scope is appropriate?

The scope of the paper should consider the impacts of climate change on the food systems and ecosystems at the local level, considering the cities and their surrounding areas. It should consider urban dwellers as climate change has impacts on their food and nutrition security, as well as availability and access to water.

Besides, food and nutrition security should be considered together as agreed during the last Committee on Food Security (CFS).

2) Have important elements been omitted or should any of the elements outlined be left out?

The report should explicitly mention that policies regarding climate change need to address the urban-rural linkages (population flows, food supply, environmental services, etc.)

3) In your opinion, what would be the main aspects that the report should emphasize?

The report should also emphasize that nutrition and food security at the local and national levels must be based on sound territorial food systems governance, with the association all the local actors, reinforcing rural-urban linkages.

With our best regards,

Francesca Gianfelici and Julien Custot

FAO - “Food for the Cities” Secretariat and Facilitator

98. Leslie Lipper, Agricultural Development Economics Division, FAO and Wendy Mann, Global Crop Diversity Trust

We'd like to thank you for the opportunity to comment on the **Proposed scope of the HLPE study on climate change.** It is most timely that the Committee on World Food Security commissioned its High Level Panel of Experts to undertake a study on food security and climate change, which currently sit at the top of the international agenda and are closely linked in the agriculture sector.

The Agricultural Development Economics division at FAO has had a program of work on food security and climate change over the past 5 years and we have also represented FAO at the UNFCCC negotiations on agriculture. Our comments, which we hope will be useful in shaping the scope of the work of the HLPE, issue from this work and experience.

1) We believe it would be useful if the focus of the study is on how food security policy, and enabling means for adoption of such policy (notably financing) have to change in light of climate change, rather than vice-versa.

2) With regard to agricultural mitigation, the circumstances and capacities of different countries, especially vis-à-vis their agricultural sector, would tend to shape how mitigation is pursued. For example, in Least Developed Countries where 80% of the population and the economy of the country may be dependent on agriculture, food security and development may have to be the priority and mitigation a co-benefit for which additional financing could be available. However, countries with emerging economies are able to address agricultural mitigation as a national priority and to allocate domestic resources (China, Brazil). Such country differentiation is important in a discussion of agricultural mitigation.

3) In the discussion on adaptation - it will be important to distinguish between adaptation to cope with short term increased frequency and intensity of shocks versus long-term slow onset shifts in temperature and rainfall and discuss the extent to which adaptation responses for the two are the same or perhaps involve tradeoffs. A much broader vision of risk management is needed to balance the current focus on the effects of short-term extreme events and to view slow-onset events beyond rehabilitation in order to reduce risks *ex-ante* rather than *ex-post*, particularly through building the resilience of agricultural production and food systems.

4) It will be difficult to achieve a good estimate of benefits and costs of adaptation by different groups, as we do not have enough information to generate reliable estimates of benefits since there is such uncertainty about climate change impacts. What may be more useful is looking at the additional action and costs that adaptation implies over business-as-usual assumptions in order to achieve food security. Being able to measure this additionality is likely to be important in accessing climate financing.

5) The final recommendation on the creation of a working group to regularly monitor the world food situation and trigger action to prevent excessive price volatility; would seem to be more pertinent to the paper that the HLPE will table this year. It may be useful to consider the possibility of some form of ongoing work on coherence across international policy related to food security and climate change, with a view to keep the UNFCCC and the CFS apprised of important trade-offs and synergies across these two important policy areas. This would seem all

the more important in view of the scarce attention given to climate change-agriculture-food security linkages within the UNFCCC. Fragmented policy approaches to these two closely linked issues can heighten the risk of perverse outcomes.

Leslie Lipper, Senior Environmental Economist, Agricultural Development Economics Division, FAO and Wendy Mann (Consultant) Global Crop Diversity Trust

Publications our team has prepared, which you may find useful, include:

FAO submissions to UNFCCC :

FAO 2009. Enabling Agriculture to contribute to climate change mitigation. http://unfccc.int/resource/docs/2008/smsn/igo/036.pdf

FAO 2010 TOWARDS A WORK PROGRAMME ON AGRICULTURE http://unfccc.int/resource/docs/2010/smsn/igo/081.pdf

FAO 2008 Financing climate change adaptation and mitigation in the agriculture and forestry sectors. http://unfccc.int/resource/docs/2008/smsn/igo/015.pdf

FAO 2011 Food Security and the Cancun Agreements http://climate-l.iisd.org/news/fao-submission-to-unfccc-focuses-on-food-security/

Policy Briefs

FAO 2010. Agriculture, Food Security and Climate Change in post-Copenhagen processes – an Information Note.http://foris.fao.org/static/data/nrc/InfoNote_PostCOP15_FAO.pdf

FAO 2009. Harvesting agriculture's multiple benefits: Mitigation, Adaptation,

Development and Food Security. ftp://ftp.fao.org/docrep/FAO/012/ak914e/ak914e00.pdf

FAO 2009. Anchoring Agriculture within a Copenhagen Agreement. ftp://ftp.fao.org/docrep/fao/012/k6315e/k6315e00.pdf

FAO Technical Reports:

FAO 2011 (forthcoming) Carbon Finance for Smallholder Agriculture: A guidebook to harvesting benefits in small-scale agriculture from project-based to sectoral approaches

FAO, 2010, *Climate Smart Agriculture, Policies, Practices and Financing for Food Security, Adaptation and Mitigation*, URL: http://www.fao.org/docrep/013/i1881e/i1881e00.htm

FAO, 2009, *Food Security and Agricultural Mitigation in Developing Countries: Options for Capturing Synergies*; URL: http://www.fao.org/docrep/012/i1318e/i1318e00.pdf

Branca G., K. Medeiros, 2010. "Estimating mitigation potential of agricultural projects: an application of the EX-Ante Carbon-balance Tool (EX-ACT) in Brazil. *FAO-TCIL Working paper* LAC/03/10, FAO, Rome, April 2010. http://www.fao.org/docrep/012/k7846e/k7846e.pdf

Other Technical Reports:

L. Lipper, M. Demeke, and J. Capaldo 2010 Food Security Chapter in D. Fiott ed. Africa, Climate Change, Environment and Security Dialogue Process report "Climate Change and Security in Africa Vulnerability"

Working papers:

Branca, G., et al., 2011, "Synthesis of Empirical Evidence on the Impact of Sustainable Land Management Practices on Agricultural Yields and Soil Carbon Sequestration", *ESA Working Paper*

McCarthy, N., et al., 2011, "Synthesis of the Empirical Evidence on Costs and Constraints to Household Adoption of Sustainable Land Management Practices", *ESA Working Paper*

Capaldo, J., et al., 2011, "Synthesis of Conceptual and Empirical Literature on Households' Decision making Under Climate Risk", *ESA Working Paper*

Book chapter: (joint with CCAFS)

Nancy McCarthy, Leslie Lipper, Wendy Mann, Giacomo Branca and Jeronim Capaldo Evaluating synergies and trade-offs among food security, development, and climate change forthcoming in Wollenberg E, Nihart A, Tapio-Biström M-L, Grieg-Gran M (eds). 2011. *Climate Change Mitigation and Agriculture.* London: Earthscan

99. Eduardo Rojas-Briales, Assistant Director-General, Forestry Department, Food and Agriculture Organization (FAO)

Dear Mr. Moderator,

The FAO Forestry Department wishes to contribute to this forum discussion with information on the links trees-climate-change-food security.

1. Forests, Trees and Food Security

- **The most direct way in which forests and trees contribute to food security is through contributions to diets and nutrition.** Plants and animals found in forests provide important nutrient-rich supplements for rural households. They add variety to diets and improve taste and palatability of staples. Forest foods often form a small but critical part of otherwise bland and nutritionally poor diets, these include leaves, fruits, seeds and nuts, roots, and tubers, mushrooms, honey, wild animal, insects and fish.
- **Forests and trees also provide fodder and browse for livestock as well as fuel for cooking and food processing**.
- **Income generated from forests and from trees on farms can make a significant contribution** to rural households and their food security.

2. Forests and Trees and Climate Change

- As climate change takes effect, rural communities will become increasingly vulnerable to crop failure caused by disruptions to familiar weather patterns and shifting distributions of crop diseases and pests, which will in turn have negative impacts on their food security. **Healthy forests can help buffer the impacts of extreme weather events**, whose frequency and severity are expected to rise with global warming. Trees provide an important buffer against the impact of storms, **reducing damage to crops, property and lives.**

- **Forests are also important as carbon sinks,** soaking up atmospheric carbon and storing it in trees and soils. **Deforestation and forest degradation release carbon into the atmosphere**, contributing to climate change.
- **Trees in forests and on farmland support bees and other pollinating insects**, which ensure a healthy production of grains and seeds both for consumption and for planting in the coming years.

3. Forests and trees and agricultural production: impact of climate change

- **Forests and trees contribute greatly in stabilizing, sustaining and restoring agricultural production, a role which is becoming all the more crucial within the climate change context.**
- **Across the tropics, trees are integrated into agricultural systems in a variety of ways, providing a range of benefits** in terms of restoring or sustaining soil fertility and boosting food production. Farmers have historically protected, managed or planted trees on their land, and are increasingly doing so as nearby forests recede or are degraded from overharvesting. **In upland areas**, where steep slopes and high rainfall create a high risk of erosion**, trees help stabilize topsoils and prevent loss of important nutrients,** helping to maintain agricultural production.
- **In dryland and semi-arid areas, trees and woodlands provide shade to growing crops and protect them from extreme temperatures. They minimize soil and water loss** through evaporation and transpiration and reduce wind speed and loss of topsoil through wind erosion. **In arid areas** herders and pastoralists often actively manage trees and forests as a **source of browse and fodder for domestic animals. It is often the very poorest who are most dependent on forests.**
- **Households living on the margins of poverty are exposed to food insecurity at certain times of the year, when income levels drop**. This may be during the "lean season" (the period when crops are growing in the fields, and stocks from the previous season are exhausted) or in times of famine or food shortage. For these families, **forests provide an important safety net,** and it is in these critical periods that the importance of forest foods is greatest.
- **Forests play a crucial role as gene pool reserves** (including a large proportion of agricultural crops currently cultivated around the world). **Forests and trees improve the quality of water and help regulate flow**, reducing the risks of extreme flooding events or the drying up of rivers during the dry season. This has important implications for food security, enabling farmers downstream to undertake agricultural production with less risk.

4. FAO Forestry Department Policy Brief Brochure on "Forests for Improved Nutrition and Food Security

The above-referenced **policy brief** http://www.fao.org/forestry/27976-02c09ef000fa99932eefa37c22f76a055.pdf. **highlights how forests and trees contribute to food security and improved nutrition as well as proposing a set of policy recommendations to sustain the benefits and the full contribution of forests and trees, to meet not only food security goals but also wider economic development objectives.** The full set of recommendations can be found on pages 9 and 10 a summary is provided below:

- **Integrate the contributions of forests and trees into national food security strategies and policies.**
- **Improve national capacity to monitor and assess the contribution made by forests and trees to food security.**
- **Encourage intersectoral and interagency collaboration. To increase the role of forests and trees in food security, government agencies responsible for forestry need to work more effectively with and through organizations beyond the forest sector.**

- **Increase investment.**
- **Increase local control over forest management and use.**
- **Develop and implement pro-poor forestry measures.**
- **Support the development of economically, socially and environmentally sustainable small and medium forest enterprises (SMFEs).**

FAO with partners recently organized the First Africa drylands week in Dakar (10-17 June 2011) where the issues of forests, trees, climate change and food security were also discussed. The attached links will take you to: www.fao.org/forestry/aridzone and http://drylandsforum.wordpress.com/

- The Concept Note for the First Africa Drylands Week
- Agreed statement from the participants of the First Africa Drylands Week

THE KEY CONCLUSIONS relating to trees and forests in dry land areas, climate change and food security are:

- **The combined effects of land degradation, deforestation and soil exhaustion are particularly severe in arid and semi-arid lands**. They are driven by overexploitation of forests, trees, bush and grazing land, inadequate management of soil and water resource as well as poverty and limited development opportunities and exacerbated by climate change.
- **Climate change in particular is demanding a renewed response to environmental and development challenges in countries with arid and semi-arid zones.**

There is therefore an urgent need to:

- **Integrate all efforts to combat desertification and mitigate the effects of climate change and drought in an Africa-wide alliance,** involving initiatives such as the Great Green Wall for the Sahara and Sahel Initiative, the MDG-based poverty-reduction strategies, aimed at transforming local community livelihoods and environment and contributing to food security through best practices such as farmer-managed natural regeneration and other agroforestry systems led by local communities, community forest management, fighting sand encroachment to protect agriculture lands as well as rehabilitation of degraded lands (including through local tree planting and promoting of natural regeneration).
- **Improve livelihoods, biophysical conditions and strengthening capacity for sustainable drylands management and adaptation to change** (climate, demographics) including agriculture land and forest lands.
- **improve Land Health (vegetation, soil and water) and integrated systems (agro-silvo-pastoral) for increasing productivity and the sustainable provision of the whole range of ecosystem services** (biodiversity conservation, climate change adaptation and mitigation, buffer against desertification and soil erosion, etc).
- **mainstream sustainable land management into local development planning and budgeting** (including rural development plans).
- **support capacity development for upscaling good practices** through the use of local champions and leaders, training of trainers, building on local knowledge and innovation, develop exchange between farmers and pastoralists through farmer field schools.
- **participatory domestication of utilized species** (trees including e.g. tamarind, baobab, shea sahel apple, etc.
- **promote diversification and competiveness** (e.g. Drylands label for drylands products) and reinforcing value chains (gum arabic, aloe, bees, meat, milk, hides), value chain analysis and value addition.

Thank you and kind regards.

Eduardo Rojas-Briales
Assistant Director-General
Forestry Department
Food and Agriculture Organization (FAO)

100. Olu Eze, University of Ibadan, Nigeria

While setting agenda for food security and climate change, nutrition security can be used as a conscience marker. In this bid, the ultimate aim of food security should be sought. And that is nutrition security - the fact that the available food be utilized by the body for maximal life. We may have Cassava in excess, to that bid people are food secure. But, nutrition-wise, they are not secure.

That said, when food security is viewed from the angle of being a means and not an end itself. Then, we can begin to work towards to the end using food-based approached because of the numerous gains we stand to get.

It is also important that due attention is paid to neglected and underutilized food species within the context of agrodiversity. They can play a role in mitigating effects of climate change, and within the sphere of agrodiversity nothing has been affected as they have been and they quietly go into extinction.

One of such food-based approaches towards nutrition security is dietary diversity. Dietary diversity, cannot happen without agrodiversity, which is an angle of biodiversity and a means to combat climate change. It is an important mitigation method, because not only does it aid in combat climate change, it promotes diversity in food consumption, thus fighting against double burden and malnutrition. Agrodiversity also aids resource-poor farmers especially those situated in developing countries.

101. Adèle Irénée Grembombo, France

[French original]

Bonjour à tous!
Pour répondre à vos questions sur les changements climatiques et la sécurité alimentaire, je voudrais mentionner que les réflexions ne sont pas portées sur la cueillette, alors que certaines populations vulnérables vivent des produits forestiers non ligneux.

Le champ de la recherche est adéquat et crucial. La recherche peut mettre à la disposition des producteurs des nouvelles espèces résistantes à une catastrophe (sècheresse) ou encore réduire la durée de culture d'une espèce face à l'avancé de l'insécurité alimentaire. La recherche peut également proposer des espèces d'arbre favorisant le développement de certains produits non ligneux (chenilles). Grâce à la recherche, les champignons peuvent être produits hors leur niche écologique habituelle.

Il convient de souligner également dans le rapport le cas de la « diversification alimentaire » face au changement climatique par des mesures d'éducation nutritionnelle.

Adèle Irénée Grembombo
Ingénieur Agronome Nutritionniste

Etudiante Master 2 Nutrition humaine et santé publique
France

[English translation]

Hi everyone!
Regarding your questions on climate change and food security, I would like to mention that nothing is said about gathering though some vulnerable population depend on non-wood forest products for their subsistence.

The research field seems adequate and crucial. Research can help producers to cultivate new disaster resistant crops (such as droughts) or to shorten the cropping period to face increasing food insecurity. Research can also help to propose some kind of trees more favorable to the development of non-wood products (such as caterpillars). Moreover, research can lead to the production of mushrooms outside their usual ecological niche.

I also wish to highlight in the report the importance of "food diversification" by means of nutrition education campaigns to face climate change.

Adèle Irénée Grembombo
Nutritionist Agricultural Engineer
Student Master 2 Human Nutrition and Public Health
France

102. Charles Teller, Center for Population Studies, Institute of Development Research, Ethiopia

Working in the food and nutrition security area in over 50 countries the last 50 years in all developing regions, I am, like most of you, concerned about climate change as another long-term challenge to the welfare of our planet. But I am also pleased to see so many localized insights from experts in many of these countries. From my perspective as a sociologist/demographer-ecologist and intensive work the last 20 years in Ethiopia, as well as in East, Southern and West Africa, let me provide summary comments on your 4 focus areas:

1- Direct and In-direct impacts: we should be guided by the theories and frameworks developed over time, and continually tested on the multi-sectoral and multi-level factors that impact on BOTH food insecurity and malnutrition. Then we work towards modifying and updating these approaches based on changing international and local contexts.

In reading over the 80+ valuable contributions, I see a neglect of the increasing population/land pressure and shifting migration/urbanization patterns, often a major contextual issue in rain-fed, low technology stressed areas. My Ethiopian colleagues and I have been looking at this for the case of Ethiopia, in our new book, The Demographic Transition and Development in Africa: The Unique Case of Ethiopia, Charles Teller and Assefa Hailemariam (eds.) (Springer, 2011), in particularly in Figure 1.1. Our focus, in this rapidly growing country with some 12-15 million food insecurity and nearly half of the under-fives stunted, with mainly rain-fed agriculture and increasing climate variability, is on the spatial, agro-economic and socio-cultural responses to multiple natural and human hazards, shocks and vulnerability. In particular, the main demographic responses are migration, labor mobility, urbanization, longer transitions to skill-building, adulthood and marriage, and slowly declining rural fertility. Along the way, we try to

document the sequence of risk, resilience, adaptation, capacity, resourcefulness and long-term transformation.

In our new study underway on the drivers of rural youth migration from two Ethiopian regions with high population/land pressure, we are finding that climate variability is only one of many drivers (and pull factors) of temporary and permanent migration, in the process of both short-term coping and longer term adaptation strategies. And context really matters: the two subregions and their different micro-climates and agro-ecologies produce different response and adaptation processes. There is also generational and cultural change: often these rural youth no longer want to be small farmers like their parents, struggling to eek out meager livelihoods on less than half a hectare of steep, tired land. We need to listen most to them, study their "agency" and aspirations, and understand life-course choices.

2. Identification of vulnerable regions and populations- this is so extremely important is the contextualized environment of micro-climatic variability, but how do we improve the capacity of food and nutrition information, surveillance and early warning systems to do that? At the Disaster Prevention and Preparedness Commission (DPPC- now called DM/FSS) in Ethiopia, there have functioning approaches, such as Early Warning Systems, District Vulnerability Profiles, Livelihood Information Units, Household Economy Areas, SMART surveys, nutritional surveillance systems and the like. While they have been quite useful in short-term disaster mitigation, they are still donor mostly donor dependent and unlikely to be sustainable and lead to the national goal of eliminating external dependency on food aid. The panel needs to evaluate which approaches and systems in which countries are most timely and useful for prevention, mitigation, and preparedness. My assessments in several East and Southern African countries are often not showing evidence of reliable data, rigorous analysis nor effective use and timely response (see chapters 12 and 16 in the above-cited Springer book on Ethiopia).

3. Adaptation options for food security and nutrition- the e-comments reveal the common generalization of what improves food security will automatically improve nutrition. The HLPE needs to hear more from the health, social protection, early childhood development and education sectors on the household and individual nutrition impacts, even given food availability and access. We have too many anomalies in Africa (including Ethiopia) where the higher food production areas also have the higher young child malnutrition. Only occasionally do we hear governments agree to implement demographic spatial dynamics (migration, resettlement, circulation, urbanization, etc.) as positive adaptation responses to climate change.

4. Policy and Action recommendations- I think those presented in #73 and #74 by the two large NGOs (SCF and CARE) are quite good and comprehensive, in principle. It is also so important for BOTH the agriculture and the health sectors to work closely together on addressing food and nutrition insecurity, but in many countries (especially Ethiopia), they find it so hard to do at national level (somewhat better at local levels). However, the policy recommendations of the international development agencies and NGOs are so hard to implement, often because of the lack of sustainable local investment in research and institutional capacity and in creating local food and nutrition expertise, as well as overreliance and dependency on temporary international expertise, to the exclusion of local knowledge and time-trusted adaption strategies. So the Panel needs to pay much more attention to developing local capacity and capabilities. For example, in Ethiopia, we are struggling to develop advanced Masters and PhD programs in food security, disaster-risk management, public health nutrition and related impact evaluation tracks, with too few senior faculty and institutional resources!

Dr. Charles Teller
Dept. of Global Health, George Washington U. (USA)
Center for Population Studies, Institute of Development Research, Addis Ababa U. (Ethiopia)

103. Clionadh Raleigh, Trinity College, Ireland, and Caitriona Dowd, London School of Economics and Political Science, UK

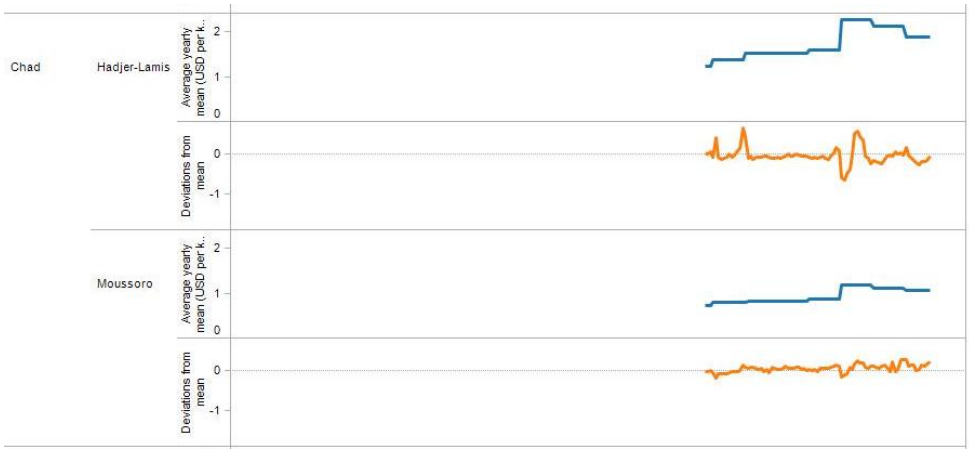
Dear Moderator,

We welcome the opportunity to provide feedback on the proposed scope of the High Level Panel of Experts on Food Security and Nutrition study on climate change.

The scope is very broad and addresses a wide range of issues relating to food security and climate change. However, the proposed study suffers from a lack of concentration on urban life. In order to identify the processes by which food security and nutrition are affected differentially by climate change, we believe the report should focus on shocks and stressors, and the variation among these by country and by food commodity.

When considering 1.a, direct and indirect impacts of climate change on food security, it should be noted that climate change shapes food availability, stability of food supplies, and access to food in urban, as well as agricultural, areas. In addition, effects on nutrition (1.b), such as the impact of climate change on food quantity and food price, and impacts on livelihood strategies and assets, are found in urban areas as well as among rural populations. Figure 1, composed of price data from FAO, gives an indication of the comparable volatility of food prices in urban and rural areas in Chad. Chad is divided into the relevant administrative district where food price data is recorded. Below, the blue line refers to the mean cost of all recorded food commodities over time while the orange line looks at monthly deviations to mean food price over time. In FAO data, the capital region was registered in Hader-Lanis- both the upward shocks are much more evident in a densely populated region than in a more rural region (bottom comparison).

Figure 1: WA select regional variation and mean

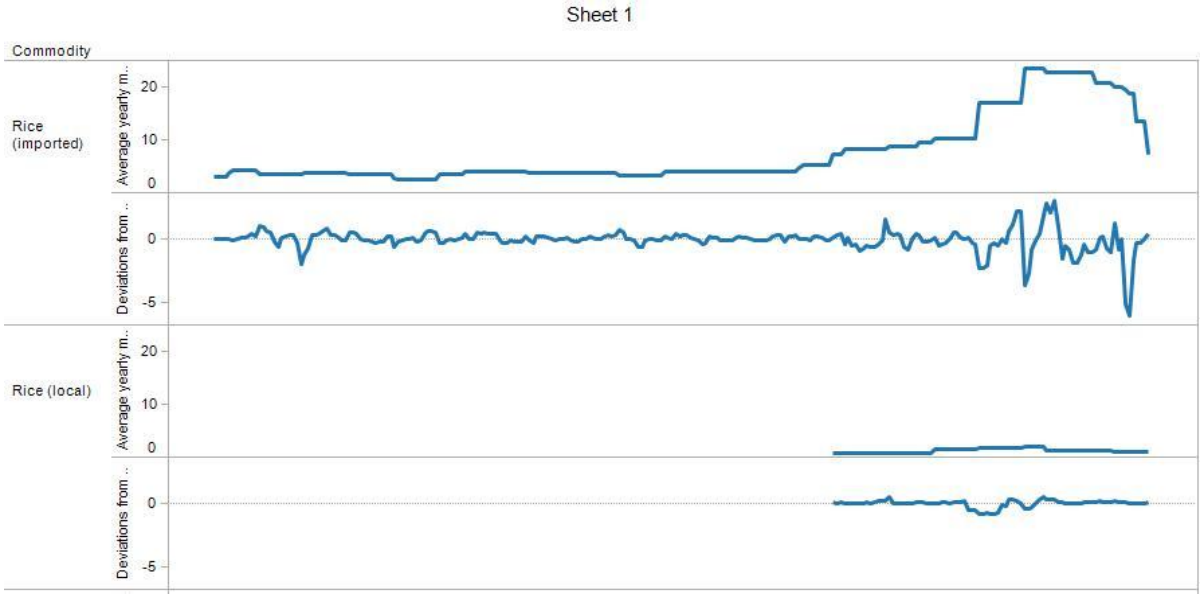


When identifying vulnerable regions and populations (2.a, 2.b), urban centres and populations should not be neglected: populations at risk include not only smallholder and subsistence farmers, pastoralists, and 'traditional societies,' but populations in urban areas reliant on agricultural production and rural populations' access to markets.

For instance, the role of imported food greatly affects the vulnerability of populations to shocks and stresses in food markets. This reliance varies by country – as states without ports rely less on imported food than coastal counterparts – and by internal factors – as infrastructure and access to markets condition the level of intra-state trade. Within a country, access of populations to markets and commodities may also be affected by barriers such as poor infrastructure, conflict or poor climate management schemes.

Figure 2, gives an indication of the pronounced volatility of food prices for imported commodities compared to their locally-produced counterparts. Here the differences in price shocks for both imported versus local rice are obvious. Those populations dependent on imported food tend to live in urban areas, close to ports and have a growing reliance on imported food. These populations are much more vulnerable to shocks, but their reliance on imported food creates market stressors for rural populations needing to foster urban markets to increase non-farming modes of income.

Figure 2: Select commodities West Africa



In short, this presentation is meant to highlight the urban issue of food prices, while suggesting that the effects of climate on price shocks and stressors is likely to be indirect, and highly conditional on rural-urban geographies, food cultures, urbanization, livelihoods, and country contexts (market access, infrastructures, conflict histories etc). Climate changes will create creeping vulnerabilities in both rural and urban spaces, yet price shocks are one way to determine how the economic geography of a state creates vulnerable populations. It also allows for researchers to determine how to mitigate food insecurity by studying those populations that have not experienced recent serious shocks.

Kind regards,

Dr. Clionadh Raleigh,
Lecturer, Trinity College Dublin, Ireland.

Caitriona Dowd,
MSc student, London School of Economics and Political Science, UK.

104. Kerstin Wydra, Centre for Tropical and Subtropical Agriculture and Forestry, Germany

Under '3. **Adaptation to climate change'** and '5.a **Recommendations for policies and actions'** the issue of existing and available agrobiodiversity is not considered. Neglected and underutilized crops and livestock breeds provide solutions to many of the existing threats of climate change through their high resilience to biotic and abiotic stress and their performance under extreme conditions. Data and information on the potentials of neglected and unterutilized species (NUS) are often lacking and characterization of their valuable traits is needed. Though, their suitability to marginal conditions and their role as 'security crop' providing food when the major crops fail is well recognized. The potential of these crops and breeds is far underestimated. In relation to the use of these crops traditional knowledge has to be evaluated.

Additionally, these species are suitable for low input agriculture and nutritionally of high value. Species proven suitable and still providing yield under various harsh conditions should be propagated in areas where climate change is still expected to cause these stress situations.

Thus, in situ conservation, valuation of traditional knowledge and research on the characteristics of NUS is needed in order to promote the use of NUS and their potential.

Prof. Dr. Kerstin Wydra
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105. Margaret Kabahenda, Makerere University, Uganda

On behalf of Youth 4G (4G = green, granaries, growth and generations) I would like to appeal for research team to investigate strategies for effectively engaging youth in initiatives focused on improving food security and adaptations to climate change. Youth form the majority of the populations in developing countries, many youth are unaware of what role they should play, and many youth can be motivated at an early age to adopt lifestyles that contribute to both improved food security and environmental conservation/restoration. We all know that it takes long to change old habits, hence youth (15-24 years) are not yet fully engaged in practices that impact food security and climate change and can be positioned to act as agents of change in their communities (especially if they are organized in groups). I think the study should also look into the potential role of youth (both in school and communities) to contributing to food security and climate change adaptations.

Margaret

Margaret Kabahenda, PhD
Department of Food Technology and Nutrition
College of Agricultural and Environmental Sciences
Makerere University
Kampala
Uganda

106. S. Edison from India

Dear Sir,

I sent my response to your email-id last evening but there was no reception at your end. As I have also lost the draft saved, I am trying to mail to you again.

The item-wise observations are as follows;

(1) Yes, the scope is appropriate.

(2) Not much; the role of appropriate crop varieties --region specific & location specific--which can mitigate the effects of climate change need to be documented and kept as a reservoir of information for sudden use.

(3) The report may resolve (i) small-holder productivity, (ii) early warning and use of the surveillance systems on the calamity, (iii) massive infrastructure for quick multiplication of healthy & good quality planting materials of food crops, (iv) strategic research support to deliver appropriate technologies confirming / conforming to the needs, (v) social justice to feed the most hungry in the LDCs and (vi) access to potable drinking water.

It will be an excellent idea to create an International Working Group to monitor the activities.

I do hope that the above points will find some consideration.

With regards.

Dr. S. Edison

Dr. S. EDISON, Ph.D.,
Fmr. Director, CTCRI (ICAR) Govt of India.
FAO/UNDP Expert/ Consultant - Spices & Tuber Crops
Ex-Member, Board of Trustees, CIP/CGIAR, Lima, Peru.

107. Shruti Mehrotra from Global Witness and Benedick Bowiem, Independent senior researcher on climate change and resource scarcity, UK

Dear moderator,

We welcome the efforts being undertaken by the HLPE to address the impacts of climate change on food security and nutrition through the commissioning of this important and timely study. While the proposed scope for the study is quite ambitious, our analysis suggests that there are several issues that require further consideration:

- **Interconnections between climate change, food, water, and energy - *the "climate-food-energy-water-(land)" nexus***: Our work on resource management and climate change indicates that any effective analysis, and so any actions to address resource-related issues such as food security or climate change adaptation and mitigation, must incorporate a systemic understanding of the relationships between climate change, food, water, energy and land use. These factors form a complex, inter-dependent system that is now being referred to as the "climate-food-water-energy-(land)" nexus. Though this term arguably

does not accurately depict the full scope of the implications of these interconnections, what is clear is that such a systemic view is now necessary to effectively address challenges in any part of this interconnected system. Specifically with regards to the scope of the HLPE study, we would suggest additional importance is placed on two under-emphasized dimensions of this nexus – water and energy:

  - *Water*: As now well understood, the effects of climate change on agriculture will be expressed most vitally through the medium of water. Moreover, existing water scarcity which will only be exacerbated by climate change is one of the underlying drivers of changes to food production patterns already underway, such as international land acquisitions. Thus though "limits from land, water…" are mentioned in the proposed scoping paper as uncertainties, we believe that water must receive additional attention in this report. Water should be integrated into the analysis of food at every stage, using for example water footprinting methodologies. Perhaps most importantly, the study must investigate the way that "virtual water trade" flows which currently present a long-term threat to global food security will be affected by climate change.
  - *Energy*: Energy is a vital input for agriculture, both through the use of petrochemical fertilisers and in the distribution of food. Furthermore, emerging resource scarcity dynamics, particularly in the case of oil, have incentivized crop-based biofuels production, creating intense competition for land and the end-use of some food staples. These dynamics are likely to continue and will be hugely impacted by climate change and changes to energy policies enacted to address climate change with serious implications for global food security. As such, this study needs to explicitly integrate energy into its analyses. This should not only include assessment of the impacts of biofuels and expected changes in the oil price which have received relatively significant attention to date, but also incorporate other related dynamics of concern such as the competition, primarily over water, between food and energy production, especially in arid and semi-arid regions, and the potentially deleterious consequences on food production of renewable energy projects which require large tracts of land.

- **Impacts on political stability**: As we have seen in the origins of the Arab Spring, high food prices and the inability of governments to continue price supports can help trigger significant political upheaval. Climate change will only exacerbate these threats to political stability, increasing the pressures on governance, institutions and the political economy more broadly worldwide. Our analysis indicates that emerging resource scarcity patterns, particularly in the areas of food, water and oil, combined with climate change are placing a much larger set of countries at risk of increased political instability than previously estimated. Such additional risk not only endangers the ability of governments to discharge basic functions, including any required support for food security and nutrition, but also in more extreme cases, can serve to undermine the state's legitimacy, and with it security and the rule of law. The global food security community has already seen the intractability of such dynamics in what FAO calls "protracted food crisis" contexts. Thus such risks to political stability need to be considered in this report, especially when developing recommendations for government subsidy programmes and national and international safety nets aimed at protecting populations from severe food price rises.
- **Role of the private capital and local markets**: The scoping paper rightly identifies the importance of the private sector in efforts to adapt to climate change. We believe that the report should employ a broad definition of the private sector comprised of the capital markets in general, including in particular new sources of capital flows from emerging economies such as state-owned enterprises and sovereign wealth funds. Furthermore, the report should not only assess the impacts that this broad array of finance can have on climate change adaptation and mitigation, but also its impacts on food production patterns in general. This may seem like an excessive expansion of the study's scope, but private capital flows are increasingly becoming critical drivers of global food production patterns as

well as efforts to address climate change worldwide, and thus need to be considered in this study. In addition, at a more local level, the study should incorporate an understanding of the structure of local markets and how they may be affected by climate change. Inadequate market structures have been an underestimated cause of local food price volatility in many developing countries and are likely to be significantly affected by climate change.

It will be critical to include the above issue areas in this report to ensure that it effectively analyzes the systemic nature of the impacts of climate change on food security and nutrition. Furthermore, the first two suggested additions, around the nexus and political stability, will be vital to consider when identifying vulnerable regions and populations. Our forthcoming publication on these issues may be of help in this regard.

We look forward to further contributing to this important work as it progresses.

Yours sincerely,

Shruti Mehrotra
Independent advisor on climate change and resource scarcity
Former Associate Director and Global Leadership Fellow, World Economic Forum, and Senior Climate Campaigner, Global Witness

Benedick Bowie
Independent senior researcher on climate change and resource scarcity

108. Anita Wreford, Sottish Agricultural College, UK

Hello

I would like to comment on the proposed scope of this study, my comments are below:

1) Do you think the scope is appropriate?
The proposed scope is broadly appropriate.
Although this study is intended to be a review, some sections indicate that new research may be carried out, which would add considerably (and possibly unrealistically) to the scope of the project. For example, section 3(b): This is a very difficult and complex area, is the study intending to summarise existing studies on this or conduct its own? On what scale? I don't see much benefit to the time and resources that would be required to conduct its own analysis of this huge area. Global assessment of costs of adaptation in agriculture have been conducted (eg. Parry et al 2009[1]) but are less useful than smaller more detailed studies. However, estimating the costs and benefits of adaptation remains a very difficult area regardless of scale, due to the inherent uncertainty involved.

2) Have important elements been omitted or should any of the elements outlined be left out?
In general, the proposed structure will overlap with a number of other reports, and the focus of some sections could be reduced in order to expand areas where this report could really add value (see specific comments below)

Elements I believe should be added:

Under section 1(c) uncertainty, aspects of uncertainty relating to the societal response to climate change, both in terms of mitigation and adaptation, as well as changes in trade patterns and food prices, should be included.

Section 3(a) Before they can be classified, observed adaptation options first need to be identified. Classifying them would be a secondary task. The second point, "developing and assessing the adaptation responses" is unclear – does it still refer to observed adaptations or does it aim to develop options for future adaptations?

3(d) is very important, however as the document stands it is not clear what the study will contribute in this area?

Sections 4 (a – c) a lot of work exists in this area already and these sections would mostly be repeating this work (see for example Wreford et al 2010[2]). Identifying mitigation options that do not negatively affect food security or resilience to climate change is very important. The most important subsection here is (d) and this should be expanded, particularly the need to address agricultural emissions without compromising food security.

An additional subsection under (4), or perhaps included in 4(d) would be to address the synergies and tradeoffs between mitigation and adaptation with regard to food security.

There doesn't appear to be any attention paid to what constitutes a resilient agricultural system or community. Rather than only focusing on vulnerabilities, section 2 could also identify regions and populations that are currently resilient to climate changes and extremes, so that lessons could be drawn from them and applied elsewhere and in future.

3) In your opinion, what would be the main aspects that the report should emphasise?
The main aspects the report should emphasise should be how to design and implement multi-objective policy for climate change and food-security.

Kind regards

Anita

Dr Anita Wreford
Researcher Land Economy and Environment Group
SAC
Visiting Fellow Tyndall Centre for Climate Change Research
University of East Anglia
United Kingdom

[1] Parry, M., Arnell, N., Berry, P., Dodman, D., Fankhauser, S., Hope, C., Kovats, S., Nicholls, R., Satterthwaite, D., Tiffin, R., Wheeler, T. (2009) Assessing the Costs of Adaptation to Climate Change: A review of the UNFCCC and other recent estimates. International Institute for Environment and
Development and Grantham Institute for Climate Change, London.
[2] Wreford, A., Moran, D., Adger, N (2010) Climate Change and Agriculture: Impacts, Adaptation and Mitigation. OECD, Paris.

109. Marc J. Cohen, Oxfam America, USA

Dear Moderator,

Participants in this discussion may be interested in the FAO-IFPRI study "Impact of Climate Change and Bioenergy on Nutrition," which can be found at http://www.fao.org/docrep/010/ai799e/ai799e00.htm. An updated version will be published by Springer as a book later this year or in early 2012.

Marc J. Cohen, Ph.D.
Senior Researcher
Humanitarian Policy and Climate Change
Oxfam America
USA

110. K V Jayachandran, Kerala University of Fisheries and Ocean Studies, India

Dear all

I am thankful to the moderator for the opportunity. I would like to add my comments as follows-

DO YOU THINK THE SCOPE IS APPROPRIATE?

Scope is appropriate, but I doubt very much that it doesn't cover the relation between climate variability and natural phenomena. The natural phenomena that occur certainly support food security. For example, the mud bank formation in Kerala (India) is directly linked with South-west monsoon. When the rainfall decreases, the mudbank formation is affected. This phenomenon support a huge fish wealth in this part of the country. It is the place where breeding fish, prawn, and other marine organisms accumulate and hence it is very important. (I have a paper published in this line)

HAVE IMPORTANT ELEMENTS BEEN OMITTED OR SHOULD ANY OF THE ELEMENTS OUTLINED BE LEFT OUT?

Scientific basis of converting wet lands into agricultural farms and vice-versa is to be ensured. This affects food production and thereby security. Rarely such studies have been carried out.

IN YOUR OPINION WHAT WOULD BE THE MAIN ASPECTS THAT THE REPORT SHOULD EMPHASISE?

The report should emphasise natural phenomena first.

Thank you very much

Prof. Dr. K V Jayachandran
Director,

School of Fisheries Resource Management & Harvest Technology,
Kerala University of Fisheries and Ocean Studies,
Kerala, India

111. Monique Mikhail, Oxfam, UK

Dear HLPE members,

Thank you for the opportunity to offer comments on the proposed scope of the HLPE study on climate change. Oxfam is pleased that you are undertaking this effort. The connection between climate change and food security is incredibly important, particularly in the context of our GROW campaign (http://www.oxfam.org/en/grow). Please find below Oxfam's initial inputs. We look forward to continued engagement with you on this important research.

Regards,

Monique Mikhail

1) Do you think the scope is appropriate?

- The view of adaptation in this scoping document (in the 'adaptation to climate change' section) seems to be that we are starting from ground zero. But, smallholders constantly adapt to their changing environments already. There is a need to both: a) include identification of adaptation activities already occurring in different agricultural systems and agroclimatic zones; and b) include discussion on methods to strengthen knowledge transfer between farmers in similarly affected zones/systems (for example, existing farmer social networks, farmer to farmer exchanges, etc.)

- In 'the role for public and private sectors in adaptation' section, encouraging the private sector to play a more important role in the public–private collaboration in the development and implementation of adaptation responses activities must be in partnership with communities. Such efforts should build from policy-driven adaptation solutions that prioritize vulnerable communities. The types of activities that the private sector should invest in includes: national planning and implementation of adaptation; developing and deploying adaptation products and services that benefit communities; assessment of risks, impacts and vulnerability at the business and community levels; knowledge sharing with vulnerable communities; technology development and transfer; investing in disaster risk management and insurance models in partnership with vulnerable communities; and investing in public-private adaptation partnerships. The most important consideration to include is that in any public-private partnership, the decision-making power must reside firmly with the government, and that private sector actions in the field of adaptation must in an addition to and complementary with government- and community-led and publicly financed action, and not a substitute for them.

- The 'recommendations for policies and actions' section could be broken out into international activities (and/or regional) and national-level activities, since there are different approaches at different levels. And, exploration of specific investments for women smallholders to improve productivity should be included.

2) Have important elements been omitted or should any of the elements outlined be left out?

Elements that have been left out but should be included:

- The sources and governance of financing of adaptation and mitigation efforts. While some attention is given to the scale of needs of adaptation finance, there is insufficient

attention paid to the governance arrangements needed at (global,) national and sub-national levels to ensure that finance responds to the adaptation needs of the most vulnerable communities.

- Emphasis on observed and projected impacts of climate change not only on agriculture (cropping patterns etc) but on fisheries – vital for island states and coastal communities, and relatively underexplored in the literature to date

- Exploration of women smallholders not just as the most vulnerable to climate change, but the possibilities for increased access to resources to be the greatest driver of adaptation / role of women as key agents in designing and implementing adaptation solutions.

- An exploration of adaptation as a learning process. Adaptation is not a choice between reducing general vulnerability or preparing for specific hazards, such as floods; adaptation requires both, in an ongoing change process whereby people can make informed decisions about their lives and livelihoods in a changing climate. *Learning* to adapt (including having the space to make mistakes) is as important as any specific adaptation intervention.

- The essential link between strengthening natural resources and improved resilience to climate change impacts. Include an analysis of agro-ecological approaches that can improve the resilience of the environment to cope with shocks as well as increase smallholder yields and incomes.

- For assessing the 'contribution of agriculture to climate change', large-scale aggregate contributions have already been reviewed, but there is a complete dearth of information on differentiated contributions from smallholders and large-scale agriculture. This would be a great piece to break out.

- For the 'mitigation options in agriculture' and 'multi-objective policy for climate change mitigation' sections, they could be combined to truly fulfill the multiple objectives (food security, environmental sustainability, and poverty reduction) instead of merely mentioning them. This will rightly shift the analysis to review which mitigation measures are positive for all three objectives (food security, environmental sustainability, and poverty reduction) and which are not. Then the options that are most valuable become clear. This section should also be broken down separately for smallholders and large-scale agriculture. And, there should be a specific focus on the risks and opportunities for smallholders in adoption of mitigation practices. Lastly, instead of a regional focus, the filter for analysis could be different agricultural systems.

- The reviewing of cost benefit analysis of adaptation options must be carefully handled. Smallholders are already adapting and will be required to continue doing so regardless of the cost – so the analysis should not assume there is a rational choice to be made by smallholders whether to adapt or not. Further, their governments will be required to repeatedly pay for emergency relief if they do not help with adaptation ahead of time, so it is vital that any such analysis includes the full and much higher costs of inaction.

2) Elements that should be left out:

- The 'cost effectiveness of mitigation options' is a less useful way to choose the appropriate mitigation efforts. The more appropriate way is which efforts derive the greatest reduction with the most positive outcomes for food security environmental sustainability and poverty reduction (see comment above.)

3) In your opinion, what would be the main aspects that the report should emphasise?

- The importance of investment in more robust analysis of both observed and likely changes in small-scale food production (agriculture and fisheries) resulting from climate change (ie need for scaled-up investment in weather and seasonal forecasting capacity in developing countries)
- How to assist the most vulnerable populations to achieve the right to food and to sustainable livelihoods in the face of climate change.
- Recognition of, investment in, and support of smallholders' role in adaptation.
- Differentiating the contribution of smallholders vs. large-scale agriculture.
- The risks and opportunities for smallholders in mitigation efforts.
- Mitigation opportunities that tackle food security, environmental sustainability, and poverty reduction.

112. Adriano Timossi, agricultural specialist, Brazil

Dear Colleagues,

The scope of the study is very complete as it takes into account key areas of study lacking information on the impacts of climate change on food security and nutrition. Perhaps another area of study could be also the potential of south-south and triangular cooperation describing ongoing developments with potential to promote adaptation and mitigation. Also, it might be interesting to have a look on "low level technologies" or local or traditional technologies which might be useful to deal with climate change for its cost and efficiency in implementation.

Regards,

Adriano

113. Tearfund, UK

Tearfund has 40 year's experience and works with smallholder farmers in over 50 developing countries, and we welcome the scope of the HLPE study on climate change.

Tearfund strongly agrees with the need to identify **costs and benefits of adaptation options** for decision making at different levels, especially to reinforce the argument of the need to invest in preparing for climate shocks and preventing food crises, which would reduce the need for costly humanitarian aid after the peak of a food crisis. Very few cost benefit analyses (CBAs) have been done in the context of drought, as a slow onset disaster, compared to many CBAs done looking back at rapid onset disasters. Tearfund's report *Investing in Communities* in Malawi1 showed that for every £1 invested over 4 years, agricultural and risk reduction activities yielded at least £24 of net benefits to the community.

1 http://tilz.tearfund.org/Research/Food+and+Security+reports/default

Quantitative data on its own is not sufficient, especially when it can be quite controversial e.g. measuring avoided loss of life through lost labour time. It needs to be balanced with qualitative data to show the social, human, natural and physical benefits of adaptation and ensuring food security as well as the financial benefits. Baselines will also need to be established at the national and local level and advice should be given on integrating CBA into decision making processes and the project cycle.

Particular attention should be paid to the 4th pillar of food security which is often neglected in research and by governments and donors in decision making: **ensuring *stability* in the first 3 pillars of food security.** This is particularly relevant to climate change because of the need to build resilience to shocks like drought and floods, whilst also trying to reduce the impact of high food prices and malnutrition. The study should identify **indicators for building resilience** to ensure food security, which will make it easier to measure progress. These can be used as a starting point: C*haracteristics of a Disaster Resilient Community* (John Twigg, 2009).1 Please see page 53 for Tearfund's adapted version of the characteristics for food security contexts.

Adaptation must have a strong focus in the study because of the urgent, pressing need for smallholder agriculture and nations to adapt and because of the financial implications of not adapting.

The study should include appropriate **tools** for programme staff and policy makers to use when assessing how to adapt to climate change in a specific context at the national or local level. For example Tearfund's tool Climate change and Environmental Degradation Risk and Adaptation assessment (CEDRA) is widely used by NGOs and policy makers.2 It helps to access climate science information and prioritise which environmental hazards may pose a risk to project locations, enabling them to make decisions to adapt projects or start new ones. Adaption options are discussed, and decision-making tools are provided to help organisations make their projects resilient. The study should also identify ways to strengthen local adaptive capacity and to build on community based strategies.

One major area missing from the scoping of the study is the **implementation of global funding for adaptation** e.g. Fast start finance for adaptation discussed at the UNFCCC negotiations, which could be used for the implementation of National Adaptation Plans for Action (NAPA)s and how this is integrated into national development budgets. NAPAs in many countries have identified agriculture as a key sector that is vulnerable to climate change. The study should identify ways to ensure country-wide ownership of the implementation of the NAPAs, coordination between different Ministries and consultation.

Another area missing from the scoping is the need to look at how to **overcome barriers of making decisions quickly after early warning** of an imminent food crisis, triggered by the impacts of climate change, especially in regions with recurring crises e.g. the Horn of Africa, the Sahel and ongoing protracted crises like Sudan. Slow onset disasters, like food crises, often have a window of 6 months to reduce the impact and help prepare communities before they reach a peak, when it is too late to save livelihoods and assets. And yet, the dominant policy response of the international community and governments over the past 20 years or so has been to treat food and hunger crises as a series of unexpected disasters that can be addressed by the provision of humanitarian relief. Improving early warning systems is not sufficient.

The section on **recommendations** for policies and actions should explore:

1 www.abuhrc.org/Publications/CDRC%20v2%20final.pdf

2 http://tilz.tearfund.org/Topics/Environmental+Sustainability/CEDRA.htm

- Ways to tackle political, economic and cultural policies, practices, institutions and processes that increase vulnerability to climatic shocks.
- Ways to incorporate climate risk information into planning and food security assessments
- The discussions of adaptation, not just mitigation, of agriculture in the UNFCCC climate change negotiations
- Exploring a multi-sectoral and holistic approach with coherent policies e.g. better coordination between the agendas, actors and existing policies on food security, DRR, climate change adaptation, social protection, natural resource management, water resource management and poverty reduction.

114. Carlo Scaramella, World Food Programme, Italy

WFP highly appreciates that the HLPE is addressing the linkages between climate change and food security. We particularly welcome that the study aims at addressing the issue in a comprehensive way, covering availability as well as access, stability and utilization issues. In line with that, we strongly support that the study highlights that "overcoming barriers to adaptation will require a comprehensive and dynamic policy approach, linking with anti-poverty and inequalities strategies", and calls for "an integrated response to addressing food and nutrition security, agricultural productivity and climate change", as indicated in this outline.

The scope of the study may be too ambitious, though. We believe the main issues the study should emphasize are 1) impact analysis in terms of present and future vulnerabilities and risks, 2) practical "no regret" adaptation and resilience building options, and 3) food and nutrition security approaches aimed at delivering multiple benefits and outcomes, including climate change adaptation as one of many interlinked challenges food insecure communities face.

Below, we would like to answer your question on whether elements have been omitted or should be left out by commenting on selected sections:

1. *Assessing direct and indirect impacts of climate change on food security and nutrition*

a) *The direct and indirect impacts of climate change on food security:*

... The studies should be focused not only on the potential impacts of climate change, but also on the observed impacts of climate change, such as: the observed impacts on instability in agricultural production, variation in spring phenophase and cropping system, trends in pests and diseases.

The various observed impacts on access (and utilization) should also be considered here.

b) *The direct and indirect impacts of climate change on nutrition:*

... Identifying, validating and costing the set of interventions required to reduce the impacts from climate change on nutrition, and capitalizing on lessons learnt through experience.

This could be done in the section on adaptation. The same should also be done for the previous section (impacts on food security).

c) *Uncertainty issues:*

.... some of the most important uncertainties should be highlighted and studied...

It would also be a very important practical outcome if the Panel addressed the question of how to deal with uncertainty, and e.g. identify and evaluate potential no-regrets options.

2. *Identifying vulnerable regions and populations*

    a) *The most affected and vulnerable regions*

... Prioritization of investment also needs the identification of "climate risk hot spots". Hence, it is significant to identify vulnerable regions by assessing impacts of climate change at various scales (global, continental and regional) and integrating environmental, economic, and social objectives.

It is important that any identification of hot spots goes beyond impacts on production and availability and also includes impacts on access (e.g. regions with people highly dependent on food purchases). To get a meaningful sense of "climate-risk hot spots", it would also be critical to overlay the analysis of the most affected regions with information on the most affected populations (see next section).

WFP could contribute to such an analysis, building on its previous work with the UK Met Office on overlaying data on climate change vulnerability with food security information (see http://documents.wfp.org/stellent/groups/public/documents/newsroom/wfp229182.pdf).

    b) *The most affected and vulnerable populations*

... Identifying vulnerable populations by assessing impacts, including socio-environmental vulnerability, of climate change on different socio-economic groups: woman, infant, elder. ...

This should go beyond demographic groups and look also at economically marginalized groups, such as the "ultra-poor", the landless etc.

... Populations at greater risk of food insecurity may include smallholder and subsistence farmers, pastoralists, traditional societies, indigenous people, coastal populations and artisanal fisherfolk. ...

Again, it is important to also look at the landless, at wage laborers, but also at urban dwellers.

3. *Adaptation to climate change*

    a) *Observed adaptation for food security and nutrition*

Classifying the adaptation options according to their distinguishing characteristics, such as intent and purposefulness, timing and duration, scale and responsibility.

This should also consider direct and indirect adaptation options, i.e. those that are more "developmental" in their nature and in most cases create the basis for adaptation.

Developing and assessing the adaptation responses to climate change for food security and nutrition, such as promoting more resilient crop varieties, developing early warning system, developing farm-level resource management innovations, modifying crop insurance programs, changing investment in established income stabilization programs, implementing irrigation practices.

We suggest changing/ adding the underlined: developing community-level ecosystem- and landscape-based approaches, enhancing innovative food and nutrition interventions, developing and strengthening established social protection and income stabilization

programmes – given that in many of the most vulnerable areas they do not exist, and to stress the role of social protection in building resilience.

A practical outcome of this section of the study would be an identification of currently ongoing interventions with adaptation benefits that could be scaled up and/or replicated.
We also suggest that this section identifies tipping points beyond which adaptation of certain livelihoods may not be possible.

b) The cost-benefit analysis for adaptation

Estimating the costs and benefits of adaptation options for decision-making at different levels by individual producers (farmers), agri-business (private industries), or governments (public agencies).

This should also look at consumers – the majority of food insecure people, including small farmers, are net buyers of food, who also have to adapt their livelihood strategies.

It should also consider the potential costs of not adapting, i.e. the estimated costs of responding to future hunger and food insecurity.

c) The role for public and private sectors in adaptation

Encouraging the private sectors to play a more important role in the public–private collaboration in the development of adaptation responses...

The study should also, as indicated in this section's title, assess the role of the public sector, stressing the responsibility of governments in protecting and supporting the most vulnerable.

Potential areas of conflict between private and public sector interests could be considered as well (e.g. in view of competition over scarce resources and adaptation efforts).

4. Recommendations for policies and actions

Enhancing research and technology investments to minimize the impacts of climate change on food security and nutrition; ...

In the context of extreme poverty and food insecurity, and in view of tight budgets and the need for immediate solutions, research and investments should focus on existing best practices and no-regrets options that are readily available and affordable to the poorest (e.g. sustainable farming practices), and on strategies, such as innovative social protection, aimed at overcoming the barriers for their adoption.

An international working group to regularly monitor the world food situation and trigger action to prevent excessive price volatility; ...

We believe that this task can and should be carried out by existing entities such as the High-Level Task Force on the Global Food Crisis, mandated to ensure comprehensive and coordinated understanding and action in responding to both immediate and longer-term food challenges – including price volatility. We therefore do not think it is necessary to establish yet another working group.

We would like to once again stress that we welcome this study being prepare, and of course will be ready to support the work of the HLPE – as a member of the CFS' Advisory Group and Secretariat, and in any other way required.

Kind regards

Carlo Scaramella
Climate Change and Disaster Risk Reduction Coordinator
World Food Programme

115. Iris Cecilia Ordóñez Guerrero, Faculdade de Engenharia Agricola UNICAMP, Brasil

[Spanish original]

El alcance presentado puede ser mas abrangente pues existen aspectos de suma importancia que están quedando fuera.
Creo que hay necesidad de conocer, según tipo de región, población y teniendo en cuenta la cultura, la capacidad de respuesta de éstas poblaciones ante el nuevo escenario, hay necesidad de conocer cuáles son las fortalezas que las poblaciones tienen para hacer frente a estos cambios, conocer si las estructuras administrativas y políticas están preparadas para todo este cambio, hay necesidad de diagnosticar al detalle pues sólo de esta forma se podrán implementar políticas reales y aplicables a las diferentes realidades y poblaciones.
El informe también debería identificar el posible impacto que se generaría en las estructuras sociales y los modos de vida y reproducción de las personas dentro de sus territorios, espacios de vida.
Hay necesidad de evaluar posibles migraciones e/o desplazamientos poblacionales, disputas por tierras más fértiles, mejores condiciones climáticas para vivir y para desarrollar la agricultura,
Atentamente,

Iris

[English translation**]**

The scope presented can be more comprehensive, since there are very important aspects that are being ignored.

I think we need to know the type of area and population, taking into account the culture and the responsiveness of these populations to the new scenario. There is a need to know what are the strengths populations do have to deal with these changes and see if administrative and political structures are prepared for all this changes. There is also a need for a detailed diagnosis: only in this way real and applicable policies can be implemented to different situations and populations.

The report should also identify the possible impact that would be generated in the social structures and ways of life and production of people within their territories and living spaces.

There is also a need to assess possible migration and/or population movements, disputes over more fertile land, better weather conditions to live and to develop agriculture

Sincerely,

Iris

116. Violet Mugalavai, Moi University, Kenya

Hello all,

In section a) under adaptation for food security and nutrition, it will be important to stress on the indigenous knowledge in crop and farm management practices which have proved to work during climate stress. Such knowledge needs to be documented and dibursed to communities through their local leaders for dissemination. Farmer groups that are inclusive in all the cultural categories by age, sex, social status and religion should be assessed for their adaptation efforts that may require capacitating and motivational involvement in adaptation activities. The youth should be a target group of involvement in adaptation practices as this will offer them an opportunity to be productive and earn a living. Success stories of case studies of group dynamics that have enhanced food production through climate adaptation efforts can be documented and shared in other regions.

Thank you.

Dr. Violet Kadenyeka Mugalavai,(PhD).
Moi University, Chepkoilel University College,
School of Agriculture & Biotechnology
Head of Department,
Dept of Family & Consumer Sciences.

117. Jean Francois Soussana, France

Dear colleagues,

Please find linked:
http://typo3.fao.org/fileadmin/user_upload/fsn/docs/HLPE/FACCE_JPI_SAB_Scientific_agenda-final.pdf the scientific research agenda of the Agriculture, Food Security and Climate Change (FACCE JPI) joint programming, which joins the efforts of 20 European countries (see faccejpi.com).

As you will see, there are many issues in common with the scope of the study planned by the HPLE on food security and climate change.
However, the main focus for the FACCE JPI is Europe within a global context.

On behalf of the scientific advisory board of the FACCE JPI, I hope that we will develop collaborations in this area.

With my best wishes,

Jean-Francois Soussana

118. Peter Holmgren, Director Climate, Energy and Tenure Division (NRC), Chair of the Inter Departmental Working Group On Climate Change, FAO, Italy

FAO welcomes the consultation on the proposed scope of the HLPE study on climate change effects on food security which gives an opportunity to stakeholders to partake their concerns and knowledge.

This study is of great relevance. First, because "Food and nutrition insecurity and climate change are, more than ever, the two major global challenges humanity is facing" as stated. Secund, because even if there are already a lot of studies on Agriculture and Climate change, as underlined by some of the contributors, there are not that many studies on the impacts of climate change on food security in all its dimensions, nor on the effects of climate change on nutrition. Third, precisely because there are a lot of studies on Agriculture and climate change, there is a need for a synthesis aimed at informing decision making. Fourth, because as the HLPE is directly linked to the foremost international platform for food security and nutrition, the CFS, it is in a position to provide decision aimed knowledge and recommendations which can inform the decision process. Finally, given the HLPE's unique position, this study could also play a major role in raising awareness on the effects of climate change on food security in the international negotiations on climate change.

1) Do you think the scope is appropriate?

The proposed scope for the study is very appropriate especially as it embraces the four dimensions of food security, availability, accessibility, utilization and stability. It is particularly important as studies often focus only on the availability dimension. In that respect, I would like to mention the FAO study "Climate Change and Food Security: a framework document", http://www.agriskmanagementforum.org/farmd/sites/agriskmanagementforum.org/files/Documents/Climate%20Change%20and%20Food%20Security%20FAO%20Framework.pdf, which can provide a usefull conceptual framework.

The section on the direct and indirect impacts of climate change on nutrition is particularly welcome as this is often neglected.

2) Have important elements been omitted or should any of the elements outlined be left out?

Considering the broadness of the topic, there is at the same time the need for a full picture, showing the interlinkages between the various direct and indirect effects of climate change on each of the four dimensions of food security, at various scales, and also to focus on some of the issues which have not been enough analyzed.

In order to fully assess the impacts of climate change on food security and nutrition every component of diets shall be properly considered. Studies on impacts of climate change often focus on major stable crops, neglecting so called "minor" crops which are often essential to ensure food and nutrition security. Impacts on fisheries, aquaculture, livestock could have a major effect on food security and on nutrition. Impact of climate change on wild foods, which often play a major role to balance traditional diets, is even less researched.

Identification of vulnerable regions and populations shall take into account various factors of vulnerability, most of which will be aggravated by climate change. An example of such an approach is FAO's publication "The State of the World's Land and Water Resources for Food and Agriculture (SOLAW) managing systems at risk", soon to be released.

Adaptation shall consider both increased variability and risks and slow onset changes such as sea level rise, salinisation and temperature increase, with due consideration to time scales and

no regret options. Increased variability and risk make even more urgent proper risk management strategies, aiming first to reduce to reduce damages and losses through increasing resilience of the production systems including by promoting best practices in an ecosystem approach, the early detection of emerging risks, the subsequent reduction or elimination of a specific risk. They shall then help systems to recover, including by restoring productive capacities. In doing so, such strategies should combine specific policies targeted to address specific agents and categories of risks. They include measures to reduce or eliminate specific risks, such as plant pests and animal diseases, including advanced observation networks for quick response. Diversification can both increase the efficiency of systems and their resilience to direct and indirect risks. It also can spread risk, increasing economic resilience at farm and local level. Diversified rotations, including crop varieties and species with different thermal/temperature requirements, better water use efficiency and resistance to pest/disease, and lower yield variability are effective ways to reduce risks and increase efficiency. Other measures either prevent the loss of productive assets, such as feed banks for livestock during droughts, or enable quick recovery, such as availability of seeds.

Genetic resources play an essential role in the interrelations between food security and climate change. They are threatened by climate change and at the same time they are an essential tool to ensure food security despite climate change. Proper consideration shall be given to the ways and means to preserve them and use them to help agriculture, forestry and aquaculture to adapt.

FAO has just released, at the occasion of the UNFCCC meeting in Bonn, an organization-wide framework programme, FAO-Adapt, that provides general guidance and introduces principles as well as priority themes, actions and implementation support to FAO's activities for adaptation to climate change. It brings together the body of climate change adaptation work accomplished by FAO, its technical units, decentralized offices and regional bodies. It aims at mainstreamng climate change adaptation into all FAO development activities while contributing to the uptake of climate-smart agriculture at national, regional and global levels. http://www.fao.org/climatechange/27594-03ecd7bd225b93086e7dca3944de64307.pdf

Agriculture can contribute to mitigate climate change, without compromising food security, in two ways. First in reducing emissions per kilog of output, all along the food chains, allowing production to increase to meet the growing demand of food and feed without a corresponding increase in emissions. Secund by preserving and increasing carbon sinks in forests and soils. Considering the magnitude of carbon sinks, land use and management has here a very important role to play.

Food security, adaptation and mitigation can be separated for analytical purposes but, on the ground, they have to be pursued jointly. This is why FAO has forged the concept of “Climate Smart Agriculture”. Climate Smart Agriculture aims to face three intertwined challenges: first, to produce enough food, especially in developing countries, secund, to adapt to climate change, third, to contribute to mitigate Climate Change, without compromising food production. Meeting these three challenges all together requires radical changes, towards more resilience and more efficiency in resource use: use less land, water, inputs to produce more food sustainably and to become more resilient to changes and shocks, while fostering carbon sequestration. At farm level it is very much based on sustainable intensification, including the livestock sector. It also encompasses integrated landscape management and food chain approaches. More details and examples in http://www.fao.org/fileadmin/user_upload/newsroom/docs/the-hague-conference-fao-paper.pdf

3) In your opinion, what would be the main aspects that the report should emphasise?

To better address the very complex effects of climate change on the various dimensions of food security, the report should emphasize systemic approaches of food systems at various scales, from local to global.

It should also consider landscape approaches in order to better take into account the respective roles of agriculture, forestry in fisheries in ensuring food security in a changing climate while contributing to mitigate climate change.

There are, especially since Cancun, new opportunities to account for agriculture and food security are treated in the international negotiations on climate change. See FAO's submissions in 2011:

- A submission to UNFCCC Secretariat on approaches to address losses and damages in agriculture, forestry and fisheries in answer to the invitation of article 28 of Decision FCCC/AWGLCA/2010/L.7 (submitted 21 February 2011)

  http://unfccc.int/resource/docs/2011/smsn/igo/105.pdf
- A submission to UNFCCC Secretariat on NAMAs in answer to the invitation of article 82 of Decision FCCC/AWGLCA/2010/L.7 (submitted 21 February 2011)

  http://unfccc.int/resource/docs/2011/smsn/igo/096.pdf
- A submission to UNFCCC Secretariat on non market based mechanisms to enhance mitigation actions (submitted 21 February 2011)

  http://unfccc.int/resource/docs/2011/smsn/igo/097.pdf
- Climate Change and Food Security in the Context of the Cancun Agreements (submitted 23 March 2011)

  http://unfccc.int/resource/docs/2011/smsn/igo/121.pdf

Given HLPE's status and its being part of CFS, this study could also be of help to improve the way Agriculture and Food Security are treated in climate change talks. It will show that from the perspective of the food security of vulnerable populations, Climate Change is already a reality. It could bring, for the sake of the world food security, a different perspective as how the agriculture sector has to be considered in the climate discussions: a sector which needs to get the means to adapt in order to ensure food security.

It could consider making recommendations aiming towards establishing better links between the topics of food security and climate change and between the international foras where they are discussed.

Dr Peter Holmgren, FAO
Director Climate, Energy and Tenure Division (NRC)
Chair of the Inter Departmental Working Group On Climate Change

119. Philippe Crahay, Rebecca Brown, Samuel Hauenstein Swan from Action Contre la Faim (ACF)

Dear Moderator,

Thank you for giving us the opportunity to make comments on the scope of this important HLPE study. ACF is deeply concerned about the negative impacts and threats of climate change on food and nutrition security, in particular for women and young children, who are amongst the most vulnerable to its effects. We particularly appreciate comments made by Sonja Vermeulen from

the CCAFS (comments 32); Maria Pizzini from Save the Children (comment 73) and Martha Chouchena-Rojas from CARE International (comment 74).

Whilst we feel the scope of the paper is appropriate, ACF would like to highlight the following issues, which could be better addressed:

1. FRAMEWORKS | It will be essential to develop an integrated analytical framework, building upon those used in the food and nutrition community (e.g. the Conceptual Framework of the Causes of Undernutrition)) and in the climate change community (i.e. climate change impacts, vulnerabilities and adaptation | climate change mitigation), along with an appropriate set of indicators. The development of a response framework for use at multiple levels and different scales for ensuring resilience to climate change and other shocks and food and nutrition security at community and household level is also needed.

2. THE 'OTHER' HUNGRY | The proposed scope of the paper seems to focus predominantly on the food and nutrition insecure farming households, in rural areas. It will also be necessary to consider the landless in rural areas, and the food insecure in urban areas. The paper should also look at the potential impacts of rural – urban displacement caused / exacerbated by climate change, and the burden placed on those communities / households hosting displaced people. It will also be necessary to consider how the effects of climate change interact and exacerbate other phenomena which have major implications for food and nutrition security, such as over – population growth, HIV/AIDS, food and fuel price volatility.

3. SPECIFIC CLIMATE CHANGE IMPACTS OF ON UNDERNUTRITION | The impacts of climate change on the prevalence of wasting and stunting; dietary diversity; maternal and child care and feeding practices; the interlinks between child health status, diseases (particularly water-related diseases) and undernutrition desserve more attention and could be emphasized in the report.

4. ADDRESSING IMPACTS AND CLIMATE CRISES | Climate change is already having an impact, causing many vulnerable communities and households to suffer serious setbacks in terms of food and nutrition security. The paper needs to consider which measures need to be put in place with immediate effect and how these will be financed.

5. EARLY WARNING SYSTEMS AND PREPAREDNESS | The paper might consider how climate monitoring systems (at various time scales, e.g. seasonal, inter-annual, longer-term), can be better linked to existing food and nutrition security monitoring systems and early warning systems, and how can these be developed and strengthened? It will also be important to define how can communities and institutions can be better prepared in the face of increasing climate-related disasters, food and nutrition crises?

6. 'NUTRITION-SENSITIVE' ADAPTATION MEASURES | In addition to agricultural adaptation measures, it should also be considered which 'non-agricultural' adaptation measures will be required to build resilience and tackle hunger and undernutrition in a changing climate. We should look at how we can ensure that agricultural and non-agricultural risk management and adaptation actions are nutrition-sensitive, i.e. that they have a greater impact in terms of preventing / reducing undernutrition.

7. INSTITUTIONAL AND POLICY SYNERGIES | How can climate change work (UNFCC and other disaster risk reduction and other climate change initiatives) be better aligned with current agendas, initiatives and policies which aim to reduce hunger and undernutrition (e.g. CFS, SUN, UNSCN, etc.) and vice-et-versa, at the various levels? Which opportunities exist at present (e.g. linking the climate change, agriculture and food security agenda with the agriculture, nutrition and health agendas; etc.)?

8. CLIMATE CHANGE MITIGATION | What could be the negative impacts/threats of specific climate change mitigation measures on food and nutrition security (e.g. land-based mitigation measures to the detriment of smallholder farmers)? How can these be avoided / minimised?

9. KNOWLEDGE GAPS AND MONITORING | What are the major gaps in expertise in relation to the multiple links between climate change, hunger and undernutrition? Which tools are recommended to assess and monitor these links?

The main aspects that the report should emphasize include:

1. YOUNG CHILDREN AND WOMEN | Priority adaptation actions should give priority to addressing the needs of young children and women, since they are the most vulnerable to both hunger and undernutrition and climate change impacts and threats. In addition, areas with the highest levels of undernutrition should be targeted as a priority, in line with existing initiatives to reduce hunger and undernutrition.

2. A MULTI-SECTORAL APPROACH | Building resilience and tackling food and nutrition insecurity in a changing climate requires a well-coordinated, multi-sectoral, 'nutrition-sensitive' approach that involves: direct nutrition-specific interventions, food assistance and safety nets; climate-resilient agriculture and livelihoods interventions; social protection schemes; maternal and child health care, water supply, hygiene and sanitation; education for women and girls and empowerment and disaster risk management, within in the broader of context of sustainable development.

3. COMMUNITY-BASED and VERTICAL INTEGRATION | Community-based, bottom-up approaches (e.g. community-based disaster risk management and adaptation) should be promoted in complementarity with more 'central' risk management, adaptation, food and nutrition security initiatives.

4. ADDRESSING UNDERLYING CAUSES OF VULNERABILITIES TO CLIMATE CHANGE AND 'ADAPTATION DEFICITS' | Even before the potentially disastrous effects of climate change, hunger and undernutrition are already enormous issues that are not yet properly addressed in many communities and households across the world. Undernutrition currently affects around 200 million children worldwide and is linked to around 3.5 million child and maternal deaths each year. Hungry and undernourished people are less able to cope with and adjust to climate-related risks and climate change. Addressing today's hunger and undernutrition and their root causes, enabling an adequate institutional environment and building institutional capacities are important measures that should be scaled up rapidly. Adaptation and mitigation activities should seek to strengthen and complement ongoing efforts to address hunger and undernutrition.

We would like to take this opportunity to wish you all the best for this important study.

Yours,
Philippe Crahay, *Food and nutrition security, disaster risk management and climate change project officer*
Rebecca Brown, *Senior nutrition advisor*
Samuel Hauenstein Swan, *Senior policy advisor*
Action Contre la Faim (ACF) | Action Against Hunger

120. Cristina Tirado - von der Pahlen, Institute of Public Health, Oakland, CA

Dear FSN Moderator

The Center for Public Health and Climate Change at the Public Health Institute congratulates the High Level Panel of Experts on Food Security and Nutrition (HLPE) for addressing this critical issue and for organization of this public consultation on the scope of the HLPE Study on Climate Change.

We welcome the reference to the UN SCN definition of "Undernutrition" as caused by inadequate dietary intake and disease, which stem from insufficient food, poor maternal and child care practices and inadequate access to clean drinking water, safe sanitation and health - all of which are directly affected by climate change.

While the proposed scope of the study includes in section 1) the assessment of direct and indirect impact of climate change on nutrition, sections 3) on adaptation, 4) mitigation and 5) recommendations for policies and actions do not provide the necessary provisions to address the key determinants nutrition security.

Nutrition security exists when food security is combined with a sanitary environment, adequate health services, proper maternal and child care and feeding practices. Adequate consideration of these issues is essential to establishing the appropriate framework for i) the analysis of the impacts of climate change on nutrition security and ii) the development of nutrition sensitive climate change adaptation and mitigation strategies that can be integrated in climate-resilient sustainable development plans.

To address these aspects in a comprehensive way requires a major effort to promote intersectoral collaboration for appropriate analysis and development of coherent and coordinated nutrition-aware institutional and policy frameworks at local, national and international levels.

The recommendations for policies and actions should consider the use of a human rights' approach when addressing the challenges of climate change to food and nutrition security. Human rights can be only realized by protecting the environment, biodiversity and ecosystem services which essential to the right to food and all other human rights.

Ideally, the study should facilitate the provision of data and information for the attribution of current and future climate change and variability to under-nutrition burdens under different scenarios. Attribution of under nutrition to climate change is complex since there under nutrition is also a result of socio-economic and development factors are there are many underling drivers of food and nutrition insecurity, which are also affected by climate change. Research and information on the linkages between climate change and variability, consequent food and water insecurity, health outcomes, nutrition insecurity and the corresponding underlying drivers is necessary.

We would like to refer to the following publications that address climate change and nutrition security in more detail:

Tirado M.C., Cohen M.J., Aberman N.L., Meerman, J. and B. Thompson. 2010. Addressing the Challenges of Climate Change and Biofuel Production on Food and Nutrition Security. Journal of Food Research International 43 (2010) 1729–1744.

UN Standing Committee of Nutrition, 2010. Climate Change and Nutrition Security: UN Standing Committee of Nutrition Message to the UNFCCC negotiators.

Cohen, M, Tirado, MC, N. L. Aberman, B. Thompson. 2008. Impact of climate change and bioenergy on nutrition. FAO High Level Conference on Food Security and the Challenges of Climate Change and Bioenergy.

The Center for Public Health and Climate Change at the Public Health Institute is currently dedicating efforts to analyze and identify the best interventions to address health and nutrition under a changing climate and we would be glad to support the work of the HLPE addressing nutrition under the Climate Change Study.

Thank you for your consideration

Cristina Tirado - von der Pahlen, DVM, MS, PhD
Director, Center for Public Health and Climate Change
Institute of Public Health, Oakland, CA
http://www.climatehealthconnect.org/

121. Jerome Bossuet, International Crops Research Institute for Semi-Arid Tropics (ICRISAT), India

Dear Moderator,

Thank you for this important topic.
First, I would like to raise a point about your introduction "Food and nutrition insecurity and climate change are, more than ever, the two major global challenges humanity is facing."
Other pressing challenges need to be addressed such as the water crisis, part of the food crisis equation but not only. When a water-starved country like Jordan is investing in Deep Aquifer drilling, a non-sustainable solution, it reflects already that this country is over water-debt.
Climate change is at the top list of current international aid agenda and policies. Of course, climate change is happening and we need to work on mitigation and adaptation policies. The issue is that everybody / meaning nobody is guilty about climate change.
I attended 2009 World Water Forum and I was amazed to see some high level policy-makers using climate change as an explanation for drastic change of river flows, which was in fact explained by a huge dam project. By labeling the problem as climate change-related, it becomes an international issue which leads to no action.

Otherwise, yes it is very interesting initiative to assess the relationships between climate change and the impacts on food / nutrition security. But what time scope are you using for climate change scenarios? 2030? 2050? 2100?

The uncertainties part c is important to be included: in fact it may be appropriate to start the review by this point, as all your impact evaluation should reflect the uncertainties of the climate change sciences predictions (such as rainfall patterns, …)

About part 3a Observed adaptation for food security and nutrition, the International Crops Research Institute for Semi-Arid Tropics (ICRISAT, http://www.icrisat.org/) has a very interesting Climate Change Adaptation project in Eastern Africa : the objective is to draw adaptation strategies for pilot rural communities. Based on 2030 climate scenarios, ICRISAT find a location/community in neighboring region which currently faces the predicted climate. Some innovations, such as drought tolerant crops or water/soil conservation technics are tested by farmers. A dialogue is also initiated between the two communities. We have a lot to learn from communities facing each year important climate change / disaster such as in Sub-Saharan Africa.

Otherwise, the ongoing CGIAR Research Program on Climate Change, Agriculture and Food Security will certainly deliver some interesting insights of the impact of climate change on food security. They have released a recent study on mapping future climate risks hot spots, matching with regions already food insecure

(link to the study: http://ccafs.cgiar.org/sites/default/files/assets/docs/ccafs-ilri-vulnerability_release_final_en-3jun11.pdf).

With kind regards,
Jerome Bossuet

122. Muhammad Shoaib Ahmedani, King Saud University, Saudi Arabia.

Dear Moderator,

I have perused the topic as well as responses to this significant issue. As discussed above, there is no second opinion that approximately all parts of the world are facing consequences of serious climatic changes. Different organizations of the United Nation have already taken up this issue some decades ago and conducted researches the impact of climate changes on biodiversity, fertility, soil moisture, alteration in duration of crop maturity, natural habitats, cropping pattern, crop intensity, mutations, genetic changes and abiotic health of the nature. The developed countries have also taken up many initiatives to counter this problem though they have emphasized more on their food security as compared to reversing the adverse changes which have occurred to the climate. Introduction of GMOs has temporarily solved this issue but its scope is limited primarily to the developed countries who are direct and indirect beneficiaries. But there is a majority of scientists who believes that the GMOs are not only harmful but also risky. Because there is no absolute surety that the GMOs are stable as compared to the indigenous gene pool. So the developed countries are also vulnerable to risk though they are food surplus at present.
I therefore think that the world must adopt following strategies to respond to climatic changes which are exerting detrimental effects on food security.

1. First of all the countries must initiate intensive and extensive research to identify the potential changes occurred to their climate in different parts of their respective countries.
2. Secondly, a deep research is required to probe the significant effects caused by the climatic changes to flora and fauna particularly the agricultural productivity in each country.
3. Each country under the umbrella of UN is required to correlate the climatic changes to the industrial and socio-economical activities taking place in those countries as well as the countries surrounding.
4. In case a country identifies the factors responsible for regional or global climatic changes, then they must prepare strategic plan to combat those issues. For example all countries of the world decided to stop production and use of methyl bromide alternative to protect further deterioration and depletion of ozone layer.
5. Finally, each country should try to benefit from the changed climate i.e. changing cropping pattern, crop varieties. For example if there is decreased rain fall in some parts of the world, then use of drought resistant varieties may resolve this issue. Similarly, if there is increase in salinity of underground water, then salt resistant varieties may address this issue.

I am sure by keeping the above mentioned points in view, we may successful respond to climatic changes and ensure food security. But this approach can not succeed if taken at individual leave. Throwing industrial waste of my country across the border will not make the world safe. Such cosmetic changes can not secure our future. I suggest each country must spare at least 5% of its annual budget to redress the harm it has made to environment in form of cutting forests, throwing industrial wastes in the streams, rivers and water channel etc.

Best Regards,
Dr. Muhammad Shoaib Ahmedani,

Assistant Professor,
Deanship of Quality and Development,
King Saud University, Saudi Arabia.

123. Richie Ahuja from Environmental Defense Fund, India

1B (the direct and indirect impacts of climate change on nutrition) ends with a call for identifying, validating and costing possible interventions to reduce the impact of climate change on nutrition. 1A has no similar provision, that is, no call for possible interventions to reduce the impact of climate change on food security. Should there not be such a piece?

On 3C – Are there distinct roles for the public and private sector (considering the title of this section is "The role for public and private sectors in adaptation")? This frames it all in terms of a collaboration. Will the panel discuss /address the types of incentives that can be brought into play to have a larger role for the private sector?

Under 'Recommendations for policies and actions"

- it will be useful to have a clear mandate that calls enhancing research and technology investments geared to improve farm production and farm economics for the smallholder farmer
- There is a mention of having an international working group to regularly monitor world food situation and trigger action to prevent excessive price volatility. This is the first time its mentioned in the document. Would it not be better to have this mentioned within the body as well?

Best,
Richie Ahuja
Environmental Defense Fund
Regional Director, Asia

124. Kent Nnadozie from the Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture, FAO, Italy

The International Treaty on Plant Genetic Resources for Food and Agriculture was negotiated and adopted as a direct international response to the global challenges related to the loss of crop diversity, which endangers agricultural productivity, food security and our ability to adapt to the pace of environmental change. The Treaty's core objectives address conservation and sustainable use of crop diversity globally, and this helps strengthens farmer's capacity to adapt to a changing climate and to feed the growing world population. The Treaty establishes a "Multilateral System of Access and Benefit-sharing", through which Contracting Parties of the Treaty create a global genepool of the world's most important food crops. This Multilateral System is implemented through the 'Standard Material Transfer Agreements' (SMTAs). The Treaty is of major relevance in addressing current global challenges, such as adapting and mitigating the adverse effects of climate change to agriculture and food production by facilitating the exchange of material that will be used to breed varieties which resist altered conditions such as drought.

The Treaty also recognizes farmers' rights. It also envisages promote the development and transfer of appropriate technologies with a view to improving the sustainable use of plant genetic resources for food and agriculture. Access to and transfer of technology is also stipulated as part of the benefits to be shared for the utilization of PGRFA.

The Treaty also provides for a Funding Strategy, including a Benefit-sharing Fund which supports projects and programmes for the benefit of farmers in developing and least developed countries. The Governing Body of the International Treaty, created the multilateral Fund, to which commercial benefits derived from utilization of PGRFA are paid into, supported by member governments and other donors. The Fund invests in high impact projects aimed at keeping farmers ahead of the climate change challenge and food secure. In essence, it addresses adaptation to climate change, food security and preservation of on-farm biodiversity, by supporting smallholder farmers and their communities.

The Fund of the Treaty, which is the first global benefit-sharing fund for genetic resources, has successfully raised about 14.3 million USD over the past 12 months. The Funds operation is facilitated through Calls for Proposals. The primary beneficiaries of the Calls are vulnerable smallholder farmers. Investments are channeled to projects meeting the criteria established by the Treaty's Governing Body. Several projects have already been supported through the Fund in the first project cycle in 2009 and they all address food security, conservation and sustainable use of plant genetic resources. The current project cycle of the Benefit-sharing Fund, is expected to disburse up to 10 million USD. The call for proposals was launched in June 2010 and selected projects will be funded by the end of 2011. This cycle focuses on supporting smallholder farmers in developing countries to stay ahead of the climate change by adapting their food crops to climatic impact. This main focus and scope of the projects responds to the widespread agreement that one of the areas of greatest concern currently confronting agriculture is how to ensure sustainable food security in the face of climate change.

Kent Nnadozie
Senior Treaty Officer
Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture
Food and Agriculture Organisation (FAO)

125. Dale Jiajun Wen, International Forum on Globalization, USA & Chinese Academy of Social Sciences, China

Dear Coordinator,

Thank you for the opportunity to provide comments on the proposed scope of the HLPE study on climate change. Answer to your specific questions:

1) Do you think the scope in appropriate?

Yes

2) Have important elements been omitted or should any of the elements outlined be left out?

The overall coverage is broad and good. There may be value to include or further highlight following areas:

- Interactions, including both synergies and trade offs between food security, adaptation and mitigation needs to addressed. For example, agroecological approaches to enrich soil organic matters and reduce usage of nitrogen fertilizers can improve crop resilience to droughts and floods, while reducing agricultural carbon emissions at the same time. On

the other hand, switching to biofuel (supposedly a mitigation measure) can drive and is driving land grab, which is threatening food security of many poor countries.

- Demand side management and lifestyle change. Much focus has been put to increase yields to address food insecurity, which is certainly important, but this is only one side of the coin. Currently, we have more than one billion people over-weight or obese while 800 million to one billion people under-nourished and hungry. This is clear manifestation that supply is not the only issue. The over-consumption(especially meat consumption, whose production is rather carbon intensive) by the global consuming class (including the majority of northern population and a growing number of people from emerging economies) is also responsible for rising rates of heart diseases, diabetes etc, which places a huge burden on health care system. Thus for the global consuming class, reduce meat over-consumption can bring multiple benefits: improve public health, reduce agricultural emissions, leave more food for the poor or leave more land to nature. Such "triple win" approach should be part of a more integrated food system. For the most vulnerable groups who are hungry, a right to food approach should help to improve their access.
- Rural urban balance and integration. Many developing countries are going through the process of industrialization and urbanization, which may also mean that they are rapidly losing arable land to other usage sand agriculture is increasingly facing unequal competition for water resources with industry. This can exacerbate the negative impact of climate change on agriculture, which may in turn undermine the short term gain of industrialization and urbanization, especially as the urban poor are quite vulnerable to food insecurity. Long term sustainability of agriculture and food security should be taken into account to design climate resilient and climate smart urbanization strategies.
- Water related issues (droughts, floods, pollution, etc.) are critical for agriculture. Precipitation change, the consequent impact on agriculture, and adaptation measures specific to water should be part of the analysis.
- The most vulnerable regions and countries should be highlighted, and ideally, better consulted within the process. This can be built on the basis of existing works which have already identified the risks for food insecurity due to climate change. For example, in Cancun, WFP and UK Met Office Hadley Centre released a global map linking climate change and food insecurity, which includes a preliminary results of a hunger and climate vulnerability index for each country.

3) In your opinion, what would be the main aspects that the report should emphasise?

The report should emphasise an integrated approach, with adaption as the key, as climate change is almost happening and is negatively impacting agriculture. Special attention should be paid to small farmers: they feed more than 60% of the world population, yet they are under-served by the agri-tech and agri-business establishment. Following questions should be specifically addressed: what kind of the challenges small farmers face, what kind of technologies are appropriate for their conditions, how to make technologies accessible for them, etc.

The recommendations for policies and actions are crucial. They should come after the study and emerge from the investigation instead of being precluded, as suggested by many other commentators.

Regards,

Dr. Dale Jiajun Wen
International Forum on Globalization, USA
Environment and development research center, Chinese Academy of Social Sciences, China

126. Michael B. Krawinkel, Justus-Liebig-University, Germany

Dear colleagues,
sorry for being late with my comments to the discussion of topics regarding CC and Nutrition Security.

In addition to mere food security considerations focussing on agriculture and postharvest management I suggest to also focus on CC-related effects on nutrition security, i.e. care capacity and health.

CC affects care capacities in different ways:
1st, as food production becomes more expensive in terms of labour, irrigation, time for fetching water a.o. the capacity for food preparation, child care and care for sick and older members of the household and the community is getting reduced; this leaves dependant family members unattended with subsequently increasing risks of ill-health, disease complications and undernutrition, e.g. mothers hav less time for infant feeding.
2nd, as farming expenses go up less money is spent for sending children to school and other investments in their future; therefore, a need for more farm- and non-farm income arises which again reduces the care capacity of the household.
3rd, in most places women are more affected by the increasing workload enhancing gender-related problems and conflicts and causing suffering of women and girls.

CC also affects health in a number of ways:
1st, there is a change of disease pattern;
2nd, less water is available for hygiene;
3rd, physical strength is reduced when drinking water is getting scarce and the risk of dehydration caused by diarrhoeal diseases increases;
4th, ill-health reduces the working capacities of farmers and farm labourers;
5th, dust over dry land is causing respiratory diseases.

This list is not meant to be complete but it may indicate dimensions of CC-effects on nutrition security besides imediate food production and food security.

Regards,

Michael Krawinkel

Prof. Michael B. Krawinkel, MD
Institute of Nutritional Sciences
Justus-Liebig-University
Germany

127. UN System Standing Committee on Nutrition, Switzerland

Dear Moderator,

We welcome and appreciate the opportunity to comment on this important study conducted by the HLPE on Climate Change and Food Security. The UNSCN has been actively involved in promoting the debate and strengthening the participation of nutrition in ongoing and future climate change discussions. In 2009, a UNSCN statement was published for COP15 on the "Implications of Climate Change on Nutrition". This was then followed by the "SCN News 38 on Climate Change - Food and Nutrition Security Implications", a peer reviewed publication which examined climate change and nutrition across a range of different sectors, using an underlying

multisectoral perspective. The issue was also addressed in the UNSCN 6th Report on the World Nutrition Situation. In 2010, an ad hoc online electronic group on Nutrition and Climate Change was created with the purpose of producing a document to be shared at the COP16. This led to the publication of the UNSCN Policy brief on Climate Change and Nutrition. The Nutrition & Climate Change (NutCC) e-group has continued to grow, now consisting of more than 180 members from 51 different countries, and input from some of the members has been included in this document.

The current renewed international focus on food and nutrition security presents an unprecedented opportunity for coordinated and coherent action. Proven solutions are available and nations want to act on this knowledge. Investments in nutrition yield immediate returns. They save lives, enable children - and their mothers – to have a better future, contribute to livelihoods, reduce poverty and contribute to the development of nations. An exceptionally large group of nutrition stakeholders are joining hands and are aiming to build bridges between different sectors and constituencies. The food and nutrition and climate change communities have to come together now; there will not be a second chance. Initiatives are increasingly taking place at all levels - country, regional and global - mobilizing the health, food security and social protection constituencies. If adequately bridged with the climate change community and led towards convergence, nutrition will be improved in a sustainable way. The focus should be on achieving human development that is universal, equitable and rights-based.

Please find below a compilation of comments provided by members of the UNSCN (Action contre la Faim, Institute of Public Health), and the Nutrition and Climate Change e-group members.

General comments

Although not mentioned explicitly, the overall outline of the study seems to focus on low and middle income countries (LMIC) as opposed to addressing the topic from a global perspective. A global approach to the problem of climate change and food/nutrition security would be needed taking into account its multi-faceted and interlinked nature. The impact of climate change varies depending on countries and even within countries due to growing inequity: as a result equitable adaptation and mitigation strategies are required.

Furthermore, it would be important to better highlight the social dimension of the issue throughout the study (including in the assessment stage) and that a human rights approach is used.

A broad multi-sectoral, nutrition-sensitive approach is needed which mainly involves: climate resilient agriculture and rural development, direct nutrition-specific interventions, food assistance and safety nets; health and social protection schemes; risk reduction and management plans; water supply, hygiene and sanitation; education for women and girls, all this within the broader context of sustainable development.

Specific comments

The assessment of the impacts of climate change on food and nutrition security can be elaborated upon. It would be beneficial to include a stocktaking and mapping exercise in the initial stage of the study (who is doing what where?) and regularly update this. This will lead to better identification of opportunities for collaboration between partners (for example for research and technological development) and identification of knowledge gaps.

The sections on adaptation, mitigation and recommendations for policies and actions do not address the key determinants of nutrition security. Firstly an appropriate framework for the

analysis of the impacts of climate change on nutrition security needs to be established. Secondly, nutrition-sensitive climate change adaptation and mitigation strategies need to be developed which must be integrated in climate-resilient sustainable development plans.

The HLPE study should provide data and information for the attribution of current and future climate change and variability to undernutrition under different scenarios.

When identifying vulnerable populations it is crucial to distinguish between current and potential vulnerable regions and to be able to anticipate impacts on populations. Perhaps through a system of indicators this could be better addressed. Healthwise, the ability of human beings to adapt to extreme weather conditions (high temperatures, low relative humidity) and the impact on the body's nutrient requirements needs to be further studied and eventually changes in norms/guidelines could be necessary.

Women are still the primary care givers of children; therefore impact of climate change on women's time and physical activities and its effect on household care practices needs to be studied.

The proposed scope of the study seems to primarily focus on food and nutrition insecure farming households in rural areas, whereas it would be essential to also take into account food insecure populations in urban areas, landless populations in rural areas, nomadic groups, immigrants and refugees etc. Furthermore, the specific impacts of climate change on undernutrition could be emphasized in the report; these include the increased prevalence of wasting and stunting, the effects of climate change on dietary diversity and on maternal and child care and feeding practices, and the effects on the interlink ages between child health status, diseases and undernutrition. The study should also reflect the fact that even before the effects of climate change are measurable, the underlying causes of child undernutrition should be urgently addressed. It would be beneficial if focus was also placed on formulating nutritional guidelines for developed countries to help mitigate climate change impacts. Reducing excess waste, promoting urban agriculture and fair-trade products, consuming more fruits/vegetables and less meat/fish/dairy products and improving the media's portrayal of food consumption could be ways forward. It should also be noted that climate change affects food quality (e.g. concentration of nutrients in crops, effect of high temperatures and water stress on growth and accumulation of dry matter) and nutrient intake.

The adaptation strategy and its cost-benefit analysis appear to be agriculture oriented. Other 'non-agricultural' adaptation measures in conjunction with the agricultural ones mentioned would be crucial for tackling the problem effectively. Additionally, agricultural and non-agricultural risk management and adaptation actions need to be nutrition-sensitive.

Concerning the climate change mitigation strategies, it should be noted that they do not always lead to food and nutrition security. Again we want to emphasize that the social consequences of adaptation and mitigation need to be better studied in a world where inequity is rising.

It is also important to address the knowledge gaps concerning the links between climate change, hunger and undernutrition. Innovative and action-oriented research on the mechanisms between climate change, food and water security, health, nutrition security and the underlying drivers is necessary.

As a member of the CFS Advisory group, the UNSCN would like to congratulate the HLPE for undertaking this study and hopes to be invited to further contribute to this process and be part of continuing efforts to improve nutrition security in a climate changing world.

Sincerely,

The UNSCN Secretariat

c/o World Health Organization
Switzerland
Website: www.unscn.org

128. Représentation Permanente de la France auprès de l'OAA / FAO, Italy

[Original in French.]

La feuille de route proposée est assez complète et intéressante. Elle appelle les remarques suivantes de la France:

- **Champ de recherche** : Les interactions entre changement climatique et sécurité alimentaire ne se limitent pas à la seule question de la production agricole mais recouvrent également les questions d'emploi, de revenu, de nutrition, de santé, de stabilité et de durabilité environnementale. Dès lors, une concertation intersectorielle s'impose.

  Les points 1a et 1b pourraient être fusionnés (la question de la nutrition est l'une des composantes de la sécurité alimentaire).

  Le point 3 b analyse coût/ bénéfice pour l'adaptation demande à être explicité davantage, on ne voit pas bien ce qu'on attend par coût/bénéfice (économique? par rapport à la SA ? Pourquoi cette distinction entre acteurs ?)

- **Eléments omis** : Le HLPE pourrait également émettre une vision critique de la coordination des instances internationales et de la cohérence de leurs travaux et positionnements en matière de changement climatique et sécurité alimentaire. Le Secrétariat du CSA devrait veiller à tenir informées les instances internationales traitant du changement climatique de la teneur de ses travaux et de ses propositions.

- **Principaux aspects à souligner** :
  - il est attendu du rapport de traiter des questions d'adaptation et d'atténuation sous l'angle de la sécurité alimentaire. Ceci n'apparait pas assez clairement notamment dans la partie 4 « climate change mitigation » où dans les points a, b, et c le champ d'étude est très large, sans focus particulier sur la question de la sécurité alimentaire (« quelles sont parmi les mesures recensées celles qui sont les plus appropriées pour garantir la sécurité alimentaire ? Quels indicateurs pour évaluer cette question lors de la définition des politiques appropriées ?). Le point d) relatif aux objectifs multidimensionnels de l'atténuation, pourrait être le premier point, de cadrage, de cette partie.
  - concernant les voies d'adaptation proposées pour les systèmes agricoles, les chaînes alimentaires et leur environnement économique, il conviendrait de porter une attention particulière aux outils institutionnels, économiques, financiers, de recherche et développement, et d'aide à la décision permettant l'adaptation des systèmes.
  - la question de la coordination des instances internationales et de la cohérence de leurs travaux et positionnements en matière de changement climatique et sécurité alimentaire

- formuler des recommandations sur la manière de mieux articuler les exercices stratégiques nationaux en matière de changement climatique (PANA, NAMA), de développement rural et de sécurité alimentaire.

[English translation]

The roadmap proposed is very complete and interesting. It has given rise to the following observations from France:

- **Research Area:** The interactions between climate change and food security are not limited only to the question of agricultural production, but also cover questions of employment, income, nutrition, health, stability and environmental sustainability. Therefore, a cross-sector dialogue is essential.

  Points 1a and 1b could be merged (the nutrition issue is one of the factors in food security).

  Point 3b analyzing cost/benefit for adaptation needs further development. It is not clear what kind of cost/benefit to expect (economic? in comparison to FS? Why this distinction between those involved?)

- **Missing elements:** HPLE could equally express a critical vision of international authorities' coordination and the coherence of their work and positioning regarding climate change and food security. The CFS Secretariat should ensure to keep international authorities handling climate change informed of its work content and propositions.

- **Main aspects to be emphasized:**
  - It is expected that the report should deal with questions of adaptation and alleviation in terms of food security. This is not clear, especially in part 4 "climate change mitigation" where, in points a, b and c, the area of investigation is very wide, without a specific focus on food security (which are, among the identified actions, the most relevant for guaranteeing food security? Which indicators assess this question once appropriate policies have been defined?) Point d) concerning the multidimensional objectives of attenuation could be the first point, the framing, of this part.
  - Concerning the forms of adaptation proposed for agricultural systems, food chains and their economic environment, it would be important to pay special attention to institutional, economic and financial instruments of research and development, and of decision making which will allow for systems to adapt.
  - The question of coordination of international authorities and the coherence of their work and positioning in terms of climate change and food security
  - Formulate the recommendations for the best way to articulate national strategic schemes in relation to climate change (PANA, NAMA), rural development and food security.

129. Olivia Muza, independent consultant, Zimbawe

Thank you for this interesting discussion and forum.
I want to emphasize the issue of disaggregating climate change impacts according to location for instance the differential impacts between the developed vs developing, rural vs urban, drought-prone vs flood-prone locations etc. By doing this we rafrain from generalising impacts. The

results are more helpful if each and every affected part's dilemma as a result of climate change impacts is clearly articulated.
Also the already existing challenges that affect farmers should be analyzed and show effectively and efficiently how they are going to complicate climate change affected people. Issues to do with gender should be clearly highlighted.
Mitigation and adaptation strategies should be relevant to the different identified groups.
Thank you

Olivia

130. Gerardo Paniagua, Farmersdialogue.org, Costa Rica

[Spanish original]

ALCANCE ADECUADO.
Miro que es buena la idea de regionalizar la problematica ,de esta forma igual podemos buscar y acortar el tiempo de respuesta ,
ASPECTOS OMITIDOS.
Pienso que se hace necesario crear un código de ética para todos y cada uno de los involucrados en el tema de alimentacion ,sean agricultores ,fabricantes de agroquimicos ,acarreadores de producto ,productores de semillas y miembros de los Gobiernos.
ASPECTOS A TOMAR EN CUENTA.
La posibilidad de distintos esenarios donde la alimentación y el ser humano se encuentren envueltos ,creando un ambiente positivo donde prevalezca la solidaridad y la alimentacion sea concreta como un derecho humano ,la posibilidad de pedir que en caso de guerras los campos de sembradios o producion de animales para carne y leche de igual forma se respeten.

Gerardo Paniagua R
Costa Rica
Agricultor

[English translation]

ADEQUATE SCOPE
I think it’s a good idea to take a regional approach when dealing with the problems: this way we can search and shorten the response time.
ASPECTS OMITTED
I think it is necessary to create a code of ethics for every one involved in the issue of food, whether they are farmers, producers of agrochemicals, product carriers, seed producers or members of Governments.

ISSUES TO BE CONSIDERED
The possibility of different scenarios where food and humans are involved, creating a positive environment where solidarity prevails and food is considered a human right. The possibility to ask that in case of war, the farmlands or land for livestock production for meat and milk is respected.

Gerardo Paniagua R
Costa Rica
Farmer