Towards a common understanding of Sustainable Food Systems?

**Collection of contributions received**

in collaboration with



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# Topic note

Dear Members,

The Sustainable Food Systems Programme (SFS Programme) of the UN One Planet network (10YFP) is currently developing a publication on key approaches, concepts and terms in relation to sustainable food systems.

While global awareness for the need to transition towards more sustainable food systems is growing, stakeholders use a diversity of language with regard to sustainable food systems and have differing views about what they are and how they can be achieved. However, a common understanding of the challenges to be addressed and the approaches to meet these challenges, is a crucial ingredient to bring about the multi-stakeholder collaboration required for the transformation of our food systems in line with the SDGs. Against this background, the publication aims to promote such a common understanding, by involving food system actors from all stakeholder groups in its development, from conception to drafting and final editing. To make it as inclusive as possible, we would like to invite you to share your inputs and views on the [**draft v1.0**](http://www.fao.org/fsnforum/sites/default/files/files/155_understanding-sustainable-food-systems/Draft_SFS_Glossary_v22NOV2018.pdf).

The SFS Programme is a global multi-stakeholder partnership with a network of currently more than 150 key food system actors worldwide. Promoting a holistic, system-based approach towards more integrated and inclusive policy-making, the Programme’s goal is to accelerate the shift towards sustainable food systems, through both normative as well as action-oriented work implemented by collaborative initiatives. The ambition of the publication is to become a reference document for anyone working towards more sustainable consumption and production patterns in the area of food and agriculture. It explores the Sustainable Food Systems Approach and a series of related key concepts and approaches, and contains a glossary with definitions of terms that are of relevance to sustainable food systems.

The current draft has been developed in collaboration with the SFS Programme’s Multi-stakeholder Advisory Committee. The goal of this consultation is to further open up the drafting phase to the entire SFS Programme network and beyond, to the widest possible set of stakeholders. All comments will be duly considered provided that they are in line with the scope of the publication and the SFS Programme’s basic texts.

We invite you to consider the following questions:

Does the draft adequately explain the principal components of a sustainable food systems approach (section 2.1.) and put the latter in relation to the approaches discussed in section 3.1.?

Are the key concepts in relation to sustainable food systems in section 2.2. well defined and described, including their importance for this publication?

Is the list of terms in chapter 4 complete, are any important terms missing (if yes, please submit together with the respective definitions) or do you think certain terms may be redundant?

For more information on the One Planet SFS Programme, please visit: [www.oneplanetnetwork.org/sustainable-food-system](http://www.oneplanetnetwork.org/sustainable-food-system)

We thank you for your valuable contribution and for helping us strengthen and promote a global common language and understanding of sustainable food systems.

Alwin Kopse
Deputy Assistant Director-General

Head International and Food Security Unit

Federal Office for Food and Agriculture FOAG, Switzerland

# Contributions received

## Md.Moshfaqur Rahman, Bangladesh

The limitation is no specific direction about operation. How you find gap is my question because- I work in operation level FAO is always the worst option to contact for anything about agriculture. Another thing market recovery it's never touch in DRAFT V1.0

After consumption if the consumer throw away & keep buying- how this is a concern?

I didn't get any specific operation/program to input in operation. Also agriculture needs investment- issing in third world. No plan for that.

## Vethaiya Balasubramanian, Freelance Consultant, India

Page 4:

'...and provide access to nutritious foods from smallholder producers must be at the heart of...'

The assumption that nutritious foods come only from smallholder farmers or producers is misleading. Can we change it like this:

 '...and provide access to nutritious foods from smallholder as well as large producers must be at the heart of...'

Thank you

## Dror Tamir, Hargol FoodTech, Israel

Shalom,

From reviewing the draft I must say I did not see any reference to insect protein as a viable alternative.

Insect protein is nature's most efficient protein source: Healthier for humans (better absorptions, support in children's growth, improvement in metabolism (sugar and cholesterol) and more sustainable considering water consumption, arable land required, feed conversion rate, Greenhouse gas emissions and zero waste farming.

The development of insect intensive farming is a key component in future sustainable food system.

Will be happy to share with you the experience we have in farming grasshoppers and their potential to feed the world.

Best regards,

Dror Tamir

Hargol FoodTech

## Kuruppacharil V. Peter, Kerala Agricultural University, India

Sustainable Food System is specific -ethnical, geographical, economic, and religious-and ecofriendly. The transformation of India from a food deficient country to a food exporting country is a sage of success of science and technology over low yielding traditional technologies where water and solar energy were in abundance. Despite higher availability of food, access to food is denied to 28-30% of India’s population (400 million people), more than the population of many developed countries in Europe and Asia. There are concerns on food production in view of shrinking space, water, energy and purchasing power due to unemployment. Climate change is affecting biodiversity. At present 12 crops sustain the food system and biodiversity of these crops-maize, wheat, rice, barley, millets, potato, tomato, capsicum, cole crops etc. are getting affected. The three series UNDERUTILIZED AND UNDEREXPLOITED FORTICULTURAL CROPS (<http://www.newindiapublishing/>); BIODIVERSITY OF HORTICULTURAL CROPS (<http://www.astralint.com/>) and FUTURE CROPS (<http://www.astralint.com/>) elaborate emerging new crops, dwindling biodiversity and possible crops of the future. The edited book ZERO HUNGER INDIA: POLICIES AND PERSPECTIVES published by Brillion Publishing New Delhi is compilation on the scientific and technological strength for a zero hunger India.

See the attachment: 8[. THE CHALLENGE OF HIDDEN HUNGER-MICRONUTRTIENT DEFICIENCIES - K.M. NAIR (1).pdf](http://www.fao.org/fsnforum/sites/default/files/discussions/contributions/8.%20THE%20CHALLENGE%20OF%20HIDDEN%20HUNGER-MICRONUTRTIENT%20DEFICIENCIES%20-%20K.M.%20NAIR%20%281%29.pdf)

## George Kent, Department of Political Science, University of Hawai'i, United States of America

In November 2018 the One Planet organization released a draft on the sustainability of food systems. It says, “A sustainable food system (SFS) is a food system that ensures food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition of future generations are not compromised (One Planet 2018).”

That sounds good, but some might read this as suggesting we already know how to ensure food security and nutrition for all, and the major challenge is find ways to find ways to keep it going over time. The reality is that we are far from solving the global hunger problem.

Every September a group of United Nations agencies release their annual report on food security in the world. According to the 2018 report:

For the third year in a row, there has been a rise in world hunger. The absolute number of undernourished people, i.e. those facing chronic food deprivation, has increased to nearly 821 million in 2017, from around 804 million in 2016. These are levels from almost a decade ago. (FAO, IFAD, UNICEF, WFP and WHO 1018)

The document acknowledged that, “Without increased efforts, there is a risk of falling far short of achieving the SDG target of hunger eradication by 2030 (FAO, IFAD, UNICEF, WFP and WHO 1018, iii). Sustainable Development Goal 2 is to achieve zero hunger in the world by 2030 (SDG 2 2018).

A risk? I am certain that the goal will not be achieved. There is no plan of action that would be likely to result in achievement of the goal, a pattern that has been repeated many times in the past (Kent 2011, 154-169). Why is there so much concern about sustainability? That preoccupation draws attention away from the more urgent issue of persistent and widespread hunger (Kent 2010). Why worry about the sustainability of food systems that don’t work very well?

Why discuss sustainability as if it was the primary goal, the apex, the goal to which other objectives should be subordinated? And why focus on “key approaches, concepts and terms?” when the real underlying question is, how should food systems be designed and improved? The core objective should be the improvement of people’s lives, especially poor people. Concerns about sustainability can be set aside while more serious work is done on designing the food system that is required to address the global hunger problem with serious diagnoses, commitments, and plans of action.

Surely much of the explanation for hunger’s breadth and persistence is related to the dominant economic system. By its nature, it produces inequality. Much of the apparent production of wealth is really about the steady transmission of the fruits of people's labor upwards through the socio-economic hierarchy. As we can see from the United Nations system’s annual reports on food security in the world and the flow of documents from the UN’s Committee on World Food Security, the system turns a blind eye to the political economy of hunger. That is not likely to be fixed if we are not willing to look at it.

References:

FAO, IFAD, UNICEF, WFP and WHO. 2018. The State of Food Security and Nutrition in the World 2018: Building Climate Resilience for Food Security and Nutrition. Rome: FAO. <http://www.fao.org/3/I9553EN/i9553en.pdf>

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SDG 2. 2018. Sustainable Development Goals. Goal 2: Zero Hunger. <https://www.un.org/sustainabledevelopment/hunger/>

## Dosse Sossouga, Amis des Etrangers au Togo (ADET), Togo

Congratulations for those who wrote this draft:

It will be better to add:

* With the demography growth, the SFS is crucial.
* Water biodiversity must be protected to avoid lack of fish d'or next generation.
* Countries reforms must give SDGs autonomy to municipalities to engage SFS to leave no one behind and create a SFS competition with awards to those with better initiatives.
* promote agro transformation industries with renewable energy promotion,
* As everyone is concerned, awareness raising to consumers is crucial. Introduce the SFS knowledges in school curriculum. Governments, academy, Civil Society with their responsibility(page 50)
* Good nutrition goes with good health, intelligence, good education, good well-being, good work, economy promotion(page 51)
* Good types depend on every country reality: e.g. Rice, maize, yams, casava...., animals, Fishes and all needed for the (sauce), fruits (page 53)
* For the interconnection policy-making(page 54) : Good reforms: vertical: from national to local and horizontal on the ground with social, economic and environmental development departments in a SDGs local center under the municipal committee.
* This SDGs center is for all literacy: data revolution, data collection, data conservation, initial local SDGs rapports as food literacy (p: 54)
* for market approaches it is important to develop transformational industries to promoter the SDG 12 by developing good repartition of these industries(p:54)
* Nutrition means good meals. What you est is a good quality for jour body (p:55)
* science food is artificial food (p:55)
* uncultivated food also is artificial(p58)
* Voluntary approaches: none(p:58)
* Food labelling: none(p58)
* Certification means that the agricultural products must be bio. (P:58)
* So for good nutrition you need to have good information. Because your good health depends on. (p58)

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

Dear FSN Forum Moderators,

Many thanks for this interesting discussion paper of the SFS Programme.

You asked for comments/remarks and I allow me to make some comments/questions/remarks to your Draft V1.0:

* What is the objective of the present paper (only a summary/report about the present situation or also to show some ways out of the present situation and to show challenges for the future, some alternatives etc.?
* The objective of the report should be clearly defined at the end of your introduction.
* Sustainable food systems (SFS) should include all the important elements of sustainability, such as Land Use (incl. Land Foot Prints; LFP), Plant and Animal Breeding, Plant and Animal Health; Alternatives to present ways of food production etc.;
* The availability of arable land decreased from about 0.38 (1970) to 0.24 (2000) and will decrease to about 0.15 ha per inhabitant in 2050 (FAO 2012; Smith 2018). These developments can be considered as the largest challenge for population, but I could not find this problem in your Draft. Therefore, a more efficient use of arable land (including Land Footprints) should be one of the most important topic, if we discuss about sustainability.
* Comments to Figure 1: Resource efficiency should be more specified: e.g. in soil, water, fuel, some minerals etc.; Food safety should be added under Food security and nutrition. Furthermore, I miss the significance of sciences (soil, plants, animals etc.) as important drivers of the Food Systems.
* p. 12 and other places: Food security should be replaced by food security and safety. Secure, but unsafe food (e.g. contaminated with mycotoxins, heavy metals, dioxins etc.) cannot be any solution for the future.
* Figure 2: Land footprint should be added into the Environmental Impacts. Animal and plants health are mentioned, but plant and animal breeding should be added under Environmental impacts. For my understanding, the plant breeding is one of the most important starting points (see added paper 4) of the whole food chain. Such new aspects should be also discussed in the following text.
* To 2.2.; you started your SFS Programme with Sustainable diets etc. From my view, this is a very conservative view. I would start with the fundamentals of the food chain, such as Plant and Animal Breeding and coming step by step to sustainable diets about nutrient flow, emissions, sustainability, reduction of losses etc.
* p. 29: Sustainable intensification should be defined. Later (p. 30), you mentioned specific agronomic techniques, which are associated with sustainable intensification, but I miss the plant breeding as the starting point of the food chain (see above and paper 4 of the added reprints).
* p. 39; Table 1: I miss the term „Food Safety“ in this Table, at least in the last column (Public health approaches)
* p. 41: Research and innovation: Only some general statements. I miss some specific examples along the food chain.
* P. 44: I am a little bit surprised about the definition of „agriculture“. There are some other (better) definitions like: „Agriculture is the science and production of plants and animals, including fresh water and marine species for food, fuel, fiber and medicine“.
* I come back to my initial question (see above): What is the objective of the present report/paper? On chapter 4 (p. 44 ff.), you defined many terms of the SFS. What is new or innovative in these definitions?
* p. 53: I miss the definitions of „Food safety“(may be below „Food security“) and „Land footprint“(LFP in addition to W-FP and C-FP). Ecological FP is possible, but L-FP is more specific concerning the limited resource land (see above).

Some minor comments:

* You used many abbreviations. (It is one of the typical disease of FAO people/FAO-reports). Therefore, it is hard to read and to understand the paper for people from outside (like me). Either you reduced the number of abbreviations or you introduced a list of abbreviations at the beginning or at the end of your discussion paper. I think that such a Draft and also the final document should be understandable for people from outside and should be the base for a lively discussion.
* For readers and comments from outside, the numbering of the lines would be extremely helpful.
* p. 56: „Sustainable consumption and production“? I think that we have to produce first, before we can consume
* Annex 1 is very impressive, but it is extremely hard to follow all connections?

Finally, I would like to summarize/characterize/define a sustainable food system as: „More safe food for more people with limited natural resources (such as land, water, fuel) and low emissions (e.g. CF). This statement should/could be the most important objective for global food security and nutrition.

In addition, I allow me tol add some more recent reprints from our group dealing with „Carbon Footprints of protein of animal origin“ (paper 1); Land use for food of animal origin“ (paper 2); “Resource inputs and outputs of food of animal origin as well alternatives to traditional food of animal origin (such as insects, lab grown meat, simulated food, single cell protein, changes of eating patterns, reduction of food losses“ (paper 3); Challenges for plant breeders from the view of animal nutrition“ (paper 4).

Best regards,

Gerhard Flachowsky

See the attachments: [AAB-61 17-36 (002).pdf](http://www.fao.org/fsnforum/sites/default/files/discussions/contributions/AAB-61%2017-36%20%28002%29.pdf) [agriculture-05-01252 Challenges for lant Breeders.pdf](http://www.fao.org/fsnforum/sites/default/files/discussions/contributions/agriculture-05-01252%20Challenges%20for%20lant%20Breeders.pdf) [animals-07-00025.pdf](http://www.fao.org/fsnforum/sites/default/files/discussions/contributions/animals-07-00025.pdf) [Carbon Footprints\_Animals.pdf](Carbon%20Footprints_Animals.pdf)

## S. Jeevananda Reddy, Telangana Academy of Sciences, India

Firstly, the entire document is built on theoretical path but real world practical path is utmost important. For this, it needs to look in to all aspects country-wise. Then only it will have some use. I said “some” is basically because multinational seed and fertilizer companies impose on the individual countries to monopolize business interests whether they fit in to the system or not. This exactly what is happening in India and the same may be true elsewhere. Also such foods including infant food is dumped into third world countries by Multinational Companies [MNCs] of the West where commercial agriculture is practiced. Officially Uttarkhand is an organic farming state. Government is giving chemical input kits “free” to create addiction and move away from organic farming. Different state governments are falling over each other in their haste to promote hybrid maize in the name of food security. Here governments are colluding with multinational seed companies. The fact is maize is not consumed as food in India.

Secondly, the entire document was built on the two words, namely “Sustainable” & “Resilient”. Under unsustainable system, resilient has no relevance. The draft V1.0 refers the resilient production system to the ability of a system to prevent disasters and crises as well as to anticipate, absorb, accommodate or recover from them in a timely, efficient and sustainable manner. Theoretically it looks to be sound but in practice it is rarely achieved. The sustainable issue automatically mosque the resilient under sustainable system. The sustainable food system [SFS] is a food system that ensures food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition of future generations and not compromised. Under polluted water this is rarely achieved. For example, in Hyderabad city, where I live, crops are grown using highly toxic polluted water of Musi River. This is common all around urban India.

In India, National Advisory Council (NAC) released a National Food Security Bill, 2013. In this there are two important clauses that needs mention in this context, namely – “Right to Food Security – Right to access of food security – 4. Every person shall have physical, economic and social access, at all times, either directly or by means of financial purchases, to quantitatively and qualitatively adequate, sufficient and safe food, which ensures an active and healthy life”; and “Rate for priority households – 24. The state government shall provide priority households whether rural or urban a minimum of 7 kg of food grains per person per month, at a price not exceeding Rs. 3 per kg for rice, Rs. 2 per kg for wheat and Rs. 1 per kg of millets at 2010-11 rates, which will not be revised upward for a minimum period of 10years from the date of notification of the Act”.

Governments after chemical inputs technology crops grown under heavy subsidy under irrigation were included in Public Distribution System [PDS] again under “subsidized scheme” and made people to addict to unhealthy diet based on rice & wheat that lead even poor people suffering from new diseases, hitherto were with the rich. This way the governments with step-motherly policies affected the area under millets that provides healthy diet, which could not compete with subsidized rice & wheat in market. Thus poor stopped eating healthy millet food as it costs more than several times to that of rice & wheat under PDS. In some states like Andhra Pradesh used subsidized rice scheme in PDS to gain political power and wealth. This affected the animal husbandry component of agriculture.

With this introduction, let us see the production issues [below references provide specific issues].

Sustainable development: There are umpteen numbers of definitions for sustainable development. Some are generalized and some are specific. Under generalized condition/ system: Sustainable development must meet the basic needs of people “today” without ruining the chances of “future” generation to do the same. However, in reality sustainable development is hindered by climate change & human interference in food system.

In general climate change is used as de-facto global warming. This has no meaning. This is clear from the definitions of climate change and global warming by IPCC [Inter-governmental Plan on Climate Change] and UNFCCC [United Nations Framework Convention on Climate Change]. Climate refers to all meteorological parameters, such as temperature, rainfall/snowfall, relative humidity, wind, solar radiation, etc.

For agriculture, in Warm Tropics moisture is the limiting factor where most of the developing countries are located; and growing season length is the limiting factor in middle-latitudes – withdrawal time and onset time of winter -- where developed countries are located. For developing appropriate sustainable agriculture systems, the most appropriate is the studies on agro-climate and agro-meteorology. The scientific institutes rarely bothered on such studies as the global warming studies provide unlimited funds to make time-pass research. UN agencies support this. This is seen from Paris 2015 Agreement.

When the global warming studies are in the birth stage, I carried out agro-climatic and agrometeorological studies for India, northern Australia, Mozambique, Ethiopia, Upper Volta [now Burkina Faso] and Senegal countries. All these I compiled in a book form [earlier they were published in Journals of international repute] (Reddy, 1993). Now the second edition is out from the publisher (2018) with the same title. Scientists from Pune University from India carried out the analysis for Maharashtra State in India in 2009; a student did Ph.D. from Pune University on Bhīma Basin in Maharashtra state earlier to this under my guidance. Such analysis provides the level of sustainability – drought risk. These are linked to local/regional rhythmic pattern in rainfall.

Droughts and floods are part of natural variability in precipitation and are modified by local conditions and method used to define them. Rao et al. (2013) presented elaborate study and presented an Atlas on Vulnerability of Indian Agriculture to Climate Change. The study has not really studied the climate change but used it as an adjective. This report presented a map of drought proneness. It shows except coastal Gujarat, all parts of India present less than 25%. In my work cited above [Reddy, 1993] they reach as high as 60% in the Western side of Western Ghats.

In agriculture sense, climate change relates to water availability from rainfall and snowfall; and destruction of production through floods and cyclonic activity – they are region specific. However, they are the major sources for water availability at local and regional level. Normal rains rarely work for sustainability of dams/reservoirs, tanks, etc. In the case of human interference, the major issues are the sharing of water and pollution – domestic, industrial and agricultural.

Sustainable development in the case of food: This relates to the security in food production and security in nutrition in addition to socio-economic security of farmers. Over different parts of the globe, food production systems are highly variable. The two main systems are irrigated and rain-fed agriculture systems. The irrigation system is divided into further in flow irrigation [surface] and lift [wells & bore-wells] (groundwater). Rain-fed agriculture system relates to in-situ rainfall and thus directly relate to drought proneness.

Current agriculture systems are corporate, cooperative and traditional. In developing countries around 2 to 5% of the populations are in agriculture sector. They follow the corporate/mechanized/commercial agriculture system. In developing countries around 60% of the populations are in agriculture sector. Here the farming system includes the animal husbandry and follow crops/cropping pattern. However, this is affected by high yielding seeds under chemical inputs. Inputs cost has gone up. Also, farm holdings have drastically come down with the growth of population, and thus agriculture became uneconomical. To overcome this problem cooperative agriculture was proposed.

Box 1 “Red Ecovide, Brazil” – this system was in use before 1960s where, I remember as child, that neighbouring village farmers bring sweet potato in bullock carts [they grow under well irrigation, where bulls are used to lift water from the well] and exchange them for grain. Now there is no such thing.

Cooperative agriculture system overcomes the problem of smaller farm holdings: Cooperatives though not new to India, in agriculture there are few isolated cases only. Anada Dairy Milk [White Revolution] cooperative was successful in Gujarat. Sugarcane/Sugar cooperative in Maharashtra also showed the success path. Israel government is implementing the cooperative agriculture with government’s assistance.

In 2001, the then Chief Minister of undivided Andhra Pradesh State, N. Chandrababu Naiudu released a White Paper on Agriculture and Vision 2020 on corporate agriculture. Also corporate agriculture was implemented in Kuppam with government money and planned to extend the same in different districts of undivided Andhra Pradesh [with around 10,000 acres each]. Kuppam experiment failed. This was an export oriented commercial crop—baby corn. Dr. YSR, as opposition leader, asked me to present a black paper on these. This was released in the Press Gallery of Assembly Hall on 15th February 2001. Majority of the print media reported this on 16th editions. One of the English daily reported with a heading “Cong advocates cooperative farming”. It states that the aim of the ruling party is to pave the way for corporate agriculture at the expense of lakhs of farmers and farm workers in the state. Apprehended that the proposed corporate agriculture, if allowed to take over the farm sector, would further widen the rich-poor gap and that the farmers would become coolies on their own lands. In this backdrop, the solution lay not in corporate agriculture, but in cooperative Agriculture/farming

When Dr. YSR became the Chief Minister in 2004, they announced that the government’s intension of introducing cooperative agriculture/farming. Unfortunately the advisor to the government, who was earlier associated with World Bank and Western MNCs, proposed corporate agriculture/farming under the disguise of cooperative agriculture/farming. The farmers rejected this. I exposed this by writing to the chief minister as well presenting in the press. The chief minister expressed willingness to review the proposal but unfortunately, he died in an accidental accident.

Fragmentation of holdings is one of the main causes of low agricultural productivity as a lot of time and labour is wasted in moving seeds, fertilizers, implements and cattle, etc. In 19770-71 the average size was 2.28 ha; this was 1.41 in 1990-91; and 1.08 in 2015-16. Cooperative farming system of agriculture is the only solution under the present volatile political and climate conditions to achieve near sustainable production at farmers’ level and thereby strengthen their economic conditions and as well nation’s economy. Here farmers come together and cultivate the land without disturbing the boundaries by better utilizing the natural resources available in an effective way. Also, plan and store and sell the products through cooperatives joining together. At present middlemen are profiting.

By including organic farming that includes components of traditional agriculture, namely animal husbandry, cropping system, crop rotation, etc. under cooperative agriculture system provide economic-food-nutrient security and as well provide employment, adulteration free milk. Organic agriculture is nothing but a traditional agriculture system wherein in the later fertilizer is farmyard manure/green manure and for the former fertilizer is compost – several types. With chemical input technology in 1950-60s with mono crop based farming killed the animal husbandry based farming and thus nutrition based food security. To overcome the non-availability of farmyard manure, techniques were devised to create compost – on farm and off-farm. Here progressive farmers’ innovation techniques can be incorporated. These issues are discussed in my book [Reddy, 2011] and the revised version is under printing.

Global Warming: So far none has established one to one relationship between anthropogenic greenhouse gases increase in the atmosphere and rise in global average temperature. Wide ranging predictions are seen in the literature using models that contributed huge quantity of CO2 through power consumption in running the computers.

Moving average technique is one such simple procedure that helps to separate trend from natural rhythmic variations. British Royal Society and US National Academy of Sciences brought out an overview “Climate Change: Evidence & causes” [24th February 2014]. The report includes a figure of annual march of global temperature anomaly along with 10-, 30- and 60-year moving average patterns using 1950 to 2010 data series. Here the moving average pattern showed the trend after eliminating 60 year rhythmic variation.

The fact is that the observed [adjusted-mutilated data series] global average temperature anomaly of 1880 to 2010 [using the procedure presented in WMO (1966)] presented a trend of 1.30 oC for 1880 to 2100. IPCC report fixed 1951 as the starting year of global warming and thus for 1951 to 2100 -- 150 years -- the raise in temperature is, [1.30/220] x 150 = 0.90 oC – if the data series are from 1850 to 2010, then it is [1.34/250] x 150 = 0.81 only. This trend is superposed by a natural cycle of 60-years wherein the Sine Curve varied between -0.3 oC and o +0.3 oC .

IPCC report state that more than half of the trend is due to greenhouse effect [global phenomenon] and less than half is due to non-greenhouse effect [local/regional phenomenon]. Greenhouse effect includes global warming caused by anthropogenic greenhouse gases and volcanic aerosols, etc. Even if we assume global warming component alone is contributing by 50%, then the global warming is 0.90 x .50 = 0.45 oC. USA temperature pattern [Raw and adjusted] showed a difference more than this. When we study jointly these, it shows global warming is practically negligible. However, annual and seasonal variations in temperature are far higher than 5.0 oC. Non-greenhouse effects are presented by changes in ecology, namely land use and land cover changes and are represented by urban-heat-island and rural-cold-island effects. They are not associated with anthropogenic greenhouse gases.

Indian scientific groups are showing the rise in annual temperature is around 0.5 oC. The minimum temperature pattern showed higher rise over maximum temperature. Also, this temperature rise was not corrected to non-greenhouse effect – clearly seen in minimum temperature. The rise may be hardly around 0.2 oC only. This has no significance over the high year to year variabilities. Same is the case with USA temperature [U.S. Climate Special Report 2017].

State of Water Infrastructure in India: Presented at a Panel discussion session of AICE’18: Total Water Solutions, of American Water Works Association Conference on 16-17th November 2018 in Hyderabad.

India has around 18% of the world’s population, but has only 4.6% of the world’s water resources with 2.3% of the world’s land area. Though in terms of geographical area Chine is around three times to India, population and area under irrigation are more or less the same. The natural input to any surface water system is precipitation and snow melt which are highly variable with climate change. Also Human interference in terms of pollution and water availability estimates and management play critical role in the quantity and quality of water available in both space and time. In general: India uses around 25% of the world’s groundwater. Out of the total 5723 groundwater blocks in India, more than 30% are already in the danger zone due to overexploitation. This may go up to 60% by 2025.

In India, in 1960-61, around 30% of the net irrigated area was under wells & bore-wells. This has gone up to around 51% in 1999-00. In undivided AP level, they were 11% and 43%. In addition, wells & bore-wells are the main sources of drinking water in rural India. However, with indiscriminate pumping of groundwater, per pump irrigated area has drastically come down. The River Sarayu that passes through Bihar & UP reduced the width from 1.5 km to 30-40 meters and polluted and thus groundwater depleted and thousands of hand pumps dried.

Immediately after the Independence, the First Prime Minister, Late Pundit Jawaharlal Nehru gave importance to irrigation sector wherein he considered “Dams are the modern Temples”. Yet around 60% of the cultivated area is still at the mercy of “Rain God”. Irrigation Projects have been moving at snails speed as in the 7th & 8th 5-Year plan periods Watershed Development Programme was given top priority as this helped the party cadre to mint money. Narmada Project is a classical example, which took several decades to complete the project. However, watershed technology failed in undivided Andhra Pradesh, Gujarat, Maharashtra, Karnataka, etc.

Polavaram multi-purpose-cost effective project was turned into cost-ineffective. This was cleared by the Justice Bachawat Tribunal on all aspects in 1981. Until 2004 nothing has happened. In 2005 Environmental Clearance was obtained. The file on getting the national project status, Just before going to cabinet meet in 2009 Central Water Commission put a break by asking the state to modify the project plan for 50 lakh Cusecs a fictitious figure of maximum flood instead of 38.2 lakh Cusecs.

This raised the cost from Rs. 10,000 crores to Rs. 16,000 crores. While this is going on, the state government completed 1st phase of Rehabilitation and Resettlement, excavation of right and left canals. Just at that time the then Chief Minister was killed. After the new government was formed in 2014, the cost has gone up to Rs. 60,000 crores – few days back central water resources minister raised this to Rs. 80,000 crores. In 2015 with three failures, by lifting water through pumps and putting into right canal and claimed it as inter-linking of rivers instead of completing the Polavaram project, that would have provided water through gravity.

In Telangana state, by completing the pending irrigation projects on war-footing the cost of rural-drinking water scheme would have comedown drastically. Also successive governments have been just watching the destruction and polluting the local water resources in and around Hyderabad including the two drinking water reservoirs wherein water is available through gravity. Groundwater is contaminated with nitrates, sulphates and poisonous chemicals.

One-thirds of the Telangana state’s population lives in Hyderabad with huge infrastructure, establishments and industries. At huge cost infrastructure was created to bring water to Hyderabad from River Manjeera, River Krishna and River Godavari but failed to stop huge losses of around 55% of which 60% through pilferages and 40% through leakages. Large population drink purified water.

Around 75% of the water turns into sewage and around 20% is passed through STPs and finally flows in to Musi and again turns into sewage. In the last two decades successive governments planned to convert Musi into Sabarmati, Narmada water flushes the pollution in to the Sea but for Musi proper planning is required.

Industries use “Zero Discharge” to overcome pollution control board’s action. CETPs have no proper technology to treat industrial effluents and thus effluents are diluted with sewage at 50:50 ratios and with some treatment dump into Musi River through Amberpet STP. Rainwater also turns into wastewater with sewage and effluents freely flowing.

The core ailments for these are: they go by theoretical path instead of practical path; under poor ethics and poor governance. Niti Aayog brought out a composite water management index relating to augmentation-restoration & management of water. In the case of urban water management Chinese brought out a “Sponge City” concept [infiltrate, detention, store, clean, utilize, and discharge]. They are theoretically sound but they fail practically in India under climate change and pollution conditions.

Whatever may be the system of agriculture, poor quality of surface and ground water is affecting the quality of food produced. People of Hyderabad eat food produced using polluted water. This is affecting health of people and the money spent on health care is increasing -- Stan Cox’s “Sick Planet: Food and health” was presented the global condition of health care and pollution [I contributed for the pollution part]. See below some of my publications on these specific issues.

Concluding Remarks

It is more appropriate to carry out studies based on the reality at country level and thus assess the food and nutrition security aspects at regional level. Global warming is not an important aspect as it is created to share billions of dollars by UN/World Bank/NGO agencies. You can see the wealth of Al Gore!

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See attachment: [AICE'18-sjreddy\_.docx](http://www.fao.org/fsnforum/sites/default/files/discussions/contributions/AICE%2718-sjreddy_.docx)

## Noemi Stadler-Kaulich, Predio Experimental de la Agroforestería Andina Mollesnejta, Bolivia

Thank you very much for the opportunity to share with you my following experience done in Mollesnejta - Centre of Andean Agroforestry situated in the semi-arid valley of Cochabamba / Bolivia:

The loss of soil fertility at the global scale is alarming, as are the impacts of climate change. Conventional agriculture practices are reducing the organic matter content of soil as well as the soil´s capacity to regenerate nutrients to a minimum. In order to ensure food security in the future, sustainable agriculture techniques have to be promoted. These techniques should not only be productive, but also build soil fertility in the long term. At Mollesnejta- Centro de Agroforestería Andina, we apply dynamic agroforestry measures in combination with two agroecological techniques, with the goal of improving soil quality: (a) Activated Biochar and (b) Ramial Chipped Wood (RCW). Pruning material sourced from pruning in agroforestry systems was used as a soil amendment through both techniques. The presentation will describe the benefits of Activated Biochar and RCW and discusses their preparation and application to the soil, where both act as long-term carbon sink. Also, are provided the results of the experiences obtained at Mollesnejta- Centro de Agroforestería Andina after using these techniques. Both techniques proved to be effective at improving soil fertility and the capacity of rainwater storage. In combination with their impact as carbon sink it would be reasonable to intensify the practice of dynamic agroforestry.

Best regards,

Noemi Stadler-Kaulich

## Aqleem Abbas, Plant Pathology & Agriculture, Pakistan

Food can be any nutritious substance obtained from animal and plants. However, some foods don't need to be nutritious and that do not provide nutrients, however, protecting and lubricating the mucus of intestine so the nutrients of the nutritious foods will be safely absorbed and rest secrete safely. Therefore I divide food into two major types 1. Nutritious food 2. Non-nutritious food. Nutritious food is that which provide nutrients whereas not nutritious is that which don't provide any nutrient, however, protect the body from the diseases and disorders. In the case of crops, Food security starts when farmers get the yield of an edible crop. Simply food security should start from the yield (seeds) and seeds are the reactants for the product (foods). Therefore we should protect good seeds as much as possible. In other words, concept food security should start from the seeds of crops and young ones of animals, birds and fish. These useful creatures can only be secure by creating awareness among the public. To achieve high yield, The Govt should supply disease and pest resistant varieties to the farmers. As chemicals are toxic to the environment and health. Govt should focus on research to develop biocontrol agents and teach the formulation of these biocontrol agents to the farmers. In the developed nations the researchers really doing a great job in securing food and even their Govt is seriously taking food security as a major challenge. That is why most of the developed nations are self-sufficient and don't need to import food from other countries. However, in the developing nations, the situation is not stable. There is always a power struggle between the rich and the poor. Coups and other political issues make the people vulnerable to diseases due to unavailability and improvision of nutritious foods. The farmers are major producers of food however in a situation where farmers is a servant and landlords are governing on him, so how can he take interest in the health of crops. Marketing problems and other issues are also in these developing nations. Mismanagement and corrupt political system of the countries are also a major challenge to these countries. As a result, no remarkable work is done to secure foods. Consequently, the whole world has to suffer. In such situations, who will provide good seeds to farmers and who will provide him subsidies.

Finally, when farmers collect yield, the contractor comes and buy at cheap prices. Food security is indeed a major challenge in these developing nations. So what is the best cycle to secure food? The best cycle to secure foods is the Govt should provide seeds, fertilizers, and bioagents to the farmers, then the farmers after harvesting and getting yield should sell to the Govt. The Govt will then store for the next year or distribute to the public in a way that food is accessible to all citizens equally. The final step is to discard the leftover of the foods or recycle if it is still ok. This is few steps to secure food. The other suggestion, if the developing countries due to their weak political system and oscillating type of Govt system cannot contribute to food security. The UN should provide subsidies to the farmers and other inputs so they enhance yield. The pests and diseases due to climatic changes have so far become more severe. When I go through the literature in 2018, I was surprised to see the diseases and pests have considerably increased and caused huge losses to crops. Not only pest and diseases, look how fire engulf millions of acre land in California USA a few weeks ago. How much food did we lose? There is no published report but it is the reality we have lost considerable yield. The draft you have uploaded is still immature and most of the definition are not clear. Considering pest and disease are the major threat we should not deny other environmental factors which are almost not our control. So good management of pest and diseases and appropriate agronomic practices maximum food can be achieved. As aforementioned due to political instability and corruption, most of the developing countries are not contributing to food security. Therefore the people of these countries are suffering a lot. To achieve Zero hunger in these developing countries is just an idea and impossible unless these countries bring changes in their system. Even zero hunger is a wrong terminology, it is impossible to reach zero hunger even in the developing nation. The scale should start from 01 to 100 rather than 0. The dead do not become hungry so 0 hunger is the most appropriate term for them. Furthermore, if a country is developed, it does not mean it is exporting agriculture products. However, the real developing country is that which is self-sufficient in the staple food and also export staple food to other nation. Construction of high bridges, roads, building, and other infrastructure does not indicate that the country is also developed in terms of agriculture. For the sustainable production of food, the first thing is Seed should be HC or CH (healthy certified/certified healthy). If the seeds are healthy and free of contaminants or diseases or pest or pest parts, there are 90 percent chances high yield can be achieved if not disrupted by environmental uncontrollable variables. Healthy seeds should be provided by the Govts free to their farmers and we can safely say, till no seeds have not highly affected by climate change.

A global problem climate change cannot influence so much a farm of hundred acres. If we secure the food within the farms then rest to make it accessible to all people is very easy. Some people say resource scarcity major issue in the developing nations. In real the developing nations are full of resources and can produce more food as compared to the developed nation if properly guided and provided assistance to the farmers of these nations. The farmers of these countries should be provided with the latest scientific knowledge to grow crops. Pest, diseases, soil and water management in these countries is also a big problem. These issues need to be resolved to get enough food to feed the increasing populations. In conclusion, food security should start at the farm level.

## Maurizio Dioli, Sudan

Does the draft adequately explain the principal components of a sustainable food systems approach (section 2.1.) and put the latter in relation to the approaches discussed in section 3.1.?

I would expand the definition of Sustainable Food System to clarify the concept that "food systems" potential varies according to "ecological areas". An arid area will be able to ensure food security for LESS number of people that areas with fertile soil, abundant water, and optimal min-max temperatures. I would also introduce and highlight the concept that a "Sustainable Food System" is a system not overly affected by the impending climate change.

Ecosystem approaches must much more clearly mention livestock. Keeping Holstein-Friesian cattle in a hot desert environment, something done commonly in many areas, is not an example of a sound ecosystem approach. In addition it must be stressed that for an "ecosystem approach" to be defined as good it must be able to cope with the temperature/rainfall changes imposed by Climate Change

Are the key concepts in relation to sustainable food systems in section 2.2 well defined and described, including their importance for this publication?

Concepts are well defined but again much more emphasis should be put that all key concepts MUST be capable to cope with climate changes: higher min-max temperatures, drought/irregular rainfall

Is the list of terms in chapter 4 complete, are any important terms missing (if yes, please submit together with the respective definitions) or do you think certain terms may be redundant?

List is not complete. Terms that are missing: Pastoralism, Pastoralist Food Systems, Nomadic Pastoralism, Transhumance, Arid Areas

## Alwin Kopse, Federal Office for Agriculture, Switzerland, facilitator of the consultation

Dear members of the FSN Forum,

It has been a suspenseful first week for the consultation “Towards a common understanding of Sustainable Food Systems”. Our special thanks go to the first movers who submitted their feedback in this early stage of the consultation period, as well as to the IT specialists that were able to resolve the technical problems that caused a temporary interruption of the FSN Forum website. The contributions so far highlighted specific challenges (e.g. climate change; pests and diseases; decrease of arable land and soil fertility; lack of investment) as well as additional concepts and approaches (e.g. agroforestry; cooperative agriculture; food safety; insect protein) in relation to sustainable food systems. In addition, insightful examples of food systems challenges at national and local level were provided, including from the Indian context.

Some questions were also raised with regard to the draft v1.0, including about its main objective and the focus on sustainability (rather than food security). The One Planet Sustainable Food Systems (SFS) Programme’s point of view is clear: while the ultimate goal is food security, it will not be achieved while the economic, social and environmental bases for food production and consumption are being compromised. In other words, the shift towards sustainable food systems is a precondition for global food security. The SFS Programme is developing this document with the objective to strengthen a common understanding of the key approaches and concepts that are central to this shift. This will allow food system actors to speak the same language when deliberating on sustainable solutions to food insecurity and malnutrition – solutions that take into account all stages from food production to consumption, as well as their interlinkages with food systems drivers and impacts.

We are pleased that the feedback received in general has been supportive of the concept of sustainable food systems. We welcome further inputs and reactions, and particularly encourage contributors to refer as much as possible to the three guiding questions in the topic note.

Best regards and thank you very much,

Alwin Kopse

Deputy Assistant Director-General

Head International and Food Security Unit

Federal Office for Food and Agriculture FOAG, Switzerland

## Mahesh Chander, Indian Veterinary Research Institute, India

This document cover well many topics of contemporary interest.

What future for animal-based foods vs lab grown meat for instance; bio fortification, hydroponics, millets, chemical & antibiotic free food stuffs, foods replaced by food supplements? Implications of these innovations on food production systems and family farmers.

Should they look for livelihood alternatives giving up farming?

## Dick Tinsley, Colorado State University, United States of America

While I have only been able to briefly look at the draft document, there are a couple concerns that I have which are historically overlooked as I have harped on in previous forums. Thus, please allow me to mention them and ask how these are being or will be addressed in the final draft of the report.

1. The operational feasibility of agronomic interventions: This is basically an oversight in the development effort, but it severely hinders acceptance by smallholder farmers. When you carefully look at agronomy it does an excellent job of determining the physical potential of an area but says nothing about how the farmers will operationally achieve that. That is how much labour or access to contract mechanization is needed, and how readily available is it, with the default assumption that it is not a problem and labour is infinitely available. Basically, how often is it assumed that smallholder farmers working alone or maybe assisted by an adolescent son can manage their hectare plus of land as easily as research/extension officers can manage a 0.10 ha research of demonstration plot assisted by a hired labour crew. When you think about it, it is kind of a ridiculous assumption! The underlying problem is that the operational limitation in smallholder cultivation has fallen into an administrative void between the agronomist as applied biological scientist and the social scientist. Within the typical development effort who has the responsibility to estimate the labour requirements need to implement innovations, the availability of that labour and most critically what are the rational compromises smallholder farmers should make as integrate the innovation into their limited operational resources and the other farm enterprises they are involved with. When this is done most likely you will find the farmers are maxed out and maximizing, not the return to a give crop or livestock enterprise but maximizing the total return to all farm enterprises. I like to think of this a separating THE SCIENCE OF FARMING as defined by research/extension for the ART OF FARMING taking into consideration the limited operational capacity and integration across all enterprises. How much of the persistent yield gap between research/extension and farmers can be accounted for the limited operational capacity of the farmers? Is this a greater problem than lack of knowledge? Please visit and consider the following webpages and links within them:

* <https://smallholderagriculture.agsci.colostate.edu/integration-an-under-appreciated-component-of-technology-transfer/>
* <https://webdoc.agsci.colostate.edu/smallholderagriculture/OperationalFeasibility.pdf>

2. Dietary Energy Balance: Another but highly related concern is the dietary energy balance between what smallholder farmers have access to and what they are expected to exert in doing a full day of agronomic field work. The difference is about 50% with farmers only having access to approximately 2000 to 2500 kcal/day when the need more than 4000 kcal/day. While we recognize that most smallholders are poor and hungry we usually fail to see that as a major hindrance to crop production. If you consider 2000 kcal/day as representing basic metabolism, smallholder farmers often are barely able to have access to enough energy to meet the basic metabolism requirements with little energy for heavy manual labor such as land preparation using a hoe, which consume some 300 kcal/hr. This then substantially curtails the workday to a few diligent hours of labor, perhaps paced for a couple more. It than extends the crop establishment time for up to 8 weeks with progressively declining potential yields, until the crop is established too late to for sufficient yield to meet domestic food security needs let alone have some surplus to move up the value chain. The result of both these issues is to consider emphasizing drudgery relief instead of crop or animal extension education. Please consider the following webpages and included links:

* <https://webdoc.agsci.colostate.edu/smallholderagriculture/ECHO-Diet.pdf> ;
* <https://smallholderagriculture.agsci.colostate.edu/ethiopia-diet-analysis> ;
* <https://webdoc.agsci.colostate.edu/smallholderagriculture/BrinksDrudgery.pdf>

I think that hits the main point. If these issues are included please point out where so I can quickly review them. Thank you.

## Debarati Chakraborty, University of Kalyani, India

Dear Sir,

The key concepts in relation to sustainable food systems in section 2.2. is well defined but not well described with examples. For example, in section 2.2.1, Sustainable Diets has been rightly defined as protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible but these points are not clearly explained with appropriate examples. Though the example of the Mediterranean diet is given its major components were not mentioned and so it is difficult to understand why it is a typical example of Sustainable Diet. I think it is better to explain the examples which help to understand the definition of a sustainable diet. For example, in Bengali diet, there is a special role of several types of greens. There is a ritual like 'Choddo sag' (14 greens) which involves eating of all these green and its considered to be auspicious in Bengali tradition. To emphasize the point of protective and respectful of biodiversity and ecosystems examples of uncultivated, forest foods which are often highly nutritious can be given.

Similar points can be raised about the section 2.2.4. Resilient Production Systems where Resilient Agricultural Production Systems is defined as the capacity of agro-ecosystems, farming communities, households or individuals to maintain or enhance system productivity by preventing, mitigating or coping with risks, adapting to change, and recovering from shocks, examples were not elaborated.

Addition of examples will help common practitioners to understand all these important points in a much practical manner.

Yours sincerely,

Debarati

## Rob Blakemore, VermEcology, Japan

Hello.

Thank you for the opportunity to comment.

Any consideration of Sustainable Food Systems need to be prefaced with the basic information that 99% of food comes from soil and that 98% of biodiversity is on land, not in oceans. At the same time the greatest, yet most ignored, environmental issue is loss of precious topsoil at a rate of 2,000 tonnes per second.

Rebuilding topsoil by preventing erosion and recycling all organic matter via earthworms is the most sensible and effective solution.

Please find my recent review paper (or just look at the graphics) - <https://www.mdpi.com/2571-8789/2/4/64>.

Kind regards,

Rob Blakemore PhD

## Per A. Eklund, Sweden

In time of accelerated rate of climate change, relevant concept for human welfare is ensuring that net deficits in dietary intake are avoided. Particularly at an early age.

Sustainable livelihood systems require adequate net dietary intake. Means availability of clean non-contaminated drinking water, control of water and insect borne diseases, avoiding capability poverty (undeveloped brain circuitry due to stunting) at early age, and balanced dietary intake.

Sustainable food security- as apparently argued by FAO - represents an inferior reductionist concept.

Per A Eklund

Literature

Capability poverty by deficits in net dietary intake at early age - Neglected by the Rangarajan poverty line

• November 2014 Indian

• Journal of Community Health 26, Supp. S1(5):2,

## Angel Leyva Galán, INCA, Cuba

Original comment in Spanish

1. La alimentación forma parte delos gobiernos de los pueblos. Quien dirige los destinos de la humanidad (por países, estados, provincias municipios, comunas etc.) tiene que conocer qué consume la población, de donde proviene y si ello está acorde o no con la generalidad con las normas internacionales y si además responde (en cantidad y calidad ) con las necesidades alimentarias de los seres humanos según su edad y funciones. Quienes dirigen las poblaciones de hombre deben estar capacitados en este principio básico de la existencia humana para la toma de decisiones.

2. Los poseedores de grandes extensiones y por tanto grandes productores necesitan formar parte de los programas de desarrollo hacia la interpretación del pensamiento agroecológico. La agroecología no es patrimonio sólo de los productores pequeños.

3. La capacitación actualizada y bien orientada, es el camino a seguir para cambiar el estilo de vida inadecuada que repercute en la salud humana por exceso o defecto.

4. La agro biodiversidad es además de ser multiplicada por agro ecosistemas a favor de los humanos, también debe ser conservada y multiplicada en igual medida para los animales alimenticios y no alimenticios, así también para la restante diversidad equilibradora de los agro ecosistemas por grande o pequeños que estos sean.

Los agro ecosistemas debieran ser evaluados (independiente a su tamaño) por la contribución que hacen a la humanidad, no sólo en cantidad, sino también en diversidad. El IDA (Leyva y Lores, 2012) en la Revista digital Agroecología No. 7. Es una pequeña contribución a esos propósitos.

Saludos

Dr. Angel Leyva Galán

INCA., Cuba

English translation

1. Food is part of governance at all levels. Those who rule our lives -at a national, regional, provincial, municipal or community level- must know what we eat, the origin of this food, if it complies with international standards and if it fulfils -both quantitatively and qualitatively- the needs of the different population groups. Rulers must have a sound knowledge of this core principle of human existence to make decisions.

2. The owners of large estates -and therefore the large producers- need to be part of development programmes aimed at the construction of the agroecological approach. Agroecology should not be restricted to small producers.

3. Updated and well-focused training is the way forward to change the inappropriate lifestyle affecting human health.

4. Apart from being enhanced by agroecosystems for the benefit of human beings, agrobiodiversity should also be equally preserved and intensified in favour of all animals, including those not intended for food production. The same applies to the remaining balancing diversity of agroecosystems, irrespective of their size.

Agroecosystems should be assessed -regardless of their size- according to their contribution to humanity, not only in quantitative terms, but also with respect to diversity. The Agrobiodiversity Index, known in Spanish as IDA (Leyva and Lores, 2012, Agroecología digital magazine, issue no. 7), is a modest contribution to this end.

Regards,

Dr Angel Leyva Galán

National Institute of Agricultural Sciences (known in Spanish as INCA), Cuba

## Roger Leakey, International Tree foundation, United Kingdom

Sustainable Food Systems

**Key literature**

Encyclopedia of Agriculture and Food Systems (2014), Vols 1-4, van Alfen, N. et al., (eds.). Elsevier Publishers, San Diego, USA.

Multifunctional Agriculture: Achieving Sustainable Development in Africa (2017). Leakey, R.R.B., Academic Press, San Diego, California, USA, 480pp.

International Assessment of Agricultural Science and Technology for Development: Global Report (Eds. B.D. McIntyre, H. Herren, J. Wakhungu and R. Watson). Island Press, New York, USA.

**Section 2.1.2 The Sustainable Food Systems Approach**

The text states “While there will clearly be trade-offs to be made (i.e. between key priorities of the food systems: inclusive poverty reduction, increased agricultural productivity, improved nutrition, and enhanced environmental sustainability), there will also be opportunities to simultaneously accomplish multiple objectives”. This concept is central to the development of Sustainable Food Systems. It is the so-called inevitable ‘Trade-offs’ that make modern agriculture unsustainable, especially in the tropics and sub-tropics. The often-mentioned inevitability of these trade-offs is a fallacy; arising from a lack of understanding of the issues that constrain farm productivity in tropical/sub-tropical regions, especially Africa. While, conventional modern agriculture is productive in temperate regions due to its compatibility with: the socio-economic and biophysical environment, high capital investment, globalized markets, etc., it fails in the tropics where it is incompatible with all these factors (Leakey, 2013). The result is the downward spiral of the ‘Cycle of Land Degradation and Social Deprivation’ which drives the creation of Yield Gaps in staple crop production. These Yield Gaps can be (and often are) as great as 85% of potential yield (Leakey, 2013) and result in the rural population suffering from hunger, malnutrition, ill health, poverty and social injustice; while the land degradation contributes to Climate Change.

The solution, especially in the tropics and sub-tropics, is to find ways to reverse the ‘Cycle of Land Degradation and Social Deprivation’ by developing better land husbandry in ways that are also compatible with the socio-economic and biophysical environment, lack of income and capital for investment, local markets, etc. In other words, the common ‘Trade-offs’ have to become the focus of both policy, agricultural interventions and agribusiness to convert them to ‘Trade-ons’ (Leakey, 2018). Work in Cameroon since 1994 has been trying and testing this innovative approach and it has been found to be highly successful – beneficially transforming numerous components of the food system (Leakey and Prabhu, 2017). This approach is based on 12 Principles (Leakey, 2014a) and the social modification of ethnobotanically-recognized cultural and traditional food species by community level participatory domestication (Leakey, in press). With hundreds of candidate species from all ecoregions of the world and a generic 3-step process (Leakey, 2013, 2018) that diversifies and rehabilitates degraded agroecosystems (Leakey, 2014b) and generates income from expanded trade, new business and employment from local non-timber tree products (Leakey, 2017a; in press), these innovations appear to offer a new approach to revitalizing food systems in the areas of the world where the problems are greatest. This approach which is designed to reverse the Cycle and Land Degradation and Social Deprivation, so closing the very common Yield Gap in many staple food crops, needs to be up- and out-scaled to verify its apparent potential.

**Section 2.2** should address the issues of Yield Gaps – the embodiment of an unsustainable food production system that then impacts the whole system.

**2.2.4 Resilient Production Systems and 3.0 Different Roads leading to Sustainability**

The above text also applies to the rehabilitation of abandoned and degraded farm land and its transformation into Resilient Production Systems through sustainable intensification.

The above approach in effect combines the development of agro ecological approaches (delivered by agroforestry) with income generation from the domestication and commercialization of the products from culturally- and traditionally-important indigenous food species (many of which are trees) (Leakey 2017a, 2018). Agroecology without income generation does not restore the whole food system as it does not address the social and economic constraints to tropical/sub-tropical agriculture.

A Table in Leakey and Prabhu (2017) illustrates impacts flowing from the interlinkages, overlaps and complementarities (Section 3.2).

The integrated rural development approach presented above is relevant to the Main strategies to promote sustainable food systems (Section 3.3).

Definitions:

Agroforestry is: “a dynamic, ecologically based, natural resource management system that, through the integration of trees in farm- and rangeland, diversifies and sustains smallholder production for increased social, economic, and environmental benefits” (Leakey, 2017).

Multifunctional Agriculture is illustrated by FSF in Figure 2 (a Figure from IAASTD Global Report, 2009).

**References:**

Leakey, R.R.B. 2013. Addressing the causes of land degradation, food / nutritional insecurity and poverty: a new approach to agricultural intensification in the tropics and sub-tropics. In: Wake Up Before it is too Late: Make Agriculture Truly Sustainable Now for Food Security in a Changing Climate, 192-198, UNCTAD Trade and Environment Review 2013, U. Hoffman (ed.), UN Publications, Geneva, Switzerland.

Leakey, R.R.B. 2014a. Twelve Principles for Better Food and More Food from Mature Perennial Agroecosystems, In: Perennial Crops for Food Security, 282-306, Proceedings of FAO Expert Workshop, Rome, Italy, 28-30 August 2013, FAO. Rome.

Leakey, R.R.B. 2014b. The role of trees in agroecology and sustainable agriculture in the tropics. Annual Review of Phytopathology 52: 113-133.

Leakey, R.R.B. 2017. Definition of agroforestry revisited. In: Multifunctional Agriculture – Achieving Sustainable Development in Africa, RRB Leakey, 5-6, Academic Press, San Diego, California, USA.

Leakey, R.R.B. and Prabhu, R. 2017. Towards multifunctional agriculture – an African initiative. In: Multifunctional Agriculture: Achieving Sustainable Development in Africa, RRB Leakey, 395-416, Academic Press, San Diego, California, USA. <http://www.fao.org/fsnforum/sites/default/files/discussions/contributions/53-An%20African%20initiative%20-%20ch039-395-416-9780128053560.pdf>

Leakey, R.R.B. 2018. Converting ‘trade-offs’ to ‘trade-ons’ for greatly enhanced food security in Africa: multiple environmental, economic and social benefits from ‘socially modified crops. Food Security 10: 505-524. <http://www.fao.org/fsnforum/sites/default/files/discussions/contributions/Food%20Security%20paper%20-%20final%20-%20Converting%20trade-offs%20to%20trade-ons.pdf>

Leakey, R.R.B. In press. From Ethnobotany to Mainstream Agriculture – Socially-modified Cinderella Species Capturing ‘Trade-ons’ for ‘Land Maxing’. In: Special Issue on Orphan Crops, Planta 0: 000-000.

See the attachments: [Food Security paper - final - Converting trade-offs to trade-ons.pdf](http://www.fao.org/fsnforum/sites/default/files/discussions/contributions/Food%20Security%20paper%20-%20final%20-%20Converting%20trade-offs%20to%20trade-ons.pdf) , [53-An African initiative - ch039-395-416-9780128053560.pdf](http://www.fao.org/fsnforum/sites/default/files/discussions/contributions/53-An%20African%20initiative%20-%20ch039-395-416-9780128053560.pdf)

## John Ede, Ohaha Family Foundation, Nigeria

In trying to understand Sustainable Food Systems, there are these 2 critical actors that are often neglected yet they are very fundamental drivers that can impact improved food systems.

1. The local farmers: these actors are the producers, and they are often not recognized in policy formulation and implementation. They are not recognized when pricing and regulation, the market regulators just fix prices and not considering inputs from the farmers, as they need to also measure their effort and some form of calculations to consider if they are making a loss or making profit from their farming activities. There is also the concern about transportation systems and access to market, we have seen that there is the activities of 'middle-men', buy the products are low prices and sell at higher prices making more profits than the farmers who are the producers.

2. Conflicts and crises: we are experiencing this concern in parts of North Central Nigeria, where farmers are clashing with herders, and tonnes of farm crops close to harvesting are either consumed by farm animals directed by the herders or burnt in anger and revenge. The face of conflict in Nigeria is having a huge impact on the food systems, and negatively affecting the food systems.

In understanding the food system, we need to understand the actors, the processes, the market and the final consumers. How does the consumer get the quality and the commensurate quantity, in the form that retains the nutrients that is needed.

## Tom Andrews, Soil AssociationUnited Kingdom

Thanks for the opportunity to comment - overall I think the document is really good but, while there is some mention of City Regional Food Systems as one type of Territorial approach, I do not think enough is said about CRFS considering what a significant driver this is becoming in all parts of the world for food system change and that the inclusion/ combination of CRFS with much of what is said about territorial approaches is a bit confusing.

## Anthony Fardet, INRA, France

My research project is the characterization of the food degree of processing in relation with health potential. In this perspective I am notably working on ultra-processed foods. A food is defined as ultra-processed if it contains at least one ultra-processed ingredient (excessive fractionation of its original matrix/cracking) or a cosmetic additive (colouring, texturizer, taste enhancer, sweetener, ...) or additive considered at risk for health or if it has underwent a very industrial drastic process (e.g., extrusion-cooking, puffing...). Such foods, when massively consumed worldwide, are associated with degradation of food systems as a whole and are not sustainable. They are notably associated with increased risks of chronic diseases, animal suffering, environment degradation (pollution, deforestation, climatic changes...), degradation of social life (food often eaten by isolated individuals), culinary traditions (hyper standardized foods replacing local ones) and small farmers or peasants (because they are cheaper than local foods). Therefore, we defined the three golden rule for preservations of all these dimensions of sustainability: Végétal, Vrai, Varié (if possible organic, local and seasonal). In English: Plant, Real (food), Varied. These rules are holistic allowing meeting all human nutrient needs and preserving human health, animal well-being and environment. In addition they are scientific because all protective diets worldwide are rich in plant-based, minimally-processed and varied foods. In detail these rules recommend not to exceed daily 15% calories from animal products and ultra-processed foods. For details see: Fardet, A. and E. Rock, Reductionist nutrition research has meaning only within the framework of holistic thinking. Advances in Nutrition, 2018. 9(6): p. 655–670. Therefore we think we have a powderpuff lever to activate locally and for a global change.

## Anthony Fardet, INRA, France

Here are definitions of processed and ultra-processed foods by NOVA: Monteiro, C., et al., The star shines bright. World Nutrition, 2016. 7(1-3): p. 28-38.

Ultra-processed foods:

« These are industrial formulations typically with five or more and usually many ingredients. Such ingredients often include those also used in processed foods, such as sugar, oils, fats, salt, anti-oxidants, stabilizers, and preservatives. Ingredients only found in ultra-processed products include substances not commonly used in culinary preparations, and additives whose purpose is to imitate sensory qualities of un/minimally-processed foods or of culinary preparations of these foods, or to disguise undesirable sensory qualities of the final product. Raw/minimally-processed foods are a small proportion of or are even absent from ultra-processed products. »

« Substances only found in ultra-processed products include some directly extracted from foods, such as casein, lactose, whey, and gluten, and some derived from further processing of food constituents, such as hydrogenated or interesterified oils, hydrolysed proteins, soy protein isolate, maltodextrin, invert sugar and high fructose corn syrup. Classes of additive only found in ultra-processed products include dyes and other colours, colour stabilizers, flavours, flavour enhancers, non-sugar sweeteners, and processing aids such as carbonating, firming, bulking and anti-bulking, de-foaming, anti-caking and glazing agents, emulsifiers, sequestrates and humectants. Several industrial processes with no domestic equivalents are used in the manufacture of ultra-processed products, such as extrusion and moulding, and pre-processing for frying. The main purpose of industrial ultra-processing is to create products that are ready to eat, to drink or to heat, liable to replace both unprocessed or minimally processed foods that are naturally ready to consume, such as fruits and nuts, milk and water, and freshly prepared drinks, dishes, desserts and meals. Common attributes of ultra-processed products are hyper-palatability, sophisticated and attractive packaging, multi-media and other aggressive marketing to children and adolescents, health claims, high profitability, and branding and ownership by transnational corporations. »

Processed foods:

« These are relatively simple products made by adding sugar, oil, salt or other culinary ingredients to raw or minimally-processed foods. Most processed foods have two or three ingredients. Processes include various preservation or cooking methods, and, in the case of breads and cheese, non-alcoholic fermentation. The main purpose of the manufacture of processed foods is to increase the durability of raw or minimally-processed foods, or to modify or enhance their sensory qualities. Typical examples of processed foods are canned or bottled vegetables, fruits and legumes; salted or sugared nuts and seeds; salted, cured, or smoked meats; canned fish; fruits in syrup; simple breads and cheeses. Processed foods may contain additives used to preserve their original properties or to resist microbial contamination. Examples are fruits in syrup with added anti-oxidants, and dried salted meats with added preservatives».

## AMM Zowadul Karim Khan, FAO (formerly), Bangladesh

Thank you. It is a nice draft. Among the issues discussed, in my humble opinion, the most important ones are how to reduce food waste (as championed by France), and how to reduce negative impact of food production.

Most of the crop-based food production are Greening activities consuming Carbon, despite some negative issues, like pesticides and others. Hence if food production can be made Greener, it will serve dual purpose.

Thanks,

AMM Zowadul Karim Khan

## Krishna Rao Pinninti, Climate and Development Strategies LLC, United States of America

This Draft is excellent in its comprehension and laying down a common framework for possible adoption with custom-designed localization (national, regional, territorial or other). Its major contribution is that it offers a set of plausible factors for conscious decision-making at different levels and sectors, recognizing various interlinkages. However, it falls short on relevant specifics: more illustrative best practice case studies or examples could motivate some of the principal stakeholders to aim at the attainment of various objectives in relation to SDGs (with due consideration of socio-economic as well as environmental imperatives of the specific agro economic settings). Over the years there have been several good examples of practices; some is these included the role and contribution of FAO and other organizations in a variety of settings. The main limitations in many of these cases, however, is lack of scalability and or sustainable self-supporting mechanisms.

Greater emphasis on climate change-compatible adaptive sustainable agriculture will be useful.

On another issue, as long as large-scale farming that is directly or indirectly controlled by unaccountable multinationals promote consumption of unsustainable animal meats, the environmental fall out will continue to dominate many other offsetting activities such as organic agriculture. Similarly, if rise in personal incomes lead to excessive unsustainable and unhealthy food consumption, many of the normative concepts and approaches of SFS may deliver merely limited good results.

Thank you for your efforts.

Krishna Rao Pinninti, Ph. D

Climate and Development Strategies, LLC

USA.

## George Kent, Department of Political Science, University of Hawai'I, United States of America

Alwin Kopse, the facilitator of the consultation on One Planet’s draft on “A Sustainable Food System” said, while the ultimate goal is food security, it will not be achieved while the economic, social and environmental bases for food production and consumption are being compromised. In other words, the shift towards sustainable food systems is a precondition for global food security.”

This appears to be a response to my questioning the high priority placed on the sustainability of food systems, on November 24, available at <http://www.fao.org/fsnforum/comment/9230> I would like to clarify my position.

I see sustainability as just one item in the list of desirable qualities in many things. When I buy a car, for example, I would like it to last a long time, but that is just one consideration among many. Sustainability is important in food systems, especially those that function well. However, I don’t see how it is a precondition for global food security.

Attention to sustainability seems to be displacing attention to the need to make serious efforts to end hunger in the world. I have yet to see a serious plan to end hunger, one that can realistically be expected to succeed. I would like to see a more serious commitment to ending hunger in the world. When we design a system that works well for everyone, we can talk about how to sustain it.

## Thomas Oelholm, Norwegian Refugee Council, Norway

Without having read the document in detail, the report has a relatively logic structure and broad attention relevant to be able to take up dialogue on sustainable food systems. A couple of subjects that could potentially deserve more attention in the document as part of future trends and what is currently challenging sustainability and providing opportunities are suggested below.

* Fragility, crisis and climate change: These should not be seen as isolated phenomena but part of system effects. They are all induced by human behaviour and influence each other including the resilience of any food system. Conflict, displacement and economic collapse are a risk to the ability transition and building sustainable food systems. The combination is a major risk to the planetary thresholds/boundaries and can therefore impact food systems that are globally integrated with each other.
* Novel foods and production systems (both industrial and family farm level): These can/already provide opportunities for a shift in the availability of new types of food and feed (e.g. seaweeds, algae, insects for food & feed, aqua/hydroponics etc.). As these can contribute to the transformation of unsustainable practices towards more sustainable food systems that are more fit for a world of rapid change they should have an increased attention as part of defining/describing what is/can be contributing to different types of sustainable food systems.

## Emilia Venetsanou, Cape Verde

Thanks for the opportunity given and congrats for the hard and consistent work. Regarding your key question 3, Right to Food (R2F) and the Human Rights-Based Approach (HRBA) should be included, at least, in the glossary / list of terms in chapter 4.

A. Making the case:

1. The draft-paper clearly fosters the three dimensions of sustainability, i.e. economic, social, environmental, (also called the “Triple Bottom Line” / People - Planet - Profit (TBL or 3BL)). Yet, to “ensure Food and Nutrition Security (FNS) for all in such a way that the economic, social and environmental bases / assets are not compromised” (page 8 of the paper), Rights and Governance must be part of the picture. For the propose, the “livelihoods approach” could also be helpful.

2. Sustainable Food Systems (SFS), addressing Food and Nutrition Security (FNS), involve multiple rights and subsequent obligations as well as Governance challenges. These elements clearly emerge all along the draft-paper and in the very definition of SFS (e.g. ensure food security and nutrition for all, holistic approach, Responsible investments in agriculture and food systems, address underlying / root causes, among others). The draft-paper explains that “governments remain in the driving seat, promoting efforts towards coherent implementation of globally agreed frameworks and commitments”. Yet, the Right to Food (R2F) and the Human Rights-Based Approach (HRBA) are not explicit in the draft-paper. First step on Human Rights promotion and protection is to make them explicit. To act, based on Human Rights, we have to speak Human Rights. So, what is implicit in the draft-paper must also be explicit, at least as a term under chapter 4.

3. The paper refers to “food sovereignty”, which is a good step forward, and by doing so, indirectly refers to peoples “right to define their own food and agriculture systems”, putting “those who produce, distribute and consume food at the heart of food systems and policies rather than the demands of markets and corporations”. As Olivier De Schutter, former UN Special Rapporteur on the Right to Food, said, “there is simply no other way we can combine the need to produce enough food for all and the need to meet the environmental challenge: only by supporting the vast mass of smallholders in the developing world, and by supporting them to produce for the local communities, can this challenge be met” (Desk Study on EC activities in the Right to Food area and on the Relationship between Food Sovereignty and the Right to Food, SOGES, Venetsanou, 2010 <https://europa.eu/capacity4dev/file/13049/download?token>). However, the “food sovereignty” cannot substitute but combine with the Right to Food and HRBA (inter-complementary and mutually reinforced domains of action). Whereas “food sovereignty is a political claim defending the right of a community, whether at national or sub-national level, to decide how to feed itself and how to combine domestic production and international trade, the HRBA and the Right to Food (R2F) add a legal dimension to FNS” (idem).

4. The Right to Food (R2F) underpins the claim that people should be able to feed themselves as a matter of right rather than as a matter of policy choice. Poor are voiceless in the political “bargaining” to which policies’ design, interpretation and implementation are subject. Food insecure people, though in great numbers, are powerless in the political arena. The R2F sets benchmarks in the political negotiation and the trade-offs between efficiency and equity, defending people’s fundamental rights and freedoms as a non-negotiable bottom line. It does so, not at a rhetorical / abstract level of good-wishes, but, relying on the Human Rights machinery at Global (international law / binding commitments) and Country (national legislation and institutional arrangements) level. This way empowering vulnerable small-farmers can be highly relevant to sustainability (we could further develop and refer examples but, this is a big chapter and I would like to keep it as short as possible).

5. Once policies / Plans / Programmes are defined in a rights-based approach, “beneficiaries” become “rights-holders”, and the authorities designing and implementing programmes accept that they may be held accountable to them (duties-bearers). The Human Rights machinery as well as the HRBA provide a solid basis for an effective accountability. Several countries already fostered the Right to Food in their constitution and legal framework. Monitoring mechanisms, including claims and redress, are in place also at international level.

6. FNS deprived from the R2F may end up either as a catch-all rhetoric or strictly project/program anchored action. Effective ownership requires institutional and legal capabilities at country and local level. So, SFS programmes, along with technical and organisational proposals must also promote such institutional arrangements and capabilities.

B. Some key references:

1. Voluntary Guidelines on the Right to Adequate Food <http://www.fao.org/3/a-y7937e.pdf>

2. Right to Food <http://www.fao.org/faoterm/collection/right-to-food/en>

3. Special Rapporteur on the Right to Food <https://www.ohchr.org/EN/Issues/Food/Pages/FoodIndex.aspx>

4. European Commission, Communication from the Commission to the Council and the European Parliament: An EU policy framework to assist developing countries in addressing food security challenges. COM (2010)127 final. Brussels, EC, 31 March 2010.

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0127:FIN:EN:PDF>

5. Implementing EU food and nutrition security policy commitments: Third biennial report <https://ec.europa.eu/europeaid/implementing-eu-food-and-nutrition-security-policy-commitments-third-biennial-report-colour-version_en>

6. Monitoring a moving target: Assessment of the implementation plan of the EU Food Security Policy Framework <https://concordeurope.org/wp-content/uploads/2017/01/Assessment-of-the-implementation-plan-of-the-EU-Food-Security-Policy-Framework.pdf>

7. The SR's opening speech on Right to Adequate Food meeting at the Committee of Food Security, 24 January 2017 <https://www.ohchr.org/Documents/Issues/Food/Event24Jan2017.pdf>

## Ronald Jones, Cambodia

Hi I have read the comments and the draft and I am always a bit dismayed at FAO FSN, HPLE et al. and the continual lack of acknowledgement of the importance that fish and fisheries especially small scale fisheries and aquaculture (coastal and inland) play in 'glocal' food security and nutrition. There are now many cross level forums, organization, state and non-state and academic processes that explicitly outline the key roles that fish, and other aquatic organisms play in securing rural livelihoods and health in the Global South as well maintaining resilient coastal communities around the world. This massive source of food for humanity and agriculture (feed) is now under serious under threat from multiple drivers and yet I sense that through this type of forum, we are still locked into thinking of food as almost entirely as an issue of sustaining terrestrial production; there are now key studies showing very important cross scale linkages connecting terrestrial and aquatic social ecological systems with the developing of sustainable food systems, beyond simplistic narratives of production and distribution; food and wider food systems (value chains) are best viewed as complex systems, encompassing diverse social and ecological dynamics so their sustainability should be seen in this context.

Ron Jones

ARDC, Intl. Co. Ltd., Phnom Penh, Cambodia

## Peter Steele, Independent Consultant Agricultural Engineer, Australia

Here are some suggestions/ideas which some of you may like to explore.

**Language**

First some linguist thoughts about producing a document that … ‘is to become a reference document for anyone working towards more sustainable consumption and production patterns in the area of food and agriculture’ It will need to be re-drafted into a version that will be easy to read ‘first time round’. Perhaps this will come - but I’ve not noticed reference to language, interpretation and/or target people. As presented v1.0 is a complicated document written in techno-complex English that is suitable for others with similar scientific backgrounds and language skills.

Given the fundamental importance of the messages that are being promoted, requested, emphasized, it becomes essential that key community people – management, political, financial - with limited time, language capabilities and/or interest be captured. Everyone knows the gaps that exist between decision-makers across the academic-techno-political divides.

**Preamble**

Daunting draft document; daunting subjects, issues, prospects and information. How to feed estimated 10B people expected within the next 30 years given the same physical resources that we have today? The question is obvious, and the considerable feedback provided thus far is as generally critical of current progress - as it is with the galaxy of examples of ideas and opportunities recommended for further use/exploration. Much is being done; and if not always as recommended, at least documentation is being prepared and people are talking one-to-the-other (leastways in forums such as FAO/FSN).

The dynamic nature of socio-economic human development during the past 250 years – times of intensive global exploration, industrialization, urbanization, population growth and more - has been staggering. When allied to the current explosion in information exchange/knowledge of what is happening elsewhere following ever-more innovative tele-communication developments (and cheap air travel) the complexities of ‘what to do next’ overwhelms.

On the one hand there’s the recent UN/IFCC reports on Climate Change to further raise awareness (and the current UN/FCCC COP24 meeting in Katowice Poland); the need to implement the insurance investments that may provide for a measure of control over GHG emissions and, it follows, some semblance of control over rising ambient temperatures. Given the fragility of our living space on Planet Earth – that friendly atmosphere of gases that, at best, is just 20 km deep that sustains and protects us – there’s little room for manoeuvre where food production is concerned.

Not only are we living longer than our forebears, but we’re demanding more. However, half the world’s people remain poor notwithstanding that the middle classes are on the rise everywhere – therein are issues with widening gaps with millions of people being left behind. And the issues herein, of course, relate to these being rural people in fragile parts of the world; people who may eventually become the mass socio-economic and/or environmental refugees for the latter part of the 21st century.

**Some interesting FSN Feedback then**

Thus far there has been some provocative feedback – consider, for example, the handful of contributions from Messrs Jeevananda Reddy, Tinsely – all of which help establish the basis of new decision-making, revision, redrafting, re-evaluation of the existing draft v1.0.

In his highly pragmatic contribution Mr S. Jeevananda Reddy in India has already covered the issues – the need to be realistic when compiling standard texts with which others can work; the need to take account of the practicalities of real-life situations. He emphasizes this, for example, with a critique of definitions used and contradictions for supply of food in India – skewed support for agriculture, ad hoc interventions by the multinationals, expensive state food subsidies for poorer families, mixed support for basic staples – millet vs rice, maize, and more.

The unknowns of climate change will impact food supplies into the next short term – droughts that will follow in India – a country already over-exploiting surface and subterranean water resources – and home to 20% of the world’s people. There’s another 20% across the Himalayas in China – with similar tenacious food self-sufficiency long term.

Dick Tinsley rightly draws attention to farm power – and the unsustainability of smallholder producers when they have only family labour available; people ill-fed on a diet that does not support hard physical work over long periods. There’s no way that crop timetables can be met, and the crop performs below expectations; less food is produced.

Trade-offs between key priorities of any food system – poverty reduction, raised productivity, enhanced nutrition feature from Roger Leakey of the UK; he extrapolates into the unsustainability of ‘conventional modern agriculture’ in the world’s tropical/sub-tropical regions, where it contributes to land degradation and social deprivation. More on industrial agriculture below.

Perhaps best of all there’s George Kent of Hawaii with his robust messages that suggests ‘Nero fiddling whilst Rome burned’ (i.e. ineffectual leadership and/or no concern for others). The focus of this particular debate/request from FAO/FSN on ‘Food Security’ is way off target, according to Mr Kent, when the real target should focus upon enriching the lives of poor people - re-appraising global hunger issues with diagnosis, commitments and action plans. Underlying this are issues that continue to promote the sustainability of food systems that patently do not work for everyone; Mr Kent calls it ‘ignoring the political economy of hunger’.

**Taking the best of what we currently have ….**

Perhaps missing from the debate is the wide issue of smallholder production vs conventional modern production – with all the ramifications for those who highlight the potential of the former with the degradation that comes from the latter; and this no matter that industrial production tends to feed most of us. There’s a key point therein that leads to the application of food production that blends the best of the value chains that we have (and which are further developed within draft v1.0 as ‘sustainable food value chains’ and ‘green value chains’) wherein the wider global/socio-economic/environmental context is included – as illustrated in Fig.1 & Fig.2 of draft v1.0.

There’s an easy-to-read/understand of the blending issues/opportunities involved in an article prepared by Johnathon Foley and published by National Geographic: ‘Five Step Plan To Feed the World.’\* In summary: 1. Freeze agriculture’s footprint; 2. Grow more on farms we’ve got; 3. Use resources more efficiently; 4. Shift diets; and 5. Reduce waste. The headings/steps are self-explanatory and the majority FSN network will be familiar with them; in any case, the original article says it all.

You only have to follow the trends of people leaving ‘agriculture’ worldwide to appreciate that lack of personal interest shown by the majority smallholders that ‘feed half the world’; no one wants the drudgery of poorly-resourced production/services. Equally, the issues of conventional modern agriculture are also well-known; industries that successfully fill supermarkets around the world on the basis of pragmatic short-term production systems, and which may pose risk for the longer-term.

Get the messages right with documentation such as draft v1.0 and it may be that there will be sufficient initiatives, legislation, decision-makers and world-class politicians that will steam-roller the changes required. Consider the redrafted/finalized ‘Sustainable Food Systems’ document as simply one more building block on the road to progress. There will be much more to follow.

Meantime, ensure that people everywhere take on board the urgency of recent UN/FCCC recommendations for climate change mitigation/reversal – including progress with COP24 in Poland this week. And implementation of the December 2016 Paris Climate Accords by the majority industrial and industrializing countries. Fail to get climate issues right and everything else fails too.

Peter Steele

Agricultural Engineer

Melbourne

Australia

05 December 2018

**PS. Definitions**

And, on an aside – those definitions contained in section #4 – long, verbose, confusing in places. Consider a ‘sentence or two’ definition (and then follow with supporting text – if required). Additional headings/text required in support of ‘Modern production systems’; the listing currently focuses upon ‘novelty’ (notwithstanding potential). To include additional farm-forestry, harvesting/gathering, novel foods production (e.g. protein from insects, algae, etc.); to include food processing (e.g. simplistic/minimum added value – use of sugar, salt, oil, desiccation); to include food production supporting sectors – energy, farm mechanization, labour, safety, irrigation, etc.). Sure, where do you draw a line? Difficult.

\*Available at: <http://www.nationalgeographic.com/foodfeature/feeding-9-billion>

## Lal Manavado, University of Oslo affiliate/Norwegian Directorate of Health, Norway

**Some Thoughts on the SFS Draft V0 on Towards a Common Understanding of Sustainable Food Systems**

Introductory Remarks:

This discussion does not undertake the following:

• Discuss the environmental, social or other ills that result from the inappropriate use of food systems.

 • Evaluate diverse methods used within any sub-system of a food system with a view to recommend any one of them.

• Provide examples of successful projects used to achieve the output of any one of such sub-systems.

• Claim that any sub-system of a food system represents the whole.

What it attempts to do:

 • Suggest a holistic outline of a food system developed through an evolutionary approach that mirrors human development.

 • Illustrate how commercialization of each sub-system of a food system has hidden its actual structure and purpose.

 • Demonstrate that the value of a food system justifiably derives only from the fact that food is the third vital thing after air and water for the sustenance of our life.

• Hint at changing the justifiable purpose of a food system from financial gain which has brought about many undesirable consequences, to enabling all of us to procure adequate and balanced nutrition.

Even though it may not be essential to mention this specifically, an adequate understanding of what may justifiably constitute a food system requires us to apprehend an important logical distinction, viz., its structure and use. Of course, this is obvious, but most of the literature I have seen appears to regard this distinction as a trivial point.

Consider the following case: A perfectly equipped school with well-qualified teachers, eager pupils, where nobody moves or speaks. We may have got all the ‘hardware’ of the system in place, but what good does it do? Nothing but waste. This illustrates my point, a food system taken as an ‘object’ in isolation can hardly throw any light on the issues we try to illuminate any more than the above school could tell us something worthwhile about an education system.

So, what is the way forward to an understanding what we may justifiably call a food system? Though it may seem unusual, this is precisely my point of departure, an uncomfortable question. Let me give a hint. Scientific methods of analysis may seem prestigious and the right way, but their use is logically limited to what are called objects subject to gnomic laws, i.e., laws governing the behavior of non-living things where we cannot talk about their behavior as ‘goal-directed. Their behavior is governed by the laws of chemistry and physics.

One more hint; unless force or some other forms of compulsion is used people would not farm, fish, or cook unless doing so serves their interests. Obviously, the early man found this practice to be highly desirable, because it gives him an easier and more reliable supply of food with greater ease, hence it serves one of his major interests, viz., and nutrition. Nobody would dispute that after air and water, food is the third most important hence valuable thing for all of us. Unless we have food, there would be no living for man or beast. This is the sole justifiable reason a rational being could attribute a value to food, and thence to activities essential for its production and passage to the end-user.

Therefore, it is untenable to speak of those putative value chains or an approaches to FSN based on them. This is not to advocate an equally untenable idea of a trader just collecting and distributing food to the end-users and hope for a tip as a reward. The point is that the value of food cannot be based on economy as it is understood and practiced. Let us never forget food was produced and consumed long before any notion of modern economy emerged. We will fail to understand the nature of a food system unless we are able and willing to forget the ‘value chain approach’ and look at it with open minds.

Towards a justifiable notion of a food system:

What does one mean by ‘justifiable’ here? It is quite simple; when our description of what we consider to be a food system meets certain essential requirements, it becomes a justifiable description of it. This begs the question, what are those essential requirements? This implies that the justifiability of such a description could occupy a place in a spectrum ranging from completely justified to being partially so. Therefore, we ought to strive to arrive at a completely justified description of a food system.

One more clarification; a food system is justified if and when its use enables the people the purpose its application is intended to serve. We all know what this is viz., enabling them to procure regularly adequate quantities of wholesome food at affordable cost so that they may enjoy a varied and balanced diet in a sustainable fashion.

Thus a justifiable food system will ensure the following:

 I. It is sustainable so that it could serve its purpose regularly, and it would be resilient enough to deal with a wide variety of adverse natural and man-made events.

 II. Its food out put would be available to the end-users.

 III. It will yield affordable food stuffs.

 IV. Its yield will be varied and wholesome and would contribute to appropriate nutrition and dietary enjoyment.

Now, it is time to look at the features a food system should meet to embody the four criteria of its justifiability. Once we have achieved this objective, it would be of immense help towards achieving a global FSN as the draft so aptly puts it.

Attributes of a justifiable food system:

As I have mentioned earlier, a description of that ‘passive’ school could hardly serve as that of an education system or even a part of it. It could be of course, but such efforts which are very common today overlook the describer’s prior knowledge that teachers are generally teaching and the pupils are learning. This is a crucial point, viz.; we recognize any system by certain actions performed by some people actually using it.

Why should they use it? A food system like any other is used, because its users believe that their use of it would enable them to achieve something desirable, and in this case get food in a more convenient way. These actions can be placed in logically linked groups relative to some step towards a given overall objective, viz., getting food. Put differently, a system in use instantiates the use of several sub-systems which may contain actions shared by more than one sub-system. For instance, individual physical movements by people to do different things are common to all sub-systems, and the sub-systems are used in the same way. For example, a subsistence farmer uses a simple transport system when clearing his fields, planting seeds, harvesting and carrying the lot home.

Apologies for jumping the gun a little, but it is necessary to do it here to ensure a continued description of the requirements of justifiability which cut across the board. Let me begin with some self-evident facts beyond dispute:

 • All animals including man need food, and they obtain it by being herbivores, carnivores or like man, being omnivores.

 • Except in some sedentary species specially adapted to their environment, food has to be procured by some effort on their part. Early man did not differ very much in this from the other omnivores. Their common food system consisted of a search for food and harvesting it from their environment by hunting, fishing or gathering and its consumption on procurement.

 •Our intellectual evolution is simultaneous with the emergence of social groups, for tools essential for the generation and expansion of our knowledge and skills depends on the possibility of passing it on to the next generation. This is impossible without social cooperation out of which shared social practices could emerge.

 • One of the first such practices seems to be taking the procured food to a shared location where archaeological evidence of charred bones shows some animal food has been cooked.

 •Now, it is possible to identify three component sub-systems in our primitive food system viz., searching for food with view to hunt, fish or gather it, in other words, harvesting it directly from the environment, transporting it ‘home’ and preparation prior to consumption. How long we used this simple system cannot be ascertained.

 • The next important evolution in our food system seems to be a two-pronged development where some social groups settled down into a primarily agricultural mode of life, while others, principally owing to their environment, evolved a nomadic way of life. However, they have never been mutually exclusive, and must be seen as a question of degree.

 •Thus, cultivation and animal husbandry gradually supplanted the hunter-gatherer food system in a majority of social groups. It would be ignoring the reality as it is, if we overlook the well-established anthropological fact that many hunter-gatherer communities survived in the world as recently as 100 years ago in Asia, Australia, South America, etc.

 • Agriculture and animal husbandry added a new component to our primitive food system viz., a real food production system whose produce could be much more easily harvested and whose yield could provide one with a food surplus.

 • Availability of surplus food intensified man’s efforts to preserve food for future use in more systematic ways. Anthropological evidence shows that even the hunter-gatherers developed some preserving systems like smoking the surplus meat, or preserving it in hollows of trees and fill them with wild honey (Veddas of Ceylon). In order to keep food for future use, adequate storage systems have to be developed. While the old cereal storage systems are still in use in some parts of the world, the giant grain silos and refrigerated storage facilities represent their technically advanced counterparts.

 • The new food security agriculture afforded man more time to devote himself to the quality of what he ate. It is reasonable to suppose that the motivation for cooking could well have been the improvement of taste and flavour of the food it could bring forth.

 • This introduced a new justification for eating viz., what may be called dietary enjoyment while it was previously only concerned with appeasing one’s hunger. Please recall that at this point in our history, man had no idea about balanced diets or its health implications.

 • In a considerable number of social groups, dietary enjoyment seems to have received considerable attention which resulted in the development of sophisticated cookery in countries where such social groups could influence cooking.

 • Other things being equal, food production depends on the availability of adequate ecosystems services. Those include the availability of water and mineral nutrients, salubriousness of the climate, soil texture, etc. Continued adequate availability of those services depends on the equilibrium between their use by the living and their return to the environment. In addition to the natural water cycle and a part of the nitrogen cycle (lightning), the bulk of this exchange is driven by the birth and death cycle common to the living.

 • But the adequacy of the contribution the birth and death cycle makes to the above equilibrium depends on the qualitative and the quantitative dimensions of the living. The former indicates the bio-diversity among them, while the latter represents the optimal population of each species. Thus, the possibility of the first equilibrium depends on the second equilibrium between bio-diversity among, and the populations of the species endemic to an area.

 • Repeated cultivation or continued grazing in a given area would soon bring about a distortion of this second equilibrium reducing one or more of ecosystems services on which agriculture depends.

 • Existence of slash and burn agriculture, use of wood ash from homes, and later on application of animal manure indicate man’s pre-scientific awareness of loss of soil fertility due to continued suppression of original bio-diversity and population balance, and his response to it. This response represents the use of a limited supplementation of the lost ecosystems services and may be called the supplementation system. In nomadic societies, migration of people and their animals following the seasons served this purpose, for it allowed the grasslands to lie fallow long enough for their regeneration.

 • Our potential ability to acquire knowledge and skills shows a wide variation with respect to the field in which they may successfully engage. While some have ‘green thumbs’, the others might revel in abstruse mathematics but will be incapable of keeping a potted plant alive. This awareness seems to have dawned upon man quite early, for it appears to have motivated the second most important development in our social evolution viz., division of labour. Social cooperation enabled man to find a use for division of labour that would make his life considerably easier.

 • In its fairest form, it involved a person belonging to a social group to engage in activities useful to all, but in which he excelled, and could exchange his productions with others for something he needed but could not produce himself, and thus emerged the barter system.

 • At least in the beginning, justifiability of the barter system seems to have been observed. Otherwise, it would have become unpopular, and then extinct. Its justifiability rested on the barter system remaining an exchange of commensurable values. However, human nature being what it is, it would be naïve to believe cheating took a long time to enter into the pastoral picture. But its lack of modern sophistication and use of casuistry may have made its unfairness somewhat more tolerable.

 • Before we go on, let us recap the components of a food system we have identified as they gradually emerge out of the continuing human social evolution. Environment which was the sole source of food has been partially replaced by agriculture as defined by the FAO (fishing is still a part of the environment in use). This may be called the food production system. Agriculture made possible an improved preparation/culinary system, created the need for better harvesting, storage, transport and preservation sub-systems. An early supplementation system has also emerged which would later expand enormously. Although exchange of food for other items or services doubtless motivated the creation of barter system, it is vital to understand that its emergence is a secondary phenomenon.

 • The perceptive would have note at this point that much of the elements now presented as ‘new discoveries’ or modern’ have been with us for millennia. It is time we clearly distinguished between technical advances within a sub-system and the purpose of the whole that remains unchanged as long as man needs food.

 • The next crucial development that affected the food systems in a mixture of positive and negative ways is another product of our social evolution viz., invention of the monetary system. Let me emphasise that its negative effects are not something inherent in it, but rather our misuse of a system for unfair profit.

 • Invention of money enabled man to introduce an intermediary step into the barter system. One could sell say a farm implement or a domestic tool for money and then buy food, or the farmer could sell food and buy the tools he needed later on. This is much less cumbersome and made the exchange of goods and services using an intermediary viz., money, which is far more convenient and easy.

 • Our search for greater personal convenience seems to have branched out with great rapidity on the wake of this latest invention. It is difficult to ascertain the evolution of trade, nor is it of great importance. What matters is that very soon provision of food as well as so many other goods and services was taken over by a new class viz., traders who did not produce or provide those themselves.

 • Cutting out the jargon, their work is concerned with buying goods or the services from those who actually supply them and sell it to the end-users making a profit by the transaction or exchange. When carried out fairly, there is no doubt that the trader should be rewarded for his services. Thus emerged the selling system associated with food systems, which owing to its huge influence, unfortunately clouds our understanding a food system as a whole in an objective and a justifiable manner.

 • Association of selling system with food systems have led to many undesirable results which have received scant attention of the mainstream describers of food system. Let me forcefully underline that system is a socio-cultural artifact and this ontogeny does not lend it to any theorizing, for such artifacts are Structured and used according to social norms.

 • Before I comment on those undesirable results, the time has now come to mention another system that has become associated with food systems i.e., health system. First, let us recall that there are still some medical doctors who simply dismiss the notion of balanced diet in Europe and in Americas. I use their attitude only to emphasise that our association of food with good health is rather recent. One does not know how many tens of thousands of sailors on board sailing ships were crippled for life by Scurvy caused by the lack of Vitamin C etc. But fairness also compels us to remember that as death rates were high in the past and populations were smaller and land more fertile so that rural populations least influenced by trade had access to better nutrition than one would suppose.

 • Let us now look at the purpose of nutrition; it serves two basic functions. First, it is necessary for growth and renewal of tissues. Secondly, it is catabolised to obtain energy for the tasks our bodies have to perform.

 • Now, obviously our intake of food should be sufficient to meet our metabolic needs which will vary according to a wide variety of factors at any given period of a person’s life. Let us recall we are not machines doing exactly the same thing all the time. Thus, there is no objective scientific basis for prescribing a diet in terms of fixed number of calories and grammes of chemical content for any being human or animal as some seem to think. The best we may do is to offer flexible guidelines on good dietary habits, and most importantly, enable to people to acquire a sufficient dietary competence.

 • Dietary competence represents the knowledge of the food best suited for oneself with respect to one’s age, sex, work/level of physical activity, local climate, local food culture, and not the least one’s own dietary enjoyment. Moreover, it also includes how and where to obtain such food and the skill needed to prepare it when necessary.

 • When one does not possess the relevant dietary competence or is unable to apply it owing to the appropriate food being not available or affordable, two adverse results may ensue. These would also result from an inadequate dietary competence or when it is suppressed by an advertisement-induced desire to consume unhealthy food even when appropriate food is available and affordable as it often encountered in affluent societies.

 • The first undesirable result involves insufficient intake of some nutrients bringing about a wide variety of deficiency diseases, stunted growth and cognitive abilities, etc. The second represents an excessive intake of some nutrients resulting in obesity and related problems that trigger NCD’s. It must be borne in mind that this awareness is quite recent when we recall that food systems have been with us for millennia.

 • Thus, the availability of a varied, wholesome balanced diet at an affordable cost will by definition ensure good health. It is difficult to see how a public health approach could be of any use in achieving our objective. Medical authorities could play a key role in publicizing and banning food stuffs that fall into the following categories:

 A. Food sold as main meals or snacks containing injurious additives, large amounts of sugar, fat, oil, etc., in them.

 B. Regular and rigourous check to ascertain that every kind of food processing, storage and outlet conforms to high standards of hygiene.

 C. Display a real dedication to the dictum “precaution is better than cure” by requiring stringent long-term testing on food produced by ‘state of the art’ or ‘cutting edge’ methods of food production before it is allowed to be produced and sold.

 D. Actively disseminate information on healthy eating habits, and the health hazards posed by some edible items and beverages on sale.

 • As the aim of a sustainable food system is to provide a diet described above, inclusion of a sustainable diet as a separate item is redundant.

Commercialization and the lateral expansion of food systems:

I will begin with a few clarifying remarks; unlike when it was in its ‘pristine’ state, a few lateral sub-systems have been grafted onto it during the course of centuries. We have already talked about the supplementation and selling systems. Indeed, the latter began to pervade all the other systems, which made it very difficult to identify it as a means devised to enable us to meet a universal need, especially in a world where ‘economy’ seems to be thought as the master and man as its humble servant. I have outlined the evolution of our food systems and even though preferable to revolution, evolution too could give birth to highly undesirable results. Fortunately, food system is a human invention, and it is certainly in our power to prune its deleterious off shoots so that the healthy trunk may grow. Just before the 2nd World War, great many learned helplessly claimed, “you can’t uninvent the evil of cannons”, but there is nobody in the modern world who could build again 16” naval artillery! Knowledge and tools are gone! Pyramids are there, but is there anybody who could make another? Genie could be bottled again if we just have the will.

 • The first sub-system to be commercialized is the harvesting or procurement system. From now on, I shall use the latter term because most of us have to purchase food instead of harvesting it for personal use. Thus, a greater part of the output from a harvesting system will be purchased by an intermediary who in tern will directly or indirectly sell it to an end-user. This does not exclude the producer from selling the harvested produce himself as it is still done and is highly sought after. Competition among sellers in buying agricultural produce and selling it, has become a mere symbol owing to the proliferation of multinational food ‘giants’ and their national imitations. This has rendered the small holder bankrupt in affluent countries leading to the creation of huge factory farms where wide-spread capital-intensive monoculture has become the norm. The adverse effects of this development on the possibility of producing a wholesome variable diet, sustainability, and living conditions in cities due to migration need no elaboration.

 • Thus, commercialization has made major inroads into independent food production systems both on land and sea (factory ships). This has deprived many small holders, fishermen and their dependents unable to meet their nutritional needs as they have been denied their sole major source of income. As most of them are adults, their only choice now seems to be to become unskilled seasonal laborers and eke out a precarious living. It is difficult to see how this piece of the ‘value chain’ could be of any benefit them in real life.

 • At this point, let me give a brief historical sketch of the developments in supplementation sub-system. One it may be envisaged as a two-pronged approach. The first involved the actual supplementation of the ecosystem services either in depleted areas, or that in areas where they were insufficient prior to any previous cultivation. The latter is most likely to be motivated by population pressures. Irrigation undertaken by rulers of ancient Sumeria, Egypt, Incas of Peru, Ceylon are too well known to be described further. Even local communities like those in upper Pan sheer valley and Nooristan in modern Afghanistan have been documented (“A Short Walk in the Hindukush” by Eric Newby in 1956), Irrigation channels have existed in hill farms of the latter province long before its forcible conversion to Islam in 1895

Advances in engineering enabled the development of tools to enhance soil tone by thorough ploughing, damming the streams to form larger and more solid reservoirs and irrigation channels, and planting, weeding, harvesting tools etc., all of which were fully commercialized. Obviously, these innovations are capital-intensive, and as such entail varying numbers of job losses even though they improve the yield and hence food security. However, not much has ever been said about how the now unemployed farm workers may benefit from that increased yield. In real life, what it means is greater food security at the expense of malnutrition for some.

As a result of the diminution in bio-diversity in permanently cultivated areas, loss of soil fertility and increase in plant and animal pests and pathogens resulted. Here, advances in sciences were again used to make chemical fertilizers and biocides to counter these two problems even though their interaction with the environment was ill understood at the time. These now range from critical problems like salination of the soil in huge areas (Aral sea disaster, islands of Indonesian archipelago and the latest candidate for disaster, Maipo valley in Chile), and the permanent loss of amphibians and fish from many European streams exacerbating the increase in insect pests. Commercialisation of these developments not based on a near total lack of relevant knowledge seems to have been motivated by a desire for profit rather than anything else. Long-term health consequences of soil pollution by these two agencies have been fully discussed at the GSOP conference hosted by the FAO earlier this year.

The second prong of supplementation involved breeding animal and plant species with greater yield than parent species, which has been carried out since the ancient times. It should be emphasized here the ‘improved species’ generally give a higher yield, but required greater quantities of fertilizers and biocides to survive. Moreover, their ‘improvement’ usually involved the quantitative and cosmetic aspects rather than a holistic improvement, for they often lack the taste of the original, ability to withstand its natural enemies owing to the limitations in its genome, etc.

Various techniques to alter plant and animal genomes in the laboratory to achieve the same objectives as those above has been introduced and continues, for it is a billion-dollar industry. However, the toxicity of Maize pollen from genetically modified plants to pollinators in the US has been known for some time, a trustworthy goal-directed scientific enquiry into its safety to our environment including man remains to be undertaken.

Another yield improving method is the use of growth accelerators in spite of the warning given by both scientists and environment groups. Once again, this is a billion-dollar industry not to be influenced by scientific facts. However, EU has been working on identifying the agro-chemicals that act as endocrine disrupters

Which indeed is a grave threat to human and animal health.

 • Coming down our outline of a food system, we now reach preserving system. Once again, a historical perspective shows us drying, salting, and smoking were common domestic practices long before they were commercialized. Moreover, the Greenlanders have traditionally preserved meat by burrowing it in holes dug in ice. Furthermore, preserving fruits as jams and jellies, pickled vegetables were often done at home. Needless to add cheese, butter and other dairy products were known for a long time before they were industrially produced for sale. Thus, commercialization entered into food preservation by direct and indirect means.

 • Our next item on progressive commercialization is the preparation/culinary sub-system. Early records show that while husking the grain remained a domestic chore for a long time, grinding it into flour became subject to a primitive commercialization when the farmers had to get their grain ground at the mill of their land owner. Later on, a professional miller took it over on his own account. In both cases, the customer had to pay in kind, and later on with money. It must be noted that husking grains like rice before cooking is still done at home in some rural areas in Asia and Africa. From this, it was a small step for a trader to purchase grain, husk, and mill and sell it to an end-user ready to be cooked or baked. Later on, this was extended to other food stuffs including meat, poultry, fish, fruits and vegetables that was cleaned and sometimes cut into filets or portions, packed in convenient quantities to be sold. One often encounters this in every affluent and even in not so affluent countries. Effects of this practice on the nutrients, especially when they are frozen as it is frequently done, is not very desirable.

 • How the whole preparation system including the culinary system proper has been commercialized needs no elaboration. We do not know with any certainty where cooked food was first made available for sale, but every eating place ranging from the humble street kitchen to most prestigious restaurant represents this practice. Naturally, the degree to which these establishments cater to our balanced nutrition and dietary enjoyment varies immensely.

 • Carrying this development beyond reason from a nutritional point of view, the whole preparation system has been industrialized to produce items frozen and sold nearly throughout the world. While some of those carry well-known generic names of dishes like pizza, beef Stroganoff, etc., their relationship to the original is often difficult to recognize. Their actual content and effect on our health has increasingly become a matter for concern.

 • These represent a direct commercialization of various sub-systems in a food system. I have purposely omitted to mention two sub-systems until now because they are always used what I would call recursively i.e., repeated used in one form or the other between and within every sub-system. They are the transport and storage systems. Trimmed of their technical gloss, they are respectively concerned with moving something from one place to another, and keeping something with least possible damage for a certain period of time. It needs no explanation to see the generic identity among man carrying his harvest on his back, it sent by rail or a container ship, as well as storing surplus meat in the hollow of tree or in a large refrigerated facility. Even in our grocer’s unloaded items are transported to a store from which they are again taken to the shelves to replenish them as needed.

 • Our last but perhaps the most insidious form of commercialization falls into two groups. The first involves purchasing huge quantities of food items, particularly like cereals when they are cheap in order to create an artificial scarcity and wait for a sufficiently long time for the prices to rise. Then the stock is sold for a greater profit, the best known instance of this practice is the “Great Grain Robbery” committed by the former Soviet Union in 1970’ies.

 • The second group comes in two flavours. In the first, food or cash crops like coffee to be harvested is bought from poor producers on advance payment of the whole price or a part. Naturally, this is a gamble, but it is undertaken after thorough study of the possible risk of loss. The price paid here is always considerably lower than the market price on harvesting, and the producer hardly ever receives a fair price for his produce, but the seller makes a respectable profit at the expense of the producer and the end-user.

 • Another variant of this involves the first buyer of the future crop selling it to a third party for a more moderate but a more certain profit, while the latter awaits a favourable moment to make the final sale of the item. Naturally, this may be continued to a fourth or even a fifth buyer before the item is actually sold. This comes under the impressive name ‘speculation in commodity futures’! Reader may work for himself what effect these activities would have on the affordability of food.

 • Now, we come to two other sub-systems that have been glued onto every commercialized, actual sub-systems of a food system. These are the packaging and advertising systems. Sometimes, they operate in tandem as can be easily seen on the labels on packages/boxes of industrial frozen ‘food’. Their eye-catching colouring and audio-visual means of advertising used in combination, has already attracted a considerable demand for such products. The enormous profits made by package ‘designers’ and advertising companies is well-known, and I need not elaborate on the health consequences of consuming such items, and how unfortunate that the end-users pay for eye-candy of advertising and packaging without getting anything of real value in return.

**Conclusion:**

Food systems have been in use since the emergence of man, and its necessary components were already in place during the Stone Age. Its most radical addition came with the invention of agriculture as well as nomadic way of life. This involved using a part of our environment either for cultivation or the sustenance of household animals, and thereby creating an actual food production system. Our growing mental acuities enabled us to invent an early supplementation system in order to counter the depletion of ecosystems services brought about the loss of bio-diversity arising from repeated cultivation of or grazing in the same area.

Next important development was the division of labour and the emergence of barter system, which was then replaced by trade via an intermediary between the producer and the end-user. While scientific advances had some benefit, its adverse effects have received very scant attention indeed. Simultaneous with this, sub-systems of most food systems have been commercialised to varying degrees making understanding what may justifiably constitute a food system difficult. An attempt has been made to achieve that objective, and I hope that the discerning readers would look at it as showing a set of human activities in real world where they perform a definite purpose viz., keep us alive here and now, not in theory.

I would be happy to provide any clarification should it be required, or help in making a graphical presentation of the system outlined here.

With best wishes,

Lal Manavado.

## Uranio Mazzanti, CRF Sc (Private Research Organisation), Italy

Hello everybody,

I hope to have posted my contribution in the right area of discussion (Food or forests?)!

Anyway: I think that forests are a great opportunity to both protect soils and environment and also supply food.

The coupled mature technologies of "wood to energy" (heat and electricity) by gasification and steam explosion should be investigated to offer the feasible opportunity of producing cellulose based forage for ruminants.

This could possibly represent an economic interest for implement forestation instead of cutting trees for more soil room to traditional agriculture.

An integrated (energy, soil&climate protection & forage production) exploitment of forest can be a model of innovative sustainable "meat production" (cellulose is not suitable as fodder for mono gastric livestock’s).

I'm looking for people interested in sharing opinions and technical/economic considerations on this possible (?) forests protection giving to their cultivation/responsible use a stronger "economic interest".

As the "species" that survive are those the man is (positively) interested in.

The poor economic interest in forest sustainable exploitment destroys them more than fire!

I'm interested in possible comments. Even not positive ones of course.

Thank you in advance.

Uranio

## Manuel Moya, University Miguel Hernández, Spain

**General Comments**

If this publication is for FAO certainly it is OK, but if its target is wider (stakeholders…) then some modifications would be advisable:

A hierarchy for the related organizations and very similar terms (SFS followed by Program, SCP…) would improve the text comprehension.

Avoid redundancies mainly appearing in section 2.1 and 2.2

In general the boxes content are very clear and concise but the subsequent comments are longer than the required explanation or support.

**Specific Comments**

2. (Page 4) SFS Key Concepts.

In my opinion it is ok in all its entries including figure 1.

It is not clear the reasons (political, scientific) for CFS presence in the draft (p 9), is perhaps the ‘boss’?

2.1.2 (p 12) SFS Approach

Definition OK. Comments a little bit long, because of the good footnotes and references, the text could be reduced and gaining readability. I.e. the para ending with reference 31 is very informative and perhaps should be expanded.

The next paragraph is to me mainly focused on LMIC, nevertheless Food insecurity affect 12.7 % of hospitalized people in US (Leung C et al. JAMA Internal Medicine 2017; doi: 10.1001/jamainternmed.2017.0239), maternal food insecurity creates a barrier for exclusive breastfeeding (Orr SK et al. CMAJ 2018; doi: 10.1503/cmaj.170880), or a more general view the problem of poor urban children (UNICEF)

2.2 (p 16) Definitions and discussion of key concepts (in relation to SFS). If added the content in brackets perhaps the following text can be reduce or even erased

2.2.1. (p 17) Sustainable diets. In the comment after the box and in the second para I would suggest that following, or instead of seafood, to quote the Alternative for proteins (from FAO Health & Sustainability). This comment could be reduced by avoiding redundancies.

2.2.2. (p 19) Sustainable Value Chain (FVC). FVC and FSFVC are mere concepts or planned actions? I’d suppress history

2.2.2.1 (p21) Sustainable Food Value Chains Approach. This is very well designed and could include the content of 2.2.2. Explain the evaluation possibilities for Circuits courts. Because of the similarities with SFS Approach, could it be referred to its content and decrease repetitions?

2.2.3. (p23) Food Loss and Waste.

Perfect, clear, very informative

2.2.4. (p26) Resilient Production. Definition OK. Comment a little bit long.

3 (p 29) Different Roads leading to Sustainability

Introduction and comment very clear. My comment only on:

3.1.4. (p36) Public health approaches.

Check content with SFS Approach (p 13).

4 Further definitions of relevance to SFS

Determinants of Health (p 51). In the clinical and practical grounds is considered the A. Smith (1987) health definition: ‘Individuals are healthy insofar they can function in their context’. That has been increasing the field of health (for example type 1 diabetes perfectly controlled individuals can be acting as normal healthy subjects apart from the daily insulin administration). Then the determinants can be: Adequate and sustainable food availability, Avoidance of alcohol and unhealthy substances, Reasonable physical activity, Adequate treatment and control of chronic diseases. These determinant should be implemented along the whole vital circle.

## Florence Egal, Food Security and Nutrition expert, Italy

First of all, congratulations for a huge undertaking. A few points/comments (which I would be happy to clarify further):

**A.** I would suggest that sustainable diets be used as an entry point to discuss sustainable food systems. People do not eat commodities, and value chains only contribute to specific elements of a diet. We certainly need to have more sustainable value chains but only once we have a clear understanding of what should be a locally appropriate sustainable – and therefore seasonal - diet.

Traditional diets were traditionally associated to a large extent with local food systems, this is not the case any longer given the growing disconnect generated by the commodification and standardization of foods and the bias towards international trade. In that perspective, the reference to the Mediterranean diet is well appreciated but reflects traditional food systems in the Mediterranean bioregion (see below). Nordic chefs tried to adapt it and ended up with the new Nordic cuisine. The traditional Corean diet is the basis for healthy diets in Seoul, etc. It is important to understand indigenous diets (and related food systems, see <http://www.fao.org/indigenous-peoples/ifs-seminar/en/> ) and revisit them on the basis of relevant scientific knowledge.

**B.** Territorial approaches are mentioned in the paper. They are well suited to operationalize complex concepts such as sustainability (which brings together economic, social and environmental dimensions). This should therefore come much earlier in the draft. Maybe this document could be of use [collaboratif.cirad.fr/alfresco/s/d/workspace/SpacesStore/.pdf](https://collaboratif.cirad.fr/alfresco/s/d/workspace/SpacesStore/6daa60e1-d89e-4a59-9bfd-ff5f66a93130/TP4D_vENG.pd)

The role of cities in driving territorial food systems and the need to improve urban-rural linkages are important dimensions of territorial approaches.

The paper refers to agroecological zones. We may want to add the concept of bioregions (A bioregion is a land and water territory whose limits are defined not by political boundaries, but by the geographical limits of human communities and ecological systems), which also brings in the human dimension. Interesting food system research (including prospective studies) use this concept as a basis, e.g. <<http://www.kpu.ca/isfs/swbcproject>>. Bioregions are usually subnational and often cross-border) which emphasizes the importance of local food governance.

**C**. Social sustainability should not be limited to « broad-based benefits for society ». It should not undermine culture, and should build upon social structures and traditional solidarity mechanisms. It would be important to further emphasize participation of people and institutions and give more attention to human rights (including the right to food, which provides a solid conceptual basis for social sustainability of food systems). We could also refer to the Agenda 2030 slogan « Leave no one behind »

On Fig 2, any way we could have eco-social development at the top for a change? :-)

The paper refers to « traditional power dynamics » p. 14. The word “traditional” may need to be clarified. Are we talking of political economy?

P. 41 on research and innovation, I am surprised there is no reference to the IPES-food work – in particular [http://www.ipes-food.org/files/IPES/2010/Principles/of/SFS.pdf](http://www.ipes-food.org/_img/upload/files/IPES%2010%20Principles%20of%20SFS.pdf) . Should be given to generation and sharing of practice-based evidence, through knowledge management of promising practices and research action.

A precondition for sustainable food system is the revision of the legal and regulatory framework to provide an enabling environment. This dimension is missing.

The reference to urban and periurban agriculture (UPA) should be framed within an urban food system framework. Its role should not be limited either to food production since it usually also plays important social and environment roles.

I may have missed it but did not find in the sources any reference to the IPES-food work? <http://www.ipes-food.org/reports/>

## Guljahan Kurbanova, FAO, Russian Federation

First of all, let me express thanks to those who has prepared the draft and to those who has arranged the online consultation.

It is essential to outline the importance of timely prepared draft and arranged discussions on Sustainable Food Systems. Since 2015 different actions have been taken towards Sustainable Development Goals (SDGs) many of which are linked and addressed to sustainable food systems and its components.

Definition and approaches. A sustainable food system is a collaborative network that integrates several components in order to enhance a community's environmental, economic and social well-being. It is built on principles that further the ecological, social and economic values of a community and region. (Pothukuchi and Jufman, 1999.)

The reference document reflects the above classical definition and even goes beyond it since it is supposed to be a platform or guidance for all working under the issue of sustainable food security and nutrition linked to social inclusiveness, right to food and conservative use of natural resources in a rational and stable manner. At the same time it draws in the center of all the consumption and production patterns in the area of food and agriculture with balanced environment and rural livelihood. Therefore, it will be better to emphasize and articulate to role of agriculture as a basis of sustainable food system (SFS) and at the same time make it has be easy for reading able and understandable for all actors, and first of all farmers, small and medium food producers, and consumers.

The main sense of SFS is its socio-economic value in terms of human needs and economic results based on resilience and environment protection oriented to a positive or neutral impact on the natural resources environment (environmental sustainability).

Structure of SFS. On the other hand, SFS is a wide comprehensive complex of components, activities, outcomes and drivers. For example, based on using of the natural resources for producing and consuming food these systems serve social needs and norms in different cultural, economic and political environments which comprehensively influence dietary preferences. To some extent the sustainability of food system depends on financial and infrastructural factors including overall arrangements of financial system (currency fluctuation, limitation of financial flows, stability of banking sector and financial markets etc.) and international infrastructure (IT, transport routes, stoking facilities, stocking technology etc.). Therefore, in the components of SFSs the financial and infrastructural subcomponents on GEO component has to be included.

Activities. Food systems involve a multitude of people depending on food to consume and generate income (producers, processors, retailers and consumers governments, NGOs, agriculture and health officers, teachers, etc. Each of the listed groups has a different set of interest and power to influence food systems and play their own role in sustainability by using different types of instruments, institutions, regulations, subsidies, and laws through relative activities. From that point of view, among the activities listed in the scheme on page 10 it is suggested to add two more activities: stocking (after harvesting) and distributing (after marketing). Stocking is very important activity for stable provision of food and animal feed. Nowadays it requires a special attention due to limited facilities and climate change. For example, due to climate change the quality of stocks is very sensitive since possible impact of mycrotoxins etc. The activity, such as distributing, covers provision variety of food needed within sustainable diet to different location including remote areas. It also covers the principles, scope and net of social protection to poor and vulnerable consumers. It also plays a special role in the provision of equality. Therefore, these two activities are very important in the provision of the objectives of sustainable food systems.

Outcomes. In the set of outcomes of SFSs it will be good to show indicators for each outcome relevant to SDGs. Food consumption is variably affected by a wide range of factors including food availability, food accessibility and food choice influenced by geography, demography, disposable income, socio-economic state, urbanization, trade liberalization, globalization, religion, culture, market fluctuation, and consumer attitude and behaviour. These drivers result in several social, economic, health and environmental consequences on food consumption changes such as increase in nutrition-related NCDs, social inequalities, loss of biodiversity, climate change, fish stocks depletion, etc. All of them contribute to food security linked to health through malnutrition, economic development, environment, infrastructure, trade and geopolitics. The absence of food security can have significant consequences for individuals and society in a whole, including malnutrition, obesity, disease, and poverty. Therefore, it is essential to emphasize the role and ways achieving food security and nutrition as results of well-functioning agri- food sector and SFS. In fact, food and nutrition security is not just producing sufficient food and to a certain extent encompasses the need in provision of access to food at all times for having the sustainable diet. Currently the aggregate production of food in the world is relatively enough for people but it is unequally distributed throughout territories and different social groups. Therefore, food insecurity and malnutrition (undernutrition, over nutrition, and micronutrient malnutrition) problems are widespread. These as well as the social, economic and environmental negative impacts of the current food consumption patterns and diets highlight the inadequacy of the global food system.

Objectives and indicators. Achieving sustainable food security will require getting the priorities right and acting upon them. One of the main objectives of that has to be addressed to support right to food and food sovereignty. These priorities should necessarily include transition towards more sustainable food consumption patterns and diets. It requires working on both sides of the food chain i.e. food production and food consumption. The focus on sustainable diets integrated in a wider food system is original in this sense and helps to integrate different dimensions of food security and nutrition. However, diet itself does not reflect enough economic factors pushing people, in particular vulnerable ones, to follow up balanced diet recommendations due to access factor or infrastructural conditions (occurrence mycrotoxins or use of conservative or any other ingredients). Therefore, one of the instruments on the provision of SFS is a set an adequate indicators reflecting all components, activities, outputs and outcomes. It is also necessary for monitoring and analysing SFS.

The sustainability of food system has to be measured for further developing and implementing adequate food systems policy and cooperating with market based approach meaning market monitoring, market assessment and response analysis. How it might be measured is a question for further consideration and development.

Recommendations:

1. Sustainable food system is very comprehensive and complex issue that is reflected in the given draft. However, the links and interconnection between different approaches as well as their variations has to be more clearly elaborated and understandable for readers. It might be a more clear if visual instruments used for making it a more clear and transparent for all readers, actors etc. The difference between SFS and sustainable food chain is not clearly outlined. From my point of view, the first (SFSs) is more oriented to consumption while the second one is more about the circle from fields to its ending point.
2. Financial and infrastructural component on GEO component has to be included
3. In the part of activities two more activities have to be added (stocking and distributing).
4. One of the main objectives of SFS is the provision of food security that is not well enough expressed in parts of sustainable diet and sustainable food chain although it is clearly identified in SDG2 with its relevant components. It will be good to use universal or standardized approach in expression of main parts of SFS with referenced to SDGs and their indicators. With regard to food security its indicators has to be included in the part of sustainable diet.
5. For all parts of SFS, in particular of the part of sustainable diet, the social and economic indicators demonstrating sustainability such as poverty level, food budget, equality, literacy, and education level will help to outline the problems, purposes and ways to reach sustainability.
6. It is necessary to demonstrate or measure by relevant indicators each of approaches in particular sustainable food systems approach. It has to be done by using SDGs indicators with SDG1 and SDG2 as a core for reaching overall sustainability.

In the draft there is also a request to add some definitions for categories of sustainable food systems. Please see my suggestions below.

Food types/ groups:

1. vegetables and legumes/beans
2. fruit
3. lean meats and poultry, fish, eggs, tofu, nuts and seeds, legumes/beans
4. grain (cereal) foods, mostly wholegrain and/or high cereal fibre varieties
5. milk, yoghurt, cheese and/or alternatives, mostly reduced fat.

Grouping of foods is based on the provision of similar amounts of key nutrients. For example, key nutrients of the milk, yoghurt, cheese and alternatives group include calcium and protein, while the fruit group is a good source of vitamins, especially vitamin C. (the Australian Guide to Healthy Eating, <https://www.betterhealth.vic.gov.au/health/healthyliving/food-variety-and-a-healthy-diet>...).

1. Sustainability information schemes – complex of tools and communication channels for timely and regularly producing, circulating and sharing of information by using new appropriate technology in assisting individuals, communities and all other actors of SFSs to meet their developmental needs.
2. Market-based approach – it is a mechanism for consideration changing conditions and requirements to direct limited human, financial, and natural resources into SFS in the most cost effective ways, programs and projects taking into account prices, profits and possible consequences for balancing socio-economic and environmental needs.

## FAO Publications

Here is a selection of titles proposed by [FAO Publications](http://www.fao.org/publications) for forum participants who would like to read more on **sustainable food systems.**

[Food systems for an urbanizing world](http://www.fao.org/3/I8346EN/i8346en.pdf)

This report presents a narrative stressing the centrality of food to the future of cities, countries and the planet, and to jobs, human health, food security and climate change, and proposes the TRANSFORM framework to develop food-smart cities.

[Integrating food into urban planning](Integrating%20food%20into%20urban%20planning)

Through an array of successful examples, spanning from the Tsukji market in Tokyo to urban agriculture in Lima, this paper shows that a systemic approach to integrating food into urban planning is crucial to increase food security and nutrition.

[Plates, pyramids, planet](http://www.fao.org/3/a-i5640e.pdf)

This report evaluates government-issued food guidelines from across the globe, looking in particular at whether they make links to environmental sustainability in addition to promoting good eating habits.

[The State of Food and Agriculture 2017: Leveraging food systems for inclusive rural transformation](http://www.fao.org/3/a-i7658e.pdf)

This year’s report looks at rural and urban areas not as separate domains but as a continuum ranging from the farm level to megacities, and emphasizes the dynamic roles that rural towns and secondary cities play as intermediaries in boosting the rural economy.

[Nutrition and food systems: A report by the High Level Panel of Experts on Food Security and Nutrition – September 2017](http://www.fao.org/3/a-i7846e.pdf)

This report looks at the links between access to food and people’s nutritional status. It calls for policies that promote adequate food access for all and strengthen consumers’ information on healthy products.

[Nutrition-sensitive agriculture and food systems in practice: Options for interventions](http://www.fao.org/3/a-i7848e.pdf)

This publication provides a list of food system-based interventions (e.g. biofortification, price policies, labelling and education) to improve nutrition across four key functions of the food system: production; storage and processing; trade and marketing; and food preparation.

[Building a common vision for sustainable food and agriculture](http://www.fao.org/3/a-i3940e.pdf)

This report builds on FAO’s extensive experience in developing sustainability concepts, approaches and tools.

Further reading

[Sustainable value chains for sustainable food systems: A workshop of the FAO/UNEP Programme on Sustainable Food Systems](http://www.fao.org/3/a-i6511e.pdf)

[Food losses and waste in the context of sustainable food systems: A report by the High Level Panel of Experts on Food Security and Nutrition June 2014](http://www.fao.org/3/a-i3901e.pdf)

[Our world is urbanizing: Is food on your agenda?](http://www.fao.org/3/I8568EN/i8568en.pdf)

## Nitya Rao, School of International Development and LANSA

This is overall a very good draft that tries to highlight the linkages between sustainable production and consumption, pointing to a range of entry-points for achieving sustainable food systems. Congratulations to the team.

While trade-offs are briefly mentioned, my main concern is the lack of adequate acknowledgement of power relations and hierarchies embedded within all stages of the process, that is, the distributional issue. We know that there is a huge gap between the rich and poor in terms of food consumption and dietary diversity, with indigenous people in India confronting a decline in dietary diversity over the past three decades, due to larger changes in land use patterns and the conflicts between macro-economic policies that encourage GDP growth through ‘industrial and infrastructure development’ often at the cost of biodiversity and local livelihoods. Divisions based on social identity – class, caste and ethnicity – need to be acknowledged, so the challenge of rising global income inequalities can be addressed.

We also know that there are power inequalities by gender which both shape divisions of labour and consumption patterns. Women in many contexts may be inclined to cultivate a diverse set of crops for food security, however, they may be excluded from decisions on land use, and lack control over inputs and resources. Greater attention needs therefore to be placed on social and gender power dynamics at each stage of the SFS, and the resource entitlements of women and men across diverse communities, in order to identify and address possible constraints.

A second element relates to shifts in diets to ultra-processed foods, contributing in turn to the double burden of malnutrition. There are many reasons for this, which are often not well understood. First, at a policy level, taxation policies need to restrict the sale and use of such foods, promoted often with several subsidies and incentives by the producing firms. On the other extreme, at the micro-level we need to better understand local livelihood patterns and the gender divisions of labour that may be encouraging the consumption of ultra-processed fast foods. In the hills of Uttarakhand in India for instance, where a majority of men migrate to the plains in search of employment, the entire burden of production and reproduction falls on women. Firewood for fuel is often not easily available and requires long treks. As a result, food that needs little fuel for preparation is potentially preferred. It is also easier for children to consume fast foods, when their mothers are absent from the home.

Third, several countries in the world today are facing growing youth employment, contributing to a competition for scarce resources for ensuring survival. I would like to draw attention to the marine fisheries sector in India. This continues to be dominated by small-scale fishers, however, over the past decade or so, there has been a push towards rapid capitalisation to enable boats to fish further from home. The size of catch has been declining, though with rising prices, earnings have remained stable. Sustainability however is in question on many fronts – ecological, economic and social. Overfishing has contributed to resource depletion, alongside rising pollution and other problems in the coastal environment. Economically, large export companies have replaced small-scale fish vendors, mainly women, depriving the latter of their livelihoods, as they can no longer access fish catch for local sales. Also, more young men are migrating to other countries to raise the capital for investment in larger boats and more technologically advanced gear (albeit often destructive). Socially, and in terms of diets, not just are women losing their source of income, but also access to fish for home consumption. Shifts in diets dependent largely on carbohydrates (rice), rather than including protein (fish) is enhancing problems of obesity, especially amongst women.

While I really appreciate the link being made between nutrition and health, social protection and agricultural production policies, bringing in social differences and power relations, based on gender and class in particular, will help move towards sustainable solutions.

## Lal Manavado, University of Oslo affiliate/Norwegian Directorate of Health, Norway

Some Additional Remarks on the V0 Draft, Towards an Understanding of Food Systems

I have read some of the contributions to the current discussion with much interest. There are many sound suggestions on what the contributors believe to be the optimal ways of making our current food production sub-systems perform better. As I have described in my first contribution, this sub-system of a food system includes agriculture as defined by the FAO including animal husbandry, fish farming, etc.

I recall at least one contribution pointing out the importance of limiting food wastage, but surely this is the result of an operational ineptness rather than an attribute of a food system itself. Of course, it could also arise from the use of inappropriate or inefficient methods in any sub-system in a food system starting from a cultivated field, poultry farm, a fishing boat to how food is used at home. Would it not be a good idea to think about the best use of the system after we have agreed on its whole structure in a separate discussion?

At the risk of being misconstrued, may I kindly point out that unless we all can agree about the structure of what may justifiably constitute a food system, it would be exceedingly difficult for any of us to make a unified effort to eliminate hunger from the globe, and ensure a sustainable, wholesome and varied balanced diet to all.

Best wishes!

Lal Manavado.

## Alwin Kopse, Federal Office for Agriculture, Switzerland

Dear members of the FSN Forum,

There has been a lot of activity related to the consultation “Towards a common understanding of Sustainable Food Systems” over this past week. Detailed and thought provoking feedback was provided, looking at the draft v.1.0 from a whole range of different angles. Among the most frequently expressed comments was the suggestion to integrate more examples to illustrate the different concepts and approaches (e.g. further examples of sustainable diets, resilient production systems, etc.). In addition, several contributors high-lighted the importance of the Right to Food and the adoption of a human rights-based approach. Yet other feedback focused on language, highlighting the need for the draft to be easily understandable to a range of different stakeholders. Furthermore, it was mentioned that the interlinkages and differences between the different approaches presented in the draft may still be made more explicit. This is just to highlight some of the most recurrent inputs, while the wealth of feedback received was of course much broader and detailed than that. Many thanks to all contributors for their time and effort put into this consultation so far!

Several commentators highlighted the fact that Sustainable Food Systems is a very broad and complex topic that requires adequate consideration. In addition, there was an important increase in the activity on the FSN Forum over the past days, which I see as an indication of the persisting appetite for this online consultation. For both these reasons we have decided to extend the consultation period until December 13th, allowing even more contributions to add to the solidity of the draft and improving our common understanding of SFS.

For this last week of the consultation, we would particularly appreciate:

* inputs providing illustrative examples for the different concepts and approaches presented in the draft; and
* Suggestions on how to further strengthen the description of the relationship (incl. similarities and differences) between the SFS Approach and the other presented approaches.

Best regards,

Alwin Kopse

## Gisèle Yasmeen, University of British Columbia and Royal Roads University, Canada

Dear Colleagues, greetings from Neuchâtel, Switzerland!

Please find below and attached my contribution to this important discussion. Merci!

Gisèle Yasmeen (normally in beautiful Vancouver, British Columbia).

Thank you for the opportunity to comment on this important document.

This is a worthwhile initiative, a very nice overview and well presented. I only have the following constructive comments to make.

I think that giving more prominence to the role of urbanization and the role of urban food systems in shaping global trends would be helpful. “In 2015 an estimated 54 per cent of the world’s population resided in urban areas and the urban population is expected to increase to 6.3 billion by 2050, when 66 per cent of the world’s population is projected to be urban (UNDESA 2014).

Regarding section 2.3 on food loss and waste, I think it’s excellent that you are including this but feel as though the language and conceptualization is a bit too aligned with the FLW challenges of the global north. My understanding is that post-harvest losses are the big issue in the Global South and that this can be lessened with investments in infrastructure. Half of grains and at least a third of fresh fruits and vegetables never make their way to market in low and middle-income countries. It would be useful to really emphasize this.

In the box on page 33 (section 1.3), while I agree that all regions have development potential, not only urban areas, I would add that rapid urbanization is a key structuring feature of the future, particularly in Africa and Asia. However, to help stem the tide of rural to urban migration, increasing incomes in rural areas is key.

On p. 34, Box 3, first bullet, I would suggest adding that micro, small and medium enterprises in the agri-food system (including informal microenterprises), have a key role to play in the value chain. Please see my report published by the Asia Pacific Foundation of Canada earlier this year (Yasmeen et. al. 2018).

On p. 36 at the end of section 3.1.3, it might be worth mentioning that much of the world’s agriculture land is devoted to growing animal feed and sugar. While complex, devoting some of this land to grow suitable, nutritious food for human beings, could go a long way in dealing with food security.

In section 3.1.4 in the box on Public Health Approaches, it would be worth mentioning that access to potable water for the washing of hands and food is the number one way to ensure higher degrees of food safety in the global south.

Finally, there are a host of other smaller issues that might be worth raising in this framework, for example: the role of sustainable packaging to move away from plastic, engaging botanical gardens as fellow travellers in the world of sustainable food systems given their role in the preservation and curation of plant-related knowledge and related education (see references below) and more references on the cost of food / purchasing power. Furthermore, I would caution against using the word “natural” when discussing breeding of domesticated plants and animals as this process has been controlled by humans for thousands of years. What may be useful to raise is the relation between biodiversity within domesticated versus wild species and opportunity share genetic resources for the benefits of human and environmental health.

Finally, the graphic depicted on Annex 1 is difficult to read. Can a simplified version be generated?

Thanks ever so much to a number of you for reaching out to encourage me to comment on this important topic. I hope my comments are helpful and I look forward to learning of what comes out of this process.

Sincerely,

Gisèle Yasmeen

Gisèle Yasmeen, Ph.D.

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See the attachments: [Feedback for FAO SFS Glossary G Yasmeen.pdf](http://www.fao.org/fsnforum/sites/default/files/discussions/contributions/Feedback%20for%20FAO%20SFS%20Glossary%20G%20Yasmeen_0.pdf)

## Ana Deaconu, University of Montreal, Canada

Description of Sustainable Food Systems; Section 2.1.1:

In the statements copied below (as in other sections), I suggest removing the words “or neutral,” as it opens a door for abuse of the term “sustainable.” Creative minds can think of many ways to substantiate their impact as “neutral”, for example by being destructive in one area and reforesting in another. Given the heavy environmental damage already caused by human action, the only way to be “sustainable” is for systems to have a positive impact that regenerates the natural environment.

“This means that sustainable food systems are profitable throughout (economic sustainability); have broad-based benefits for society (social sustainability); and have a positive or neutral impact on the natural environment (environmental sustainability).”

“On the environmental dimension, sustainability is determined by ensuring that the impacts of food system activities on the surrounding natural environment are neutral or positive, taking into consideration biodiversity, water, soil, animal and plant health, the carbon footprint, the water footprint, food loss and waste, and toxicity.”

Use of term “traditional”, Section 2.1.2 and elsewhere:

I commend the inclusion of Indigenous people and traditional food systems. I suggest doing a search for other uses of the word “traditional” in the text to assure that there is not confusion. For example, in the phrase below (Section 2.1.2, pg. 14), I assume the use of traditional does not refer to cultural traditions or traditions of Indigenous people

Overcoming polarization and traditional power dynamics as well as promoting inclusiveness are paramount conditions to enhance multi-stakeholder collaboration.

Use of terms “developed” and “developing countries, Section 2.2.1 and elsewhere:

Prefer the use of terms High Income Countries and Low and Middle Income Countries instead, as “developed” is a value judgement.

Unbalanced burden on consumer responsibility rather than industry responsibility (Section 2.2.1):

Section 2.2.1 should focus more on the role of industry in assuring that their products are environmentally, socially and economically sustainable, rather than putting the burden on consumers to make that choice (as it does in the phrase copied below, pg. 18). It makes more sense to change the behaviours of a few large industries than to attempt to educate and change behaviours of billions of individuals. Consumers will take into account their more pressing individual constraints (e.g. cost, preference) over their ideologies while choosing from the options that are available on the market; the market should thus offer sustainable choices for consumers to choose from. The complicity and resulting responsibility of the food industry should not be minimized.

“In addition, people need better information and clearer recommendations regarding environmentally, socially and economically sustainable food and how food consumption impacts on all elements of the food system.”

Definition of agroecology:

This section is very well developed and provides a clear depiction of agroecology, as well as its emphasis of family farming and social/cultural concerns. Excellent! A small word choice correction: at the bottom of page 32, the word “Besides” should instead be “Additionally,” and the following sentence also needs clearing up.

Ana Deaconu

PhD Candidate in Nutrition, University of Montreal

BS and MS in Earth Systems, Stanford University

## Sid Mehta, Canada

On behalf of the Private Sector Mechanism (PSM), we thank Sustainable Food Systems Programme (SFS Programme) of the UN One Planet network (10YFP) for the opportunity to comment on the draft v1.0; towards a common understanding of Sustainable Food Systems.

After an initial review of the draft, the following are overarching comments based on the leading questions;

1. Global Multidimensional Poverty Index 2018 prepared by UNDP indicated 3 billion people live in multidimensional poverty. 85% of those live in rural areas. Furthermore, 83% of all multidimensionally poor people in the world live in Sub- Saharan Africa and South Asia.
2. Today we face the reality that the number of hungry globally is on the RISE. The most pressing issues of development must focus on SDG 1 and SDG
	1. Particularly stunting and wasting of children, along with child and maternal health.
3. Based on the above, PSM urges that sustainable food systems must first and foremost focus on the most vulnerable population such as those living in rural poverty, women, and children while taking into account the unique needs of individual countries.
4. Sustainable food system approach considers food systems in their totality, taking into account the interconnection and trade-offs among the different elements of the food system, as well as their diverse actors, activities, drivers and outcomes. However, in describing the sustainable food systems approach, Attention to sustainability seems to be displacing attention to the need to make serious efforts to end hunger in the world. We strongly disagree with the notion that sustainable food systems is a precondition for global food security. The reality is that we are far from solving the global hunger problem.
5. Food safety, nutrition and food security are inextricably linked. Unsafe food creates a vicious cycle of disease and malnutrition, mainly affecting infants, young children, the elderly and the sick. Foodborne diseases impede socioeconomic development by straining health care systems and harming national economies, tourism and trade. Throughout various section of the draft and in particular Section 2.1, we recommend the addition of food safety as a key pillar within the sustainable food system approach. The word safe only shows up in the text on page 17 of the document.
6. Global food trade has a critical role to play in feeding the world: by matching food supply to global demand, efficient markets ensure that food is accessible and affordable for all. The effort to eliminate tariff and non-tariff barriers towards a multilateral trading system that is open, non-discriminatory, and rule-based is a necessary component of any food system.
7. Productivity gains achieved through external inputs can increase farm incomes and resilience. Poorest farmers often have the lowest yields due to lack of improved seed varieties, and other external inputs. External inputs can reduce risks e.g. by providing missing nutrients, micronutrients, crop protection and disease and pest resistance. We support the efficient and integrated approach to inputs as an integral part of any sustainable food system.
8. On the ten principles of agroecology, agroecological agriculture should include traditional food systems with good environmental outcomes, and also innovative systems that are reducing the footprint of agriculture. Agroecological outcomes should have clear metrics on soil, water use, water quality and other outcomes. Furthermore, the principles are missing an essential component on the importance of Science, Technology and Innovation
9. The development of innovative technology to increase sustainable food production remains an area with enormous potential. Innovations to improve water efficiency and reduce greenhouse gas emissions already exist; an immense challenge is in facilitating technology adoption in developing countries that suffer from low productivity.
10. Sound investments in infrastructure, ranging from roads to markets to telecommunications, will accelerate the transformation towards a more sustainable system.
11. Today, more than 40% of the population globally is youth. We won't be able to achieve the SDG goals unless we can engage, recruit and retain youth in the sustainable food systems approach. We think it will be critical to make efforts towards engaging young agricultural and food leaders and to equip them with the knowledge, resources, and access to markets needed to produce and distribute food to feed the world.
12. We reinforce the recommendation in section 3.3 and in particular
* Achieving coherent, integrated policies working across sectors to support enhanced food systems and diverse consumption requires emphasis on institutional and human capacity building. Without strong institutions and capable personnel, even the best and well-formulated guidelines will not provide the desired policy and program development, implementation and monitoring.
* It is difficult to design and enact sound policies in the absence of nutrition-focused and policy-relevant research on food systems and food demand. It is essential to have access to high-quality, multi-sectoral information systems, analytical capabilities, knowledge sharing platforms, and best practices resources.
* Countries cannot achieve their SDG goals without an aligned, motivated and incentivized private sector as a key partner. In this context, improved multi-stakeholder dialogue and collaboration between government, business, civil society and international organizations is crucial for guiding engagement and focusing efforts where they can have the most sustainable impact and long-term success.
* The private sector is a supportive partner in improving public health and well-being through listening, learning, and sharing expertise to discuss and develop practical opportunities for actions that meet public health objectives.
* The sustainable food system approach should encourage all actors to invest, apply, adapt, and co-create R&D to improve the sustainability and resilience in the context of FSN development and support to risk management tools such as crop insurance, which can improve the long- term well-being of farmers and provide a stable platform for further improvements in production systems.

See the attachment: [PSM Input Sustainable Food System FSN Forum One Planet December 2018.pdf](http://www.fao.org/fsnforum/sites/default/files/discussions/contributions/PSM%20Input%20Sustainable%20Food%20System%20FSN%20Forum%20One%20Planet%20December%202018.pdf)

## Vivien Franck, Ireland

Thank you for the invitation to share our inputs and views on the v1.0 draft ‘Towards a Common Understanding of Sustainable Food Systems’. We, the SHARECITY team, Department of Geography, Trinity College Dublin, Ireland, would hereby like to make a contribution. We acknowledge the present section 2.2 which identifies key concepts in relation to sustainable food systems including food waste on p.23 of the draft. However, we feel like food sharing as a key concept is currently underrepresented.

Food sharing is one of the oldest forms of collective behaviour is currently experience a renaissance through the application of information and communication technologies (ICT) (Davies et al. 2017a).

We would hereby like to hereby submit the following definition for the inclusion in chapter 4:

Food sharing is defined as “having a portion [of food] with another or others; giving a portion [of food] to others; using, occupying or enjoying [food and food related spaces to include the growing, cooking and/or eating of food] jointly; possessing an interest [in food] in common; or telling someone about [food]” (Adapted from Oxford University Press, 2014) in Davies et al 2017b

Food sharing is often facilitated by grassroots and citizen led initiatives as they appear in the [SHARECITY100 database](http://sharecity.ie/research/sharecity100-database/) (Davies et al. 2017a, 2017b). Food sharing initiatives include growing initiatives like community gardens, e.g. Muck and Magic community garden, Dublin, Ireland, initiatives, which facilitate cooking and eating together, e.g. Be Enriched, a community canteen from London, UK (Marovelli 2018), redistribution initiatives, e.g. Foodsharing.de from Germany (Morrow 2018; Weymes and Davies, 2018) and educational initiatives, e.g. Global Generation, London, UK. Many of the initiatives like Global Generation are multifunctional and are conducting many different services leading to a more sustainable food system.

Section 3 addresses different roads leading to a more sustainable food system. We feel that grassroots and citizen-led initiatives should be included into this section as key drivers of sustainability transitions. We would hereby like to suggest explicit mention the role of grassroots innovation and collective activities for facilitating more sustainable food systems which has been demonstrated internationally (Rut and Davies 2018a, Rut and Davies 2018b, Davies 2012).

We welcome the recognition of research and innovation on p.41 of the draft. In addition to this, we would hereby like to suggest SHARECITY as one of the research projects on p.43 leading food systems onto more sustainable pathways. This project uses a collaborative and trans-disciplinary approach to assess the practice and sustainability potential of city-based ICT-mediated food sharing economies. SHARECITY (2015-2020) is funded by the European Research Council (ERC) and involves a team of international researchers and a high-level advisory panel of global experts.

SHARECITY establishes the significance and potential of food sharing economies by:

* Developing deeper theoretical understanding of contemporary food sharing
* Generating comparative international empirical data about food sharing activities within cities
* Assessing the impact of food sharing activities
* Exploring how food sharing in cities might evolve sustainably in the future

To conclude, we would like to add the following references:

Davies, A., et al., 2017a. Creative construction: crafting, negotiating and performing urban food sharing landscapes. Area, 49 (4), 510–518. <https://doi.org/10.1111/area.12340>

Davies, A., et al., 2017b. Making visible: interrogating the performance of food sharing across 100 urban areas. Geoforum 86: 136–149. <https://doi.org/10.1016/j.geoforum.2017.09.007>

Davies, A., et al., 2017c. Sharing economies: moving beyond binaries in a digital age. Cambridge Journal of Regions, Economy and Society, 10 (2), 209–230. <https://academic.oup.com/cjres/article/10/2/209/3868122>

Marovelli, B. 2018. Cooking and Eating Together in London: Food Sharing Initiatives as Collective Spaces of Encounter. Geoforum. <https://doi.org/10.1016/j.geoforum.2018.09.006>

Morrow, O. 2018. Sharing Food and Risk in Berlin’s Urban Food Commons. Geoforum <https://doi.org/10.1016/j.geoforum.2018.07.016>

Rut, M. and Davies A.R. 2018a Transition without confrontation? Shared food growing niches and sustainable food transitions in Singapore, Geoforum. <https://doi.org/10.1016/j.geoforum.2018.07.016>

Rut, M. and Davies, A.R. 2018b Sharing foodscapes: shaping urban foodscapes through messy processes of food sharing, in Plows (ed.) Messy Ethnographies in Action, Vernon Press: Wilmington, DE. 978-1-62273-329-3. pp 167-175.

Weymes, M. and DAVIES, A.R. (2018) [Re]Valuing Surplus: Transitions, technologies and tensions in redistributing prepared food in San Francisco, Geoforum <https://www.sciencedirect.com/science/article/pii/S001671851830335X>

Davies, A.R. (2012) Enterprising Communities: Grassroots sustainability innovations, Emerald Publishing, London.

The authors: Anna Davies, Principal Investigator of the ERC-funded project SHARECITY, Professor of Geography, Environment and Society at Trinity College Dublin, Stephen MacKenzie, Postdoctoral Researcher with SHARECITY, Monika Rut, PhD student with SHARECITY, Vivien Franck, Research Assistant with SHARECITY

SHARECITY, Department of Geography, School of Natural Sciences, Trinity College Dublin, the University of Dublin, Dublin 2, Ireland. E-mail: sharecity@tcd.ie, <http://www.sharecity.ie/>

See attachments: [Davies\_et\_al-2017\_Creative construction\_Area.pdf](http://www.fao.org/fsnforum/sites/default/files/discussions/contributions/Davies_et_al-2017_Creative%20construction_Area.pdf) [Davies-et-al.-2017\_Making visible\_GeoForum.pdf](http://www.fao.org/fsnforum/sites/default/files/discussions/contributions/Davies-et-al.-2017_Making%20visible_GeoForum.pdf) [Davies et al. 2017\_Sharing economies-beyond binaries\_CJRES.pdf](http://www.fao.org/fsnforum/sites/default/files/discussions/contributions/Davies%20et%20al.%202017_Sharing%20economies-beyond%20binaries_CJRES.pdf) [SC-Marovelli 2018\_Cooking and eating together in London.pdf](http://www.fao.org/fsnforum/sites/default/files/discussions/contributions/SC-Marovelli%202018_Cooking%20and%20eating%20together%20in%20London.pdf) [Morrow 2018\_Sharing food and risk\_GeoForum.pdf](http://www.fao.org/fsnforum/sites/default/files/discussions/contributions/Morrow%202018_Sharing%20food%20and%20risk_GeoForum.pdf) [Rut\_Davies 2018\_Transitioning without confrontation\_GeoForum.pdf](http://www.fao.org/fsnforum/sites/default/files/discussions/contributions/Rut_Davies%202018_Transitioning%20without%20confrontation_GeoForum.pdf) [SHARECITY\_Sharing foodscapes\_messy\_ethnographies.pdf](http://www.fao.org/fsnforum/sites/default/files/discussions/contributions/SHARECITY_Sharing%20foodscapes_messy_ethnographies.pdf) [Davies and Weymes 2018\_ReValuing Surplus\_GeoForum.pdf](http://www.fao.org/fsnforum/sites/default/files/discussions/contributions/Davies%20and%20Weymes%202018_ReValuing%20Surplus_GeoForum.pdf)

## Anita Utheim Iversen, Ministry of Trade, Industry and Fisheries, Norway

Thank you for the opportunity to comment on the V1.0 draft sustainable food system. We have some comments that we will ask you to take into consideration:

In 2014 the CFS gave the advice to make fish a visible, integral element in food security and nutrition strategies, policies and programmes. CFS also invited FAO to make explicit reference to fish resources and aquaculture as vital in combating hunger and securing nutritious food for everybody in all relevant documents on agriculture, food security and nutrition. Fish contains high levels of important nutrients that are not commonly found in other foods. It is a good source of proteins, very long-chain omega-3 fatty acids, vitamin D, vitamin B12, selenium and iodine. These nutrients are of greatest public health concerns. Food security is not just about enough food but the right kind of food. We have to remember that aquatic food can be a part of the solution. Still, aquatic food is often left out of relevant work, including in some of the text in this V1.0 draft. Reference is made to the CFS HLPE report on Sustainable Fisheries and Aquaculture for Food Security and Nutrition, which we think should be looked into and referred to in this work: <http://www.fao.org/3/a-i3844e.pdf>

Food systems also includes aquatic food systems. In UN the word "agriculture" is defined to include crops, livestock, forestry, fisheries and aquaculture. The document actually mention a sort of similar definition, but we have to wait until we get to the box at page 44. The first time fish is mentioned is at page 17. Fisheries and aquaculture are included in the text before that, however hidden in the word agriculture. When people read the word "agriculture", eg. page 6 "the area of food and agriculture", chances are slim that they will think of fisheries and aquaculture. This is unfortunate, and may be one of the reason that aquatic food, fisheries and aquaculture often are left out of relevant texts and work. Hence we would ask you to look through the document and see if you could do as CFS has recommended, make fish visible. Eg. add a footnote were the term agriculture is used the first time, which states that in this document the term “agriculture” includes crops, livestock, forestry, fisheries and aquaculture. Alternatively specify in the text where appropriate. Another alternative is to change the wording "food and agriculture" to "food and food production". This do not exclude fisheries and aquaculture semantically. Having said that, we are also happy to see that the definitions on food systems, page 8, uses the words food, food production etc. Such words are related to all types of food, both from land, oceans and inland waters.

With a reference to the fact above, we do question the footnote no 24 at page 11 which says: "While specific definitions are likely to vary from country to country, the food and agriculture sector typically comprises: i) entities that are engaged in growing crops, raising livestock and harvesting other animals as well as timber; ii) entities that transform agricultural products into food and beverage products for intermediate or final consumption (including packaging, etc.); iii) wholesalers and retailers (including transportation, etc.). " Where is the fish?

Sustainable food systems for healthy diets is recognized as one of the six pillars of the UN Decade of action on Nutrition. Thus Norway has initiated a global action network Sustainable Food from the Oceans and Inland Waters for Food Security and Nutrition under the umbrella of the Nutrition decade. Taking a holistic approach from the healthy ocean to the healthy consumer, including cross sectorial expertise and paying attention to the elements of food security (sufficient, safe, nutritious, dietary needs, food preferences and leaving no one behind). We believe that responsible fisheries and aquaculture development will be one of the keys in achieving the sustainable development goals (such as goal no 1, 2, 3, 8, 12. and 14 to mention some). We would like to ask why SDG 14, life below water, is not mentioned at page 27? Life on land SDG 15 is. The environment where we grow our food, both on land SDG15 and below water SDG14 is important. Why just mention one? Healthy sustainable environment both on land and in waters are important to produce sufficient and safe food.

We are happy to see that in the later part of the document, there are several references related to aquatic food, but it would be even better if it was made clear earlier in the document that sustainable food systems also includes aquatic food. It deserves to be more visible at the beginning. We would also appreciate if you looked through the text to make sure that aquatic food systems are not excluded by the formulations.

Best regards,

Anita Utheim Iversen

Senior Adviser

Ministry of Trade, Industry and Fisheries

## Yvonne Colomer, Triptolemos Foundation, Spain

It is a praiseworthy effort.

Thank you SFS Programme- UN One Planet network for your confidence in our opinion.

The [Triptolemos Foundation](http://www.triptolemos.org/en/) has developed [a model that allows the Global Food System TRIPTOLEMOS Index (ITRIn)](http://www.triptolemos.org/en/indice-triptolemos-itrin/), to be quantified through previously defined parameters. The model allows the forecast and comparison between food systems in different countries and territories. The model has been recognized by UNESCO with the grant of the Chair "Science and Innovation for Sustainable Development: Global Food Production and Safety".

Triptolemos Foundation defines the Global Food System on [four basic axes](http://www.triptolemos.org/wp-content/uploads/2018/12/4-axes-Triptolemos-Foundation-master.pdf): availability, economy, politics and knowledge, and believes that Sustainable Food Systems are linked to territory, culture, country ... and that one of its objectives should be not only be the sustainability of resources but also that production be able to ensure the availability and accessibility of a proper diet the population. In a globalized world, this objective can be articulated through a Global Food System that acts as a regulator.

On the other hand, regarding the definitions of the technical vocabulary used in the document One Planet draft v.1, we can suggest contacting the prestigious IFT (Institute of Food Technology) to create a working group that defines them in accordance with their technological evolution linked to sustainability and the maintenance of the population's food resources.

Our overall vision of the Global food System can be found in our publications [The Global Food System: I-Definition of a space](http://www.triptolemos.org/en/portfolio_page/el-sistema-alimentario-global-i-definicion-de-un-espacio/) (2013) and [The Global Food System: II-Quantitative approximation to the food space of Mediterranean Europe](http://www.triptolemos.org/en/portfolio_page/sistema-alimentario-global-ii-aproximacion-cuantitativa-al-espacio-agroalimentario-la-europa-mediterranea/) (2018), and in the book with the Thomson- Reuters editorial "[The Food System: globalization, sustainability, security and food culture](http://www.triptolemos.org/en/publication-of-sistema-alimentario/)" (572 pages and 29 chapters).

We remain at your disposal for any extension and subsequent action.

Greetings from Barcelona

Kind regards,

Yvonne Colomer

[www.triptolemos.org](http://www.triptolemos.org/en/)

See the attachments: [TRIPTOLEMOS FOUNDATION contribution.docx](http://www.fao.org/fsnforum/sites/default/files/discussions/contributions/TRIPTOLEMOS%20FOUNDATION%20contribution.docx)

## Judith Benedics, Federal Ministry of Labour, Social Affairs, Health and Consumer Protection, Austria

Thanks a lot for the opportunity to contribute to the document “Towards a Common Understanding of Sustainable Food Systems”. Please find our comments below:

General comment:

We recommend to refer to healthy and sustainable food systems rather than to stick to the term sustainable. The publication could also emphasize the synergies between health- and environmental-oriented food system approaches as a catalyst for a holistic food system transformation (p. 29). Health and environmental professionals can build a strong alliance to push the food systems approach forward.

Comments:

Page.8: Section 2.1.1 – Definition: I strongly suggest to explicitly mention health as an important aspect of SFS.

Page.9: Healthy and sustainable food systems lie at the heart of SDGs

Page. 11: Paragraph 2: Reference can be made to the Policy brief: “Connecting food systems for co-benefits: how can food systems combine diet-related health with environmental and economic policy goals?.” (Corinna Hawkes, Kelly Parson) Source: <https://www.eu2018.at/calendar-events/political-events/BMASGK-2018-11-22-EU-Food-Systems.html>

Page. 40: Public private partnership:

Explicitly mention the importance of public procurement. (Best Practice example: City of Copenhagen: <http://www.procuraplus.org/public-authorities/copenhagen/>

Page.51: Determinants of health:

Reference:

<https://www.who.int/hia/evidence/doh/en/>

[https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(16)30217-0/fulltext](https://www.thelancet.com/journals/langlo/article/PIIS2214-109X%2816%2930217-0/fulltext)

Page.54: Interconnected policy-making

I recommend to refer to the policy brief: “Connecting food systems for co-benefits: how can food systems combine diet-related health with environmental and economic policy goals?.” (Corinna Hawkes, Kelly Parson) Source: <https://www.eu2018.at/calendar-events/political-events/BMASGK-2018-11-22-EU-Food-Systems.html>

Page 55:

Definition for nutrition

<https://www.who.int/topics/nutrition/en/>

Definition processed food

<https://www.nhs.uk/live-well/eat-well/what-are-processed-foods/>

Please don’t hesitate to contact us if you have any further questions.

With kind regards,

Fabian und Judith

## Rose Hogan, Trocaire, Ireland

Thanks, great initiative.

The critical contribution of wild/wild harvested plants and animals to nutrition is not strongly profiled in this paper.

Definitions which could be added- please refine as necessary

1.Social and solidarity economy (SSE), The United Nations Inter-Agency Task Force on the Social and Solidarity Economy (UNTFSSE) considers it an umbrella concept and uses the following: ‘Social and solidarity economy is defined as a concept designating enterprises and organizations, in particular cooperatives, mutual benefit societies, associations, foundations and social enterprises, which have the specific feature of producing goods, services and knowledge while pursuing both economic and social aims and fostering solidarity’ (UNTFSSE 2014: Social and Solidarity Economy and the Challenge of Sustainable Development. A Position paper).

2. Mindful Markets Concept: Mindful Markets are alternative approaches to shaping food systems based on full awareness of interconnected factors and driven by the principle of “Organic Food for All.” Mindful Markets focus on long term relationships between farmers and consumers by creating channels and building networks which provide access to healthy food and promote well-being for all. Mindful Markets work to develop functioning alternative models and practices. Creating ‘Mindful Markets’ is an alternative model that realizes associative economies on the ground by creating tangible demand for organic agricultural produce.

In the Mindful Markets, rural producers and urban consumers care mutually for each other’s real needs: care for people, care for food, care for landscapes, care for human habitat, care for culture.

Van Willenswaard, W. (Ed.), 2015. Mindful Markets: Producer-Consumer Partnerships towards a New Economy, Bangkok: Garden of Fruition publishers <https://towardsorganicasiath.wordpress.com/mindful-markets>

3. Participatory Guarantee Schemes

Participatory guarantee systems (PGS) were reported in many countries, with more sustained development in Latin America and Asia. While most national organic labelling schemes require certification by a third party, PGS enable local sales of non-certified products by adopting a process of farmer and community peer review. These locally controlled guarantee systems keep the costs of certification down for producers and enable a constructive exchange and creation of local markets for consumers and members of the community. All regions urged that PGS be recognized as valid forms of certification at national level. To strengthen these systems, the participants of the seminar in Latin America proposed creating PGS reciprocity mechanisms in the region (Recommendation 9, Brasilia).

Source: FAO CATALYSING DIALOGUE AND COOPERATION TO SCALE UP AGROECOLOGY: OUTCOMES OF THE FAO REGIONAL SEMINARS ON AGROECOLOGY <http://www.fao.org/documents/card/en/c/I8992EN/>

Other definitions, which might be included:

4. Inclusive Value Chains

5. Inclusive Local Green / Short Value chains

6. Public Procurement Schemes

7. Wild foods

## Ariel Larson, IPM Institute of North America, Inc., United States of America

Thank you for the opportunity to comment!

IPM Institute's input is attached and pasted here:

1. Does the draft adequately explain the principal components of a sustainable food systems (SFS) approach (section 2.) and put the latter in relation to the approaches discussed in section 3.1.?

1. Suggest including food safety as a principal component and list food safety under Food security and nutrition in figure 1
2. Suggest including worker safety under Food system outcomes in Figure 1
3. Suggest including land use and farm inputs under food system elements – environment category in Figure 1
4. Are the key concepts in relation to sustainable food systems in section 2.2. well defined and described, including their importance for this publication?

1. Sustainable diets:

1. Suggest adding that sustainable diets are those with low environmental and human health impacts, including both farm workers and consumers. An integrated pest management approach minimizes potential risks associated with pesticide use by emphasizing non-chemical approaches, chemical use only when necessary and low-risk chemicals over high risk alternatives.
2. Clarify in the text that “health” includes health of farm workers, communities close to agriculture that may be impacted by pesticide drift, and the health of those eating the food. Often in the public’s mind when we think about “health” we’re only thinking about those consuming the food.

2. Sustainable value chains

1. In the discussion of “green” value chains, suggest mentioning that sustainable sourcing can take place w/in a company through their internal efforts to identify products that meet certain sustainability criteria – they may not necessarily be third-party certified to a sustainability standard. Food retailers may work in partnership with their suppliers to address sustainability, by e.g., collect information on various sustainability attributes like pesticide inputs, and work together to improve outcomes and reduce risks. Walmart, Costco, Whole Foods Market, Woolworths have various sustainable sourcing practices and programs in place, there’s [published literature from Stanford](https://news.stanford.edu/2018/01/09/grocery-store-programs-improve-farmers-environmental-practices/) on the efficacy of Woolworth’s approach and improving adoption of environmentally friendly practices at the farm level.

3. Resilience:

As an example of a specific measure, suggest adding importance of soil health and practices that keep soil covered year-round, reduce erosion and improve soil health (e.g., cover crops, no/low tillage). Soil C sequestration also contributes to GHG reductions and overall resilience of agricultural systems.

1. Is the list of terms in chapter 4 complete, are any important terms missing (if yes, please submit together with the respective definitions) or do you think certain terms may be redundant?

1. Integrated production:
2. Suggest adding “... to minimize risk to people, property, resources, and the environment” to the sentence reading: “Their implementation promotes the recycling soil nutrients and overall soil quality, and reduces the issues linked to pests and diseases.”

2. Suggest adding integrated pest management as a term

1. Proposed definition: integrated pest management (IPM) is an science-based approach that focuses on long-term prevention of pests or pest damage through a combination of physical/mechanical, biological, cultural and chemical approaches. Pesticides are used only when necessary, after or in conjunction with non-pesticidal strategies, and only if pests or pest damage exceeds an economic threshold as determined by monitoring/scouting. IPM focuses on pest prevention, avoidance, monitoring and thresholds. When pesticides are used, those that minimize risks to humans, non-target species and the environment are selected and applied in ways that minimize potential negative impacts.

See attachments: [Sustainable Food Systems IPM Inst Feedback 120618.docx](http://www.fao.org/fsnforum/sites/default/files/discussions/contributions/Sustainable%20Food%20Systems%20IPM%20Inst%20Feedback%20120618.docx)

## Pradip Dey, ICAR-AICRP (STCR), Indian Institute of Soil Science, Bhopal, India

Dear All,

Good evening from India!

Agro-ecological zoning separates areas into the region at the apex level and agro-eco unit at the bottom. The agro-ecological region identifies the natural resources in terms of problems, potentialities and constraints and their extent with respect to land utilization types and groups them in uniform units. Digital database in GIS and application of logic through decision support system (DSS) further enhance the process and precession of agro-ecological delineation. The sub agro ecological regions are further subdivided into agro-ecological zones based on landforms, soil association and land use. The agro ecological zones have further taken down to sub zones depending on terrain characteristics, parent materials, soil texture, depth, salinity, surface and ground water potentiality and cropping pattern.

Also we may think for overlaying vulnerability map with such agro ecological zones to create polygons in GIS and use the same to predict food security as well as systems need to be followed in long run for food sustainability.

With warm regards,

Pradip Dey

## Peter Stevenson, Compassion in World Farming, United Kingdom

Compassion in World Farming welcomes the opportunity to comment on the draft of *Towards a common understanding of sustainable food systems*.

**Definition of sustainable food systems, page 8**

This rightly provides that the food system must operate “*in such a way that the economic, social and environmental bases to generate food security and nutrition of future generations are not compromised*”. This wording would allow the food system to operate in ways that compromise key environmental or other factors that do not directly impact food security e.g. wildlife. One of the greatest threats to wildlife is the fragmentation and destruction of habitats by expanding agriculture.

**Animal welfare, page 13**

We welcome the recognition that “food system activities need to contribute to the advancement of important socio-cultural outcomes, such as … animal welfare”. However animal welfare is not mentioned again although a definition of “animal welfare” is provided on which we comment below.

We believe that animal welfare should be included more fully in the report’s understanding of sustainable food systems. Industrial livestock production is the norm in the developed world and many emerging economies. Even with good stockmanship industrial livestock production has no potential for providing satisfactory welfare. Animals are confined in cages or narrow crates or in barren, overcrowded units which make it impossible for them to carry out their natural behaviours. Many are pushed to such high yields or fast growth that they suffer from painful health problems including lameness, bone deformities and bone fractures.[[1]](#endnote-1) [[2]](#endnote-2) [[3]](#endnote-3)

Animal welfare should not be regarded as a peripheral consideration in the formulation of food and farming policy. Instead it should be accepted – together with food security, public health, the environment, climate change and farmers’ livelihoods - as one of the core criteria that must be satisfied by our food and farming systems.

**First paragraph of page 14**

We particularly welcome this paragraph’s holistic vision and recognition that proposed measures must be assessed against all other dimensions of sustainability to ensure there are no undesirable impacts.

We believe that it is important when developing policy on food and farming to take account of all the factors that may be influenced by decisions in this area. At present much research and policy-making is conducted in silos which can lead to the introduction of measures that may benefit one element (such as climate change) but have adverse impacts on other important considerations.

This is well put in *Global Food Security’s* new [policy brief](https://www.foodsecurity.ac.uk/news/181130-n-paris-compliant-healthy-food-systems-policy-brief-for-united-nations-climate-change-conference/) for COP24 of the UNCCC in Poland. This states: “Focussing solely on GHG emissions instead of wider metrics of sustainability could result in the loss of ecosystems and greater social inequality”.

**Definition of “sustainable diets”, page 17**

We set out in red suggested amendments to this definition

“***Sustainable diets*** *are those diets with low environmental and climate impacts which contribute to food and nutrition security and to healthy life for present and future generations.* ***Sustainable diets*** *are protective and respectful of biodiversity, animal welfare and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimizing natural and human resources.*

**Nutritional quality**

We think that the report should be clearer in highlighting that nutrition entails quality as well as quantity as too much of today’s discourse on food policy focuses on quantity alone. The FAO points out that the modern western diet lacks nutrient quality and highlights the need to integrate the dimension of nutritional quality into food policy.[[4]](#endnote-4)

**Better consumer information, page 18**

We fully agree with the statement that “people need better information and clearer recommendations regarding environmentally, socially and economically sustainable food and how food consumption impacts on all elements of the food system”. This is in line with Sustainable Development Goal 12.8 which states “By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature”.

**Food losses and waste: section 2.2.3, page 22**

It would be helpful if this section recognised that the feeding of human-edible cereals to animals is a form of food loss. The UN Environment Programme calculates that the cereals which, on a business-as-usual basis, are expected to be fed to livestock by 2050, could, if they were instead used to feed people directly, provide the necessary food energy for over 3.5 billion people.[[5]](#endnote-5)  Cassidy *et al* (2013) conclude: “shifting the crop calories used for feed and other uses to direct human consumption could potentially feed an additional ~ 4 billion people.[[6]](#endnote-6)

In addition, Alexander *et* al (2017) calculate that 2.9 EJ (exajoules) are lost each year through overconsumption i.e. consumption in excess of nutritional requirements.[[7]](#endnote-7) This too is a form of food loss.

**Sustainable intensification: section 3.1.1, page 29**

“Sustainable intensification” has become a divisive term as it is used by some to justify calls for further industrialisation of crop and livestock production. The tendency by some is to focus on the “intensification” dimension of the term and largely ignore the “sustainability” element.

The term is pertinent in the poorest of developing countries where, for example, improved health and nutrition for animals would improve both productivity and animal welfare. It is an unhelpful term in developed countries where further intensification of crop production would lead to increased degradation of soils, overuse and pollution of ground- and surface-water, air pollution and biodiversity loss. Further intensification of livestock production would result in animal welfare problems and additional animal health problems leading to an increase in routine preventive use of antibiotics.

**Definition of “precision agriculture”, page 47**

Precision livestock farming (PLF) mainly operates in the intensive sector. By alerting farmers to problems at an early stage it can to a degree improve animal welfare and system efficiency. However, such improvements are made within a system that has inherently low potential for good welfare and is inherently inefficient due to its dependence on feeding human-edible cereals to animals. PLF may primarily be used to enhance the viability of intensive livestock production, to make it more feasible to keep very large herds or flocks in stressful, high density conditions with poor levels of welfare. PLF needs to find a role for itself in supporting an increased uptake of extensive farming which has much greater potential for delivering food security, environmental sustainability and good animal welfare than the intensive model.

**Definition of “circular agriculture” would be helpful**

The report includes a definition of “circular economy” but we believe a definition of “circular agriculture” would be helpful. The definition we use is: Circular agriculture minimises the use of external inputs by creating nutrients through the farm’s own activities, for example by using nitrogen-fixing legumes, rotations and manure in quantities that correspond to the land’s need for nutrients. Circular agriculture is regenerative; it builds soil quality and restores biodiversity. It ensures that its wastes are recycled into productive agricultural use rather than being allowed to escape and pollute the environment.”

**Definition of “animal welfare”, page 48**

This definition is helpful. However, it does not take account of the increasing scientific recognition that good animal welfare entails not only preventing negative factors but also providing the opportunity for animals to have positive experiences.  Mellor (2016) stresses that it is necessary not only to minimise negative experiences but also “to provide the animals with opportunities to have positive experiences” such as “comfort, pleasure, interest, confidence and a sense of control.[[8]](#endnote-8)

In its *Sustainability Policy Framework* Rabobank, a global leader in agriculture financing, highlights the importance of “promotion of positive experiences” and states that this “refers to improving welfare above the survival minimum by providing animals with enriching opportunities to engage in behaviours that increase their comfort, confidence and capacity to make rewarding choices. These principles support the contemporary recognition that acceptable animal welfare management should include both the minimization of negative experiences and the provision of opportunities to have positive experiences”.[[9]](#endnote-9)

Scientists are increasingly recognising the importance for animals’ physical and mental wellbeing of being able to engage in exploration, investigation, problem solving and play.[[10]](#endnote-10)  Špinka & Wemelsfelder (2011) point out: “monotonous, predictable environments may lead to apathy and boredom, and prevent animals from experiencing a positive quality of life”.[[11]](#endnote-11)

**Definition of “externalities”, page 52**

This is arguably too narrow. We suggest additions in red below

“~~Environmental~~ Externalities refer to the economic concept of uncompensated environmental and health effects of production and consumption that affect consumer utility and enterprise cost outside the market mechanism.

As a consequence of negative externalities, private costs of production tend to be lower than its “social” cost. Economists recognise the importance of internalising negative externalities, for example by regulation or fiscal measures. The FAO stresses: “In many countries there is a worrying disconnect between the retail price of food and the true cost of its production. As a consequence, food produced at great environmental cost in the form of greenhouse gas emissions, water pollution, air pollution, and habitat destruction, can appear to be cheaper than more sustainably produced alternatives”.[[12]](#endnote-12) It is the aim of the “polluter/user-pays” principle to prompt households and enterprises to internalize externalities in their plans and budgets.”

## Dhananjaya Poudyal, Civil Society Alliance for Nutrition (CSANN), Nepal

**Q. 1** Does the draft adequately explain the principal components of a sustainable food systems approach (section 2.1.) and put the latter in relation to the approaches discussed in section 3.1.?

Yes, I think so. It has been explained the key areas of a sustainable food systems approaches clearly. Accordingly the approaches are discussed in 3.1 too. However, I have a small remark regarding the public health approaches in 3.1.4. It has focused on safety and qualitative foods with nutritional profile too. Food intake gives nutrients to the body which ultimately supports in health status. In this regard, I would like to suggest changing the “public health approaches” as “health and nutrition approaches”.

**Q. 2.** Are the key concepts in relation to sustainable food systems in section 2.2. well defined and described, including their importance for this publication?

In my opinion it has been well defined of the key concepts in relation to food systems and described in details. It is enough for the publication of the document. But I want to take an opportunity to mention here at this moment that Nepalese diet is also one of the complete (well balanced) and hygienic diet from the point of nutrition. It has been included all the macro as well as micro nutrients in the diet. Accordingly, new visitors from abroad prefer to have the Nepalese diet because of composition of the food as well as of taste.

**Q. 3.** Is the list of terms in chapter 4 complete, are any important terms missing (if yes, please submit together with the respective definitions) or do you think certain terms may be redundant?

It seems to be completed now the list of the terms in chapter 4. But it can be required more as per the needs of the individuals in time factor. Now I would like to suggest you to incorporate the definition of nutrients missing in the document. I don’t think that the terms are unnecessary rather may be less important.

Regarding the definition of the terms missing in your document I have mentioned as follows:

Definition of Nutrition: As defined by the Food and Nutrition Council (of the American Medical Association), “nutrition is the science of food, the nutrients and other substances therein, their action, interaction and balance in relation to health and disease, and the processes by which the organism ingests, digests, absorbs, transports, utilizes, and excretes food substances.” - Nutrition and Diet Therapy Dictionary, Third Edition, Virginia S. Claudia, & Rosalinda T. Lagua, Published by Merriam & Webster Inc. Manila Philippines. 1991.

Definition of Nutrient: “Any chemical substance needed by the body for one or more following functions: to provide heat or energy, to build and repair tissues, and to regulate life processes.” Although nutrients are found chiefly in foods, some can be synthesized in the laboratory (e.g. Vitamins) or in the body (biosynthesis).” - Nutrition and Diet Therapy Dictionary, Third Edition, Virginia S. Claudia, & Rosalinda T. Lagua, Published by Merriam & Webster Inc. Manila Philippines. 1991.

Finally, this is really a very good document which is useful not only in agriculture or food system but it keeps its relevancy for other sectors of development too starting from the pathway of agriculture. Virtually it could be referred as a reference document for anybody like student, teacher, researcher, planner, development worker and also for the farmers. I am very much impressed with the document.

Thank you,

See the attachments: [Sustainable Food System-dhananjaya poudyal.docx](http://www.fao.org/fsnforum/sites/default/files/discussions/contributions/Sustainable%20Food%20System-dhananjaya%20poudyal.docx)

## Pradip Dey, ICAR-AICRP (STCR), Indian Institute of Soil Science, Bhopal, India

Dear All,

Good Day!

This is just to add a little more to the great effort of SFS draft 1.0.

Interconnected policy-making: Enabling decisions related to sustainable food system together with agriculture and its products marketing, labour laws, land holding, rural development etc.

The above is just what I could conceptualised on my own.

With warm regards,

Pradip Dey

## Adrian Muller, Research Institute of Organic Agriculture FAO, Switzerland

Dear colleagues,

this is an important effort to bring together and clarify a number of highly complex issues, thank you for this. Below, I list some comments. I first present some general comments, then more specific ones, directly referring to the text.

Please contact me any time in case questions arise and I am happy to further contribute to this in whatever form may be useful.

Best regards, Adrian Muller, Research Institute of Organic Agriculture FiBL. 9.12.2018

General comments:

Such documents are needed and important and can help guiding discussion and action, but I think that such documents often remain somewhat too general and unspecific. In my opinion, this also applies to this document.

First, I think that there is a lack of concreteness in the formulation of all the frameworks and approaches mentioned in section 2. In my understanding, these should work as toolboxes for reducing complexity and they should be formulated in an as concrete way as possible, so that one can really work with them. For some further details on this, see my comment below referring to page 19.

Second, I think the document falls short of really making concrete suggestions on what can be done. There is a general call to arms and suggestions to increase information provision, research and development, also internalization of external costs, etc. – but I think one could and should become much more concrete, e.g. on pages 40/41 on policy instruments. In my opinion, there is a number of policy instruments/approaches that could be supported in any case i.e. that robustly would lead to improvements in a broad context of diverse characteristics. I think such a document should aim at identifying and promoting those. Examples I usually think of are the following – without having researched on those systematically, without having analyzed those in depth, and without aiming for completeness:

* Taxation of any nitrogen that is imported into certain regional boundaries: this would apply to concentrate and other feed imports and to mineral fertilizers, for example, but not to N in feed grown locally or to N from biological N fixation within these regional boundaries. Reducing these N imports to regions (what such a tax would aim at) is key to address a number of environmental challenges, from N2O emissions and climate change to biodiversity loss.
* In parallel, we need a tax on CO2 from burning fossil fuels. This is more adequate than a general GHG tax or a tax on meat, for example, as it would not put grass-fed ruminant production at a disadvantage, as it may not be optimal for the climate, but can play a central role in sustainable food systems in relation to other indicators.
* Further aspects I would suggest to pursue: a ban on any advertisement of food. Or at least a strong restriction on such advertisement, in particular a prohibition to transport wrong pictures on how farming looks like (in Switzerland, all advertisement related to food promotes an idyllic farming system that is very far from reality…).
* And I would also suggest to work towards keeping as much of the value chain of a product within the country that produces the original product. When acting on value chains, I think this approach may bring more than the general claim to support shorter value chains and to bring consumers and producers closer together (for more on the criticism of this last point, see my comment referring to page 20 below).

Third, some general guiding principles for improvement could be made stronger; these are mainly

* The aim for consistent policies. It does not make sense to work on biodiversity measures and at the same time subsidizing mineral fertilizers and pesticides, for example. Or to work on health issues by, say, a tax on sugar and on the same time supporting sugar cane production by special payments for this. Thus, a general call should be for reducing perverse incentives, combined with the internalization of external costs – the latter is part of the document, but it could be made more prominent; and it could be related to the general discussion of consistent policy approaches.
* The necessity to openly and self-critically analyze one owns values; many statements are value loaded and I think they rather have the status of hypotheses than facts – cf. the comment referring to page 20 below.

Other aspects that I would claim to be such value driven implicit hypotheses rather than facts are the following: informed stakeholders act in favor of increased sustainability; power-less stakeholders act more responsible and in support of sustainability when given more power than the currently powerful stakeholders; increased stakeholder involvement leads to increased sustainability. I do not argue against those issues per se: more information; change in power relations; stakeholder involvement (and also short value chains, see other comments) – all these can contribute much; but I think that we – the people working on sustainable food systems, etc. – tend to be biased towards expecting too much from these aspects I challenged above.

Here, I may also point to a specific discussion that relates to “naturalness” and which role this may play in sustainable food systems, as e.g. addressed in the following paper: <https://www.sciencedirect.com/science/article/abs/pii/S026483771631376X>

Specific comments:

Page 8, definition of “food system”: to keep it manageable and useful, there needs to be some reference to boundaries (geographical, population-wise, or whatever), otherwise, we have in many cases only one food system, the global one (besides some special cases of self-sufficiency), as it captures “all the elements” by definition, thus necessitating it to encompass everything.

Page 9: “This means that sustainable food systems are profitable throughout (economic sustainability);” I think “profitability” is a difficult term here – it should be clearly stated that this means profitability while accounting for internalized external costs and public good provision and not only profitability of a single business action in a given policy context (that thus may not get payments for public good provision, but may benefit from externalizing societal costs). Thus, may better write: “This means that sustainable food systems account for external costs and public good provision (internalization of negative and positive externalities) when being judged regarding their profitability (economic sustainability);”

Page 13: “On the social dimension, a food system is considered sustainable when there is equity in the distribution of the economic value added, taking into account vulnerable groups” – do you really mean “equity” and not “just” (justice), i.e. “…when the distribution of the value added is just, taking into account…”? This makes quite a difference.

Page 14: “…will have to be assessed against all other dimensions of sustainability to ensure there are no undesirable impacts.” This formulation is too absolute, as in most changes, there will be trade-offs and some undesirable impacts will always arise – e.g. if the internalization of external costs is strengthened, then there will be some players that loose profit. One may argue that this is “desirable” – but then we need a clear definition of which impacts are desirable and which ones are undesirable, or we need at least some guidelines on how to determine this. And even then, in many cases trade-offs will remain unavoidable – and which guiding principle will help us then? – “no undesirable impacts” hinders many actions with such characteristics. One way out could be to claim that total societal welfare increases – but this is very general (but in this it fits the level of discussion addressed in this document). This solution is offered three lines later – but then better formulate such as to allow for undesirable impacts, as long as the net overall impact is positive (which bears complexities regarding matters of equity and justice, etc…).

Page 16: I struggle with formulations as the following: “aim to ensure the provision of sufficient nutritious, sustainable, culturally acceptable, desirable and affordable food to consumers, while generating decent incomes to producers and other value chain actors, as well as protecting natural resources both domestically and abroad.” These are good aims – but in their aim to cover and improve everything, they bear the danger to result in inaction, as it is highly complex to work with such issues. What I would expect from this document is support and guidance regarding very concrete actions and goals to be pursued as proxies for all this – may not living up to all these good intentions and values, but at least reasonably well (cf. the general comments above).

Page 16: “The main actions suggested by the SFS Transformative Framework in this regard are to” the four actions that follow remain very general… - these are from another document, thus they cannot be changed here, but this document here may could try to make them much more concrete.

Page 18: “people need better information and clearer recommendations regarding environmentally, socially and economically sustainable food and how food consumption impacts on all elements of the food system.” This is a suggestion for concrete action – but on the basis of which insights? Is it really the case that more information and clearer recommendations leads to improvements? I doubt this when looking at our western societies, where we have all this information and recommendations and not much changes…

Page 19: Given the definition “A food value chain (FVC) consists of all the stakeholders who participate in the coordinated production and value-adding activities that are needed to make food products reach consumers.” I do not see how this may be primarily “an analytical approach to understanding how supply chains work in practice and how they can be influenced to achieve desired outcomes”. An analytical approach is something different, it should, for example, offer the concepts to be used for reducing complexity – thus: e.g. focusing on different stakeholders and their relations, such as “stakeholder analysis”, or focusing on governance, actors and resources, such as the “socio-economic systems” approach, or focusing on drivers, pressures, states, impacts, responses, such as the DPSIR, or focusing on different capitals, such as the livelihood approach. What is needed are suggestions for frameworks on how to reduce complexity when dealing with food systems, not definitions that encompass everything or commitments to take everything into account without concrete suggestion on how to really achieve this.

In this, also the “sustainable food value chain approach” from page 20, for example, should be made more concrete, to clearly name which concepts are used to reduce complexity and then to work with the issues of interest.

Page 20: “in creating a strong linkages between consumers and producers that contributes to the sustainability of the food system” – can you prove that this really is the case – in general, not only in case studies. I think it rather has the quality of a hypothesis. Furthermore – how scalable is this? How many consumers can and want to have a close linkage to producers? This may be a small fraction of all consumers only.

I think this is a general danger in these discussions, that people working on sustainable food systems think that people are and should be interested in food and “good” food in particular (however defined). I doubt this and I would rather say that 80% are not interested in this at all and I also do not think that people should be interested in food if they do not want to be so (I would love if they were – but can we really require this in a liberal context, where people should have their say on what is a “good life” for them?). They just want to eat – better or worse, but without much effort – and cheap. This is also merely a hypothesis, but depending on which one is right, actions to improve the food systems may look totally different…

Page 30: As observed by Godfray (2015): “Sustainable intensification if treated seriously is genuinely radical. It is not a smorgasbord of interventions that can be chosen at will to justify different farming methods and philosophies. It is a coherent program that seeks radical change in the way food is produced and which places as much weight on improving environmental sustainability as on economic efficiency. It should not be seen as business-as-usual with marginal improvements that benefit the environment, nor as a call for a purely environmental agenda that fails to acknowledge the need to meet people’s expectations for affordable, nutritious and varied food.”103 This is all nice – but this still seems to be a hypothesis – where are the concrete contents of SI as a coherent program?

Page 30, SI: may make explicit, that SI tends to have a bias towards supporting efficiency: less input and impact per kg output, etc. – this is adequate for some indicators (e.g. GHG) but less so for reactive N, for example, which affects ecosystems, and these impacts are crucially related to areas and impacts per area rather than per ton produce.

Page 38: “Food that provides calories lacking adequate nutrient density – due to impoverished soils, over-processing, unbalanced genetics, or some combination of these – are also topics of study from a public health perspective.” – With regard to this, I would suggest to also address the issue that certain yield increases are mainly driven by increases in starch, etc. , thus leading to diluted micronutrients per energy – thus, these commodities become micro-nutrient deficient due to increasing yields – thus, increasing productivity, as emphasized above, needs to be addressed with caution when choosing the measures to assess this.

Page 42, bottom: reference is made to section 2.1. on the SFS transformative framework for more concrete examples; but in 2.1, concreteness remains rather low, and there are no direct references to SFS transformative framework given. Even when googling it, one gets very few hits only and no specific document – so please make this much more concrete – ideally in section 2.1., or refer to the relevant web-resources.

## Emilia Venetsanou, Cape Verde

I am positively impressed by this debate that presents many interesting developments, thanks to the quality-contributions of dedicated and committed colleagues.

I want to come with a second intervention on the concerns raised about the causal links between SFS (Sustainable Foods Systems) and FNS (Food and Nutritional Security). Whereas the “One Planet Sustainable Food Systems (SFS) Programme” states that SFS are a precondition to FNS (“while the ultimate goal is food security, it will not be achieved while the economic, social and environmental bases for food production and consumption are being compromised”) a number of contributions are clearly opposing this view. Probably, we have to slightly shift our standpoint of analysis and try to finetune language and terms.

I consider that **SFS are not a precondition for the FNS, but, a sine qua non condition**, based on the following premises:

1. There are **strong causal links** between FNS and SFS. Both, SFS and FNS, are highly inter-related and mutually- reinforcing/ed systems.

2. These causal links are not linear (in the sense of time, i.e. first this and then that) and are not unidirectional, i.e. only A provokes an effect to B or that A is prenominal cause to B.

3. There is agreement on the **holistic approach**, for both constructs (SFS and FNS), so, our analysis should be coherent with such approach, which assumes that the whole is greater than the sum up of the parties and therefore, it focusses on the wholes rather than to the dissection into parts, e.g. SFS, FNS, although distinction is necessary.

4. Both, **SFS and FNS, are constructs, i.e. conceptual and political agreements**. Conceptual constructs are attempts of interpretative models on which stakeholders agree upon through a knowledge-building consultative process, in order to facilitate common action, based on common language and minimally shared understanding. On the other hand, political constructs result through negotiation capabilities of several constituencies and groups over different and even conflicting agendas. Constructs are dynamic, i.e. evolve.

5. Any developments on FNS as well as on SFS do not happen just spontaneously but, are governed. Actually, **Governance** (including policy-making and its implementation through appropriate institutional arrangements – Public Action) is a relevant sub-system of the whole picture. Governance may be good or ill, but in any case, is a relevant part of the picture particularly in our endeavour to address dysfunctions, inequalities, (un)sustainable Food Systems or Food and Nutritional (un)security.

6. Both FNS and SFS are dynamic and continuously evolving, yet, in inter-relation. There is not a SFS standard to be achieved per se but, always, in relation with FNS and vice-versa. Food Systems may be considered sustainable (environmentally, economically, and socially) only if effectively underpin FNS. Yet, Food Systems can be sustainable only if FNS meets at least minimum standards. When food insecurity prevails, it is not possible building up any sustainable food systems.

Let’s see **an example from the bottom**, on how SFS are subject to poor FNS conditions because food (in) secure people foster (un)sustainable practices that negatively impact on environmental, economic and social sustainability. The below example focusses on the social and economic unsustainability. Yet, we also know that vulnerable-households impact negatively on the environment e.g. through ill practices on land (rotation shortages, clearing by burning and so on), firstly because of the shortage of labour (related to economic and social sustainability shortcomings). Through the example, we also try to concisely show that Governance is part of the whole picture as well as why inclusiveness and equity are important features to be understood, reminding that inequality does not stop at the gates of the community and that all small-farmers are not just the same.

In the rural areas, in Africa, the poorest, during the “hunger gap” or “lean season” when the food-need is extreme, end up selling their labour under cost (sometimes for a plate of beans) to the “better off”. In Kenya, this is the case of those households whose food (in) security mainly relies on farm temporally work (“kibarua” in Swahili) paid in cash or kind. A good number of them are women workers that are the main or only breadwinners and, whoever, the ones ensuring food to the children. Similarly, in Northern Mozambique, in the Macua society is usual the so called “o’lala” which is a traditional practice of exchanging labour for food. Such practice enables those who benefit from the work of others to reach considerable accumulation. Suffice it to say that one day's work under "o'lola" can be paid in about 3-4 kg. of cassava per day of work, sometimes only with a plate of beans, while a worker can produce 7 - 9 kg. of cassava in one day’s work. Small-farmers that have to sale their work under these conditions do not manage to cultivate their own plot of land. Labour is the major limiting factor for small farmers in the context of the subsistence agriculture, at least.

Consequently, such widespread practices as “kibarua” and “o’lala” **trigger a vicious cycle** of vulnerabilities, food insecurity, multiple unsustainability and trans-generational poverty. Inequalities blow up. For instance, in rural Kenya, the richest 20% of the rural earn 62% of incomes (SID, 2004), while the bottom 20% earns 3.5 % of rural income (World Socialist Website, 2008). In Northern Mozambique, Nampula, already in the beginning of the 90s’ a trend of concentration of land was observed, with about 40-50% of the total land held by only the 25% of small-producers, the latter farming 5 times more land per household than the lower quintile.

For many rural households, their production – consumption system is a cycle (a continuum) evolving along three key moments, i.e. a) production (harvest and usually sufficient food for 3-5 months) – b) lean season (6-9 months) – c) severe food shortages (periodical crisis - emergency). The “Governance” of the cycle starts at household. At household level, to make face to the food-shortages, people develop appropriate risk management (ex-antes) and coping strategies (ex-post), aimed to strengthen household resilience. However, several times such strategies are not enough and, as we can see in the above example, lead to the unsustainability of the systems. **Public Action** is needed. Recognising that for several small farmers, the Production – Consumption cycle evolves along a continuum (as exposed above), the Public Action may propose a corresponded remedy evolving along the **Promotion-Prevention-Provision - Continuum / PPPC**. As a matter of fact, food security approach addresses: a) agricultural livelihoods development (Promotion of the production, addressing underlying causes of food insecurity); b) social transfers / SSNs (Prevention from falling into extreme poverty; risk management ex ante) and c) emergency assistance as last remedy (Provision of means to meet basic needs; coping strategies ex post). (See, e.g. “Entitlements and access to food: systems of social transfers to fight extreme poverty”, Brussels, May 2008, Position paper). <https://europa.eu/capacity4dev/file/12890/download?token=74L3pAzg>).

## Catherine Conil, Ministry for the Ecological and Inclusive Transition, France

I have read the draft, and I would just like to make an observation about the definition of "sustainable Intensification" in particular on page 30 "Sustainable Intensification and the Sustainable Food Systems Approach have in common that they both address all three dimensions of sustainable development". In France, this agriculture has not the three dimensions of sustainable development. It is a way to minimizing the use of input but fundamentally not the way to change the agricultural practices. I understand that it is a theoretical concept, but the environmental dimension is not on the same level than agroecology for example, and it is difficult to see where the social is or the economic dimension. In theory and in practice, these kind of agriculture is not systemic.

Is it possible to indicate that the environmental dimension is approached and can have some impacts on social and economic dimensions?

Best regards,

Catherine CONIL

## Lal Manavado, University of Oslo affiliate/Norwegian Directorate of Health, Norway

A Few Clarifying Comments

I cannot agree more on the matters of principle Ms. [Emilia Venetsanou](http://www.fao.org/fsnforum/comment/9286)

Has raised in her second contribution.

However, I think we have failed to addressed the brief as it is presented to us, viz., coming to a common understanding of what might constitute a food system. Obviously, unless it is a generic food system free from specific details, it will hardly be a common one.

We are requested as it were, to outline a food system which in its skeleton form common to those in use everywhere. Figuratively speaking, their actual manifestations may be obese, well-built, or skinny.

Let us not confuse two distinct things connect with a tool, viz., the structure of the tool, and how it is used. Knife is a useful tool in the kitchen, but in someone’s hand, it could also be a murder weapon. The problem here is in how a person uses a given tool. Thus it is in a food system.

Social ills Ms. Emilia Venetsanou describes arise from this cause. My description of a food system has indicated clearly that an unfair exchange of values became available since barter system was invented. Her examples are just a case of labour exchanged for an unfairly small quantity of food in return, a possibility I have not overlooked in my first contribution.

So, it is not the food system per se that is the root of social ills, rather the way it is used. Of course, looking at food systems as sure sources of profit and building them for that purpose will exacerbate FSN, which is how it is today. Hence, the need for a justifiable food system.

Ensuring against a variety of social ills, environmental damage, etc., that are attributable to unjustifiable food systems or their misuse, is in the hands of powers that be. If they are willing and able to undertake this step, then they will need a holistic governance that covers several areas, viz., agriculture, trade, labour regulations, etc., etc.

Best practices as such might be very useful when an appropriate agriculture policy is implemented in an area where it is suitable, in other words, tactical implementation/operationalization or whatever the current word is.

I hope that the final draft of the present work will clearly distinguish between the tool and its appropriate use not forgetting that at present we are only asked to contribute to what might justifiably constitute that tool i.e., a food system.

Cheers!

Lal Manavado.

## Margaret Sova McCabe, Unit of Arkansas, United States of America

Thank you for the opportunity to comment on this important draft. We are law professors at the University of Arkansas in Fayetteville, Arkansas, USA. We think the final report will serve as an invaluable tool for establishing a lexicon of SFS terms in a way that will facilitate a more precise understanding of SFS law and policy development. We are advocates of such a lexicon so that stakeholders communicate SFS concepts through a shared language. We offer three perspectives on the draft:

(1) Many SFS models embed law and policy making as a food system element. See p. 10, Fig. 1. This report may benefit from making a distinction between structural elements of SFS (law and policy, institutions) and the substantive elements of a food system (socio-cultural, environment, and science and technology). We make this suggestion so that stakeholders can distinguish between policy ideas and the tools that allow those ideas to be implemented. Framing law and policy as a structural aspect of SFS rather than a source of substantive input will also foster insight into how different types of government may or may not be well suited to adopt different policy options.

(2) The draft requests comments that assist in defining inter-connected policy-making. See p. 54. From the legal perspective, we accept that inter-connected policy making is a way to capture both the process and substance of formulating, implementing, and evaluating law and policy that has systems-based outcome goals. It is important that inter-connected policy making (passing the law, implementing it, and studying outcomes to make further changes if goals aren’t achieved) also incorporates a systems perspective so that changes in policy are assessed on the broad SFS spectrum, not simply within the particular policy domain. For example, inter-connected policy making regarding crop subsidies should consider not just the impact on agricultural sector, but also on human health and environment in all phases of policy-making. See K. Parsons et al., UK Policy Making Institutions and their Implications for Integrated Food Policy, in Barling & Fanzo, Advances in Food Security and Sustainability, Chpt 7, 3:227-8 (2018).

(3) Law (including regulation) is perhaps the largest influencer of the food system. For this reason, this report is critical to speaking a common language that will allow more effective policy development. We urge the drafters to provide more context, and possibly direction, for positive SFS policy development by defining or visualizing current policy incoherence. For example, what language will SFS stakeholders use to describe the barriers that come from policy incoherence? Similarly, should the report include visualizations of barriers to achieving SFS such as lack of inclusion, disconnections between legal domains, and cultural misunderstanding? Fig. 1 (p.10) and Annex 3 (p. 61) provide excellent visual representations of SFS concepts but they might benefit from clearer representations of barriers or friction points that limit SFS progress.

Again, we appreciate the opportunity to comment on this important draft and look forward to reading the final product.

· Margaret Sova McCabe, Dean & Professor of Law

· Uche U. Uwelukwa, E.J. Ball Professor of Law

· Susan Schneider, William H. Enfield Professor of Law & Director, LL.M. Program in Agriculture & Food Law

## Patrick Herlant, European Commission, Belgium

Dear All,

As regards territorial approaches to development I'd like to add a reference to a recent position paper on 'fostering territorial perspective for development' prepared between GIZ/BMZ/AFD/FAO/CIRAD/EC/OECD/.. it could help in clarifying what adopting a territorial perspective is about as well as clariying some of the underlying principles.

Patrick Herlant

DEVCO C1

See the attachments: [TP4D\_vOK.pdf](http://www.fao.org/fsnforum/sites/default/files/discussions/contributions/TP4D_vOK.pdf)

## Stephen Thornhill, Dept of Food Business & Development, University College Cork, Ireland, Ireland

Congratulations on such a thought-provoking report and bringing together the many different issues regarding sustainable food systems into a coherent document. This first draft will act as a useful reference, but I think the document’s main strength is in guiding us toward actions required to make our food systems more sustainable.

Food systems are commonly framed as being sustainable from an environmental, social and economic perspective. But the reason so much of our global food system is so unsustainable is that we have failed to build sufficient environmental and social costs into economic profitability. We need to put planet and people first and not be afraid to develop policies that make unsustainable food systems uneconomic, whilst promoting more sustainable food systems at affordable prices to all.

The introduction notes that “governments remain in the driving seat”, but is it not the case that multi-national agri-food companies yield more power in the global food system? There is growing acceptance within the private sector that much of our food system needs to be transformed, but so far this has mainly amounted to a bewildering array of voluntary certification schemes that have only made limited inroads.

The section on value chain approaches refers to such schemes, as well as the importance of improving consumer information, but they are not specifically mentioned in the section listing the main strategies to promote sustainable food systems. Yet sustainability certification and regulation could play a much greater role in ensuring the transition to sustainable food systems given that major multi-national companies have already started to adopt such practices.

The main problem is that these schemes are currently voluntary, there are far too many of them (463 according to the Eco-label index) and they each cover different environmental, social and economic criteria. It is therefore very difficult for consumers to understand what is included in each of the voluntary certification labels and whether one is more sustainable than the next.

The UN and nation states could play an important role in setting out a minimum level of environmental and social criteria that any sustainability certification scheme must adhere to in order to describe itself as promoting “sustainability”. In this way consumers could be confident that any product certified as sustainable, is indeed promoting, at a minimum level, all forms of sustainability throughout its value chain. This approach could be included under, and create an important link between, the proposed strategies to strengthen the policy environment, promote public-private partnerships, education and awareness-raising, as well as metric based monitoring and evaluation.

The focus on metric-based evaluation is important in terms of measuring progress on key sustainability issues. There is also a need for better methodologies and metrics to monitor sustainability performance, particularly in relation to food and nutrition security. One example of this is the Nutrient Deficit Score which calculates the deficiency (or excess) of key nutrient intakes from reported food consumption data, so as to provide guidance back to households on better food production and purchasing decisions. This can also then be linked back to greenhouse gas emissions and other environmental indicators in the value chains associated with such foods.

On strengthening the policy environment, there could be a role for trade policies that penalise foods that clearly involve unsustainable practices, such as deforestation: this would then encourage more foods to be sustainably certified. Similarly, agri-food support policies should be transformed so as to encourage more sustainable food production instead of those responsible for the largest greenhouse gas emissions and other unsustainable practices. Meanwhile, newly-emerging agri-food sectors and value chains in developing countries should not have to face unfair competition from imports of products which benefit from significant domestic support.

Regarding the definitions and frameworks:

In the definition of a food system, I suggest using the word “encompasses” rather than “gathers”, as the definition should be describing what a food system is rather than what it does.

Mention is also made that a sustainable food system is “more than a linear linking of the individual stages of the value chain”. Yet the framework used in figure 1 depicts a linear system within an environment of elements, drivers and outcomes. We need a better way of depicting the food system that shows circular flows at different stages of the value chain, as more and more of our biomass resource is fed back into the system as nutrients (eg any so-called food-based “waste” used in anaerobic digesters to produce organic fertiliser and gas energy).

Importantly we need to show not only the economic, but the environmental and social values at each stage of the supply chain, so that we can identify where additional links in the chain often reduce such values, and perhaps add unnecessary economic value at the expense of environmental and social costs.

Thank you for compiling this very interesting and informative document and I look forward to reading the next version.

## Beate Scherf, Food and Agriculture of the United Nations (FAO), Italy

Dear all,

Thanks for sharing this document. I am wondering how it relates to the FAO Food Systems Framework that is currently being developed under the leadership of ESN.

The introduction is focusing on crop yields and crop production solely but should cover all food production agricultural sectors. I also note that pastoralism, the livelihood of several million people utilizing and managing more than a third of the world’s terrestrial area producing both milk and meat with grazing ruminants is not even mentioned. Also the generalization of people consuming too much animal protein should be written in a more specific way because this is only true for highly developed countries whereas ultra-processed food is on the rise also in developing countries. However, of the 2 billion malnourished people in the world, a large portion suffers of anemia because of lack of animal-source foods.

I also wonder from where the definition of agriculture has been taken. I have not seen this definition before and I must say it reads quite strange. We usually introduce the term as agriculture encompasses all agricultural sectors (crop and livestock production, aquaculture, fisheries and forestry). The terms farmers, farming systems and farming communities should be used carefully as they do not encompass all agricultural sectors and basically exclude pastoralism, aquaculture, fisheries and forestry.

Moreover the term natural resources is often used to encompass land and water but sometimes to also encompass biodiversity. It should either be defined in the wide sense or when applicable also be referred to biodiversity which is often forgotten.

Please check general statements – e.g. pest-resistant varieties and breeds – and use sector specific and adequate wording – in this case disease tolerant breeds.

Circular economy is an element of agroecology. This might be highlighted.

The list provided on page 26/27 seems to be limited to the One Planet Network. However many more initiatives illustrate and/or respond to the practice of creating resilient production systems.

Page 31 – I agree that the ecosystem approach is focusing on ecosystems but agroecology is rather people centered and it is not new but has been developed over the last century (when looking at literature).

Page 32 – agroecology may also comprise aquaculture. Agroecology goes beyond agro-ecosystems and promotes transformation of food systems including shortening value chains and consumer- producer interactions which is later explained on page 33. Agroecology is promoting territorial approaches. Here the approaches are overlapping.

I understand that the one health approach also includes environmental health which is not been mentioned in the definition.

Page 37 – I would suggest to replace the word ‘eater’ by ‘consumer’. The term ‘effluent form confined animal feed operations’ is not clear. Rather than air, water and soil are being contaminated by pesticides. Also further down on that page – it is not just a matter of nutrient density but also micronutrient content and availability in terms of absorption rates.

Page 46 – precision agriculture also applies to livestock production and e.g. milk yield, concentrate feed intake and health data. Integrated production may also include aquaculture e.g. livestock-aquaculture integration. Also the integration of trees (fruits, nuts, fertilizer trees, shade or feed or fencing for livestock trees).

Page 56 – smallholder farmers – this definition excludes pastoralists which are often considered in this category despite that they may manage large herds utilizing mostly communal lands – see <http://www.fao.org/3/a-i1034e.pdf> on small scale livestock keepers.

I am looking forward receiving the final report.

With kind regards,

Beate Scherf

## Debarati Chakraborty, University of Kalyani, India

Respected Sir,

As mentioned in my earlier comments on 2.2.1, Sustainable Diets being defined as protective and respectful of biodiversity and ecosystems, culturally acceptable I mentioned about a Bengali ritual of eating 'Choddo sag' (14 greens). It is well known that leafy green vegetables are among nature’s best nutrition supplements Bhoot chaturdashi, celebrated a day before Kali Puja among Bengali is believed to be the day Narakasur (a demon) was killed, according to mythology. It is on this day 14 greens are consumed a list of which along with their scientific names are given below

14 greens/Choddo sak

1. Waterclover green Marsilea minuta

2. Chick pea/Bengal gram leaves Cicer arietinum

3. Spinach leaves Spinacia oleracea

4. Corchorus sp. young Jute green

5. Calabash green Lagenaria siceraria - lac

6. Squash green Cucurbita sp.

7. Green amaranth Amaranthus viridis

8. Hincha saag /Helencha saag Enhydra fluctuans

9. Fenugreek green Trigonella foenum-graecum

10. Vine spinach Basella alba

11. Oriental radish green Raphanus sativus var. Longipinnatus

12. Black mustard green Brassica nigra

13. Water spinach green Ipomoea aquatica

14. Red amarnath leaves Amaranthus cruentus

Moreover, in another Bengali ritual of Lakshmi Puja, it is a must to have a khichdi (an Indian dish made with rice and lentils) to use particularly Gobindobhog, an aromatic rice landrace. In winter, it is common to celebrate the ritual of Makar Sankranti with aromatic date palm jaggery (Nolan gur) based sweet dishes (Payesh- a type of rice based kheer and pithe- rice cakes). These rituals are few of several examples of innumerable traditional dishes which are not only directly contributing to nutritional benefits but also to the conservation of indigenous landraces (eg. Gobindobhog). The date palm jaggery helps to improve digestion, have high iron, potassium and magnesium content. Thus my suggestion is instead of making the document totally technical even if a few of such innumerable traditional culinary dishes name can be included along with an emphasis towards their health benefits, it will motivate its users to have their very own traditional foods. After all, until and unless we are actually growing and eating our own traditional, local foods we can't contribute directly towards their conservation. Another such example is drumstick tree Moringa oleifera every part of which is used in Indian culinary traditions from ages and now it is well known for its medicinal benefits. We need for such examples from all over the world to understand the concept of Sustainable Diets being rooted to everyone's unique culture and biodiversity.

## Anita Pinheiro, India

This is an important effort to make a clear understanding on the concepts of sustainable food systems. I appreciate the efforts and hubmly present my comments to the draft are as follows:-

Emphasis on ‘profitability’ of sustainable food systems will completely undermine subsistence **production** systems and similar decentralized initiatives that is integrated with the local economy.

Resilience is a pre-requisite to sustainability and hence it cannot be used synonymous to sustainability. Although the draft has given a detailed account of resilient production systems, characteristics of a sustainable production system also needs to be given equal emphasis in the draft. It is important to distinguish what a sustainable production system will look like when it is compared with the conventional mode of monoculture production with intensive inputs-be it organic or chemicals.

House-lot food gardens needs to receive attention in the glossary. House-lot gardening is a traditional form of economically viable local production in the Global South that provides inexpensive source of nutritious food to the family from the private spaces of a house such as backyards, rooftops, and setback. The purpose of house-lot gardens are primarily subsistence production of fruits and vegetables for the consumption of family members. However, the on-going movements that taking place in the state of Kerala (India) shows that house-lot gardens could be drivers of larger change to address the lack of larger pieces of land, if supported with adequate policy and institutional support. Apart from supplementing the family with fresh vegetables, the house-lot gardens also facilitates recycling the household organic wastes at the source. Moreover, the emerging initiatives that provides platforms to sell exclusively home-grown surplus produce in Kerala shows the potential of home-grown production to develop into a cooperative local marketing system. The example of Kerala is mentioned here to emphasis that house-lot gardens can do much more to the sustainable local food system if is provided with adequate policy and institutional support. Hence, it needs be considered to mention in the glossary.

It would be good to define urban agriculture and peri-urban agriculture separately. There is considerable difference in the practices and socio-economic-environmental aspects of peri-urban agriculture and urban agriculture. Peri-urban agriculture is a commercial activity that is carried out on land whereas urban agriculture may not necessarily be a commercial activity and sometimes it doesn’t require land for production. The given definition in page 48 under the sub-heading ‘urban agriculture/urban gardening’ could be modified to incorporate urban house-lot gardens, rooftop gardens, vegetable and fruit gardening on the small private spaces of balcony, patio, and set back areas. It is also important to mention that urban agriculture could be of building-integrated capital-intensive production systems such as rooftop green houses and vertical gardens or low-budget house-lot vegetable gardening using the available spaces at rooftop, balcony and set back. In both these forms of urban agriculture, the importance is that it does not require any additional land for growing vegetable and fruit crops. There are efforts to bring environmental consciousness in capital intensive urban systems by adopting solar energy to power up the production. As the methods and practices of urban agriculture and peri-urban agriculture are different, it would be appreciated if the terms could be defined separate in the glossary.

## Carola Strassner, FH Muenster University of Applied Sciences, Germany

Dear Alwin, all authors and contributors,

This publication will do the exchanges about these topics a very valuable service and I thank you for the opportunity to comment and make suggestions.

Re Q1: 2.1 is ok if the basis is UN-organisations' work

Some of the points I noted (and will try to keep short here) include

1.3 - it seems to imply that there is a "right" understanding; things will not change or transform because we impose one understanding. Will this be presented as a living document, that as we progress more theory and practice and understanding (perspectives) are shared? This could be revisited later in the 10YFP-sfsp, depending on resources, of course.

2. How open will the defining process be? There is space to propose an own definition but at the same time include or allude to other understandings / definitions.

2.1.1 The chronology seems to get a bbit mixed in the telling. On p.9 ...SFS are profitable ... 3 dimensions ... seems to be a very narrow and old rendition. On p.10 l8-9 ... feedbacks..impacts...outcomes.. seems a micing of concepts / frames. On p.18 I think it should be Traditional Mediterranean Diet (not MD).

Re Q2: Certainly good to have a kind of collection of all key SFSP-near FAO-terms.

Re Q3:

(a) Terms I can suggest definitions or clarifications for:

P.48 UA/UG: it may be more helpful to distinguish between UA (urban farming, CSA (and all its synonyms such as Teikei etc.), edible cities), UG (allotments, backyard garden) and Community Gardens (intercultural, neighborhood, school and campus gardens). Or alternatively, it may be an idea to list "synonyms" or list "similar concepts". That way people can find common ground more easily. (A starting source: Nicole Rogge et al. e.g. on ResearchGate)

P.50 Consumer ed: OECD has a publication or two addressing this, see e.g. [http://www.oecd.org/sti/consumer/promotingconsumereducationtrendspoliciesandgoodpractices](http://www.oecd.org/sti/consumer/promotingconsumereducationtrendspoliciesandgoodpractices.htm) also [http://www.oecd.org/sti/consumer/newpolicyrecommendationsonconsumereducation](http://www.oecd.org/sti/consumer/newpolicyrecommendationsonconsumereducation.htm) Consumer awareness: brings one to consumer literacy, which brings up all the "literacies" - they may be good additional terms - maybe under -literacies: food, health, consumer, ecoliteracy-,

For this overall topic I recommend Hayward et al. 2007 <https://uwaterloo.ca/canadian-index-wellbeing/sites/ca.canadian-index-we>, also reviews.

P.51 Det. of Health: I suggest WHO, details here <https://www.who.int/hia/evidence/doh/en/>

p53. Fd Sec: Not sure if you want to pick up on the long fd-sec / fd-sec&nutr / fd&nutr-sec discussion but may be a good idea to bring nutrition in; refer to FAO

P.53 Fd. types / grps: used in all national recommendations but perhaps slightly differeingly - maybe try WHO. If you were to write something like ... are basis for diet recommendations ... you might refer to Fischer/Garnett 2016 <http://www.fao.org/3/a-i5640e.pdf>

P.54 Fd Lit (besides comment above): see <http://www.efad.org/media/1573/efad-food-literacy-fact-sheet.pdf> and the book depicted at the bottom; for deeper maybe <https://www.sciencedirect.com/science/article/pii/S0195666316306833>

P.55 Nutr: WHO may be best for a 'globally acceptable' definition see <https://www.who.int/topics/nutrition/en/>

P.55 UPP - NOVA classification, Monteiro et al - as mentioned by others in the forum; processed food meant in NOVA context? Careful - has general meaning

P.58 fd label: Codex alimenatrius may be good for this as a neutral source; many countries/ministries have own explanation, see also FAO <http://www.fao.org/ag/humannutrition/foodlabel/76333/en/>

P.58 fd cert: maybe refer to ISO

(b) Terms I suggest as important and missing from the list:

A number of strategies and approaches e.g.

'Blue economy', 'greening Goliaths multiplying Davids'

I'll leave it at that for now; I'd be happy to give further feedback if the opportunity arose.

Kind regards and all success.

Carola

## Bernardete Neves, Land and Water Division, FAO, Italy

Dear colleagues,

I particularly support three bold statements made in the very short section on strategies to promote sustainable food systems:

* "Inequality among stakeholders has to be **compensated** at least to some degree by public sector (i.e. government) intervention, in a way that leads to greater overall prosperity.
* The “rules of the game” need to be **adjusted** so that the true costs and benefits of certain practices are accounted for in a fair manner.
* Financial **incentives** are not the only consideration but are one of the strongest levers of change available."

**Indeed, a key strategy to promote sustainable food systems is to recognize that we need a combination of measures, to compensate, adjust and incentivize change**. For agricultural producers to adopt more sustainable practices, these need to be integrated in a package of actions that genuinely improves farm management and income. Agricultural producers will only be able to comply with conservation requirements and restoration goals, if they can maintain or improve productivity elsewhere on their farm and reduce pressure on remaining natural ecosystems, and the opportunity cost of land for restoration. Similarly, investment in rehabilitation and sustainable management must have an economic return.

**SFS investments must take agriculture producers to a new equilibrium** with restored and productive landscapes, producing higher environmental benefits, on farm and beyond, with lower opportunity costs. **But this doesn’t necessarily require much additional investment as there are a variety of programmes offering incentives for this transition**. These range from policy-driven investments to fulfil mandatory regulations, such as taxes and charges; to private strategies for saving production costs (water-quality protection programmes); to opening new markets (certificates/standards); to voluntary investments in social and livelihood benefits (corporate social responsibility and NGO investments in social development).

**An important contribution that the SFS Framework can make, in addition to the others mentioned in 3.1., is to bring in investments from the consumer side,** linked to certification and other strategies for sourcing of sustainable agriculture products and services, to better reward producers for environmental and social benefits of sustainable food production systems.

In the next stages of the 10 YFP SFS, **greater attention needs to be given to strategies to increase policy coherence-** across environment, agriculture, health, finance- **and convergence of sustainability investments along the value chains.**

## Emilia Venetsanou, Cape Verde

Dear facilitator, Mr. Alwin Kopse, dear colleagues, this is a great work.

Thank you again for the opportunity.

I want to say that I share the views of Mrs Carola Strassner, particularly concerning the points 1.3 and 2. on what she, elegantly, called “right” understanding. As I concisely put forward in my second contribution, definitions (e.g. SFS or FNS) are but “**constructs” (conceptual and political agreements**) and as such should be understood and used, in a dynamic and adaptive way. Please, see point 4 of my contribution. So, I consider very important the point 2 raised by Mrs Carola Strassner.

The issues raised by Mr. Beate Scherf also called my attention because are coming to reinforce my own perplexities in relation to our tendency to build up new constructs and abandon the previous without reference and without assessment. This is a huge chapter that I believe it is not the case to open on this debate. Everyone can understand what I am trying to say. Anyhow, it is difficult to me to understand why the “**sustainable livelihoods approach**” (SLA) is not taken on board by this new endeavour on SFS? What did-I miss in the development of ideas and agendas? I attach the relevant paper of the “Committee on World Food Security / CWFS, Twenty-sixth Session, September 2000, Rome, - Who are the insecure?” that shows that SLA is not about a peripherical approach but a core tool of analysis and policy-making. See also the FAO brief <http://www.fao.org/docs/up/easypol/581/3-7-social%20analysis%20session_167en.pdf>

Kind regards

See the attachments: [CFS 29.docx](http://www.fao.org/fsnforum/sites/default/files/discussions/contributions/CFS%2029.docx)

## Cassandra Walker, FAO, Italy

Dear colleagues,

Please find below the attachment with my comments.

See the attachments: [Draft\_SFS\_Glossary\_v22NOV2018-CW.pdf](http://www.fao.org/fsnforum/sites/default/files/discussions/contributions/Draft_SFS_Glossary_v22NOV2018-CW.pdf)

Best regards.

## Elise Golan

Dear all,

Please see the file attached below with my commnets.

Best wishes,

Elise Golan

See the attachments: [Draft\_SFS Glossary of key approaches, concepts and terms\_v22NOV2018\_clea....docx](http://www.fao.org/fsnforum/sites/default/files/discussions/contributions/Draft_SFS%20Glossary%20of%20key%20approaches%2C%20concepts%20and%20terms_v22NOV2018_clea....docx)

## David Neven, Italy

Two key systems approaches are missing: market systems and business models

• Definition on p.8: no reference to linkages, value-addition, aggregation, also “environment” is not clear (enabling or natural or both?), not good to have “etc.” in a definition. Stating “outputs” including “outcomes” is hierarchically incorrect. Consider definition given in Reference 20

• Illustration of food systems: Consider inserting FAO’s food system’s wheel graphic (Figure 1 in Reference 20 “FAO 2018. Sustainable Food Systems: Concept and framework”), perhaps to replace figure 1 on p.10 (although they do not entirely cover the same) or alternatively at the end with the other figures (Annex 1, 2, 3).

• Page 11. Besides tradition and modern, we can distinguish alternate food systems (see FAO SFS course)

• Infrastructure covers more than trade and roads – ICT, energy, irrigation, etc.

• P.16 replace sustainability along all food value chains with sustainable food value chains (similar formatting to sustainable diets)

• Sequence of concepts related to the value chain concept. The sequence in page 19 is incorrect. For example, sub-sector analysis, global value chains and market systems approaches are missing. For a more correct sequence, see Reference 54 (FAO 2014 Sustainable food value chains – guiding principles).

• P.21 reference is made to intermediary actors, but it is better to refer to these as input and support services providers (in line with the lit referenced)

• Sustainable intensification seems mostly concerned with agronomic performance – not triple bottom line sustainability.

• Territorial development: Could mention territorial approaches to agro-industry development (e.g. agri-food parks or Special Economic Zones (SEZ) as well as Rapid Urban Food Systems Appraisal Tools (RUFSAT)

• Table p.39: SFVC approach column is incorrect – it should be the same as SFS approach, except for at the end it should say “commodity” in terms of level of analysis

• PPPs – add reference to FAO literature on this

• Section 4: missing are definitions for: business model approaches, value-added, triple bottom line, consumer environment, market system approaches

• Not clearly indicated what a SFS approach is in practice. How does it link to the individual (sub-system) approaches?

## Siobhan Kelly, FAO, Italy

Congratulations to the lead authors on a very difficult task of consolidating the copious amount of literature on the seamless topic of food systems. I think the glossary is moving in the right direction and with some more depth in some of the areas raised in the online debate, it will be a very useful reference resource for those starting to navigate the elements that need to be considered for a sustainable food system. The below may help with this.

- Overall the thrust and level of the document is conceptual, reflecting however the design and content of the approaches that are synthesized. If possible it would be good to extract from the approaches reviewed any of those that refer to actual country experiences. This would help the reader contextualize the knowledge shared in the glossary.

- It may be more useful to introduce earlier the notions of multi-stakeholder engagement and PPPs given that Section 3.3 emphasizes these approaches as the main strategies for promoting sustainable food systems.

- It may be useful to the reader to have Table 1 closer to the intro and then weave the text around a description and comparison of these approaches.

- Section 1.1 on the Rationale explores the nutrition dimension of FS in para 3, but maybe one or two words could be included in the opening first paragraph. The para as it stands describes what is unsustainable about current food systems, and as such nutrition should be touched upon.

- The last line of the third paragraph could also be easily expanded to include a reference on the estimated cost to the public sector of unhealthy diets and non-communicable diseases.

- Paragraph 4 refers to the need to address ‘all’ elements of a food systems. This is debateable and therefore this paragraph and discussion point could be edited or refined. While a holistic vision of the landscape is needed, countries are at different stages of development, with different priorities depending on the contexts and agricultural and environmental comparative advantages. The messaging again needs to be refined as it is unrealistic to expect a country to try to tackle ‘all elements’ simultaneously, with priorities and staging required for the process.

- Paragraph 5 states that “governments remain in the driving seat”. This is also debateable. It could be argued that structural adjustment placed multinational food companies in the driving seat and due to weak cross-national governance mechanisms, this has led to the challenges we face today. On the other hand, in many developing countries, in particular Africa, the public sector holds the reins, with very little private sector input and consultation, which is stifling growth and innovation in the food system. The lack of dialogue is also preventing the identification of solutions which place sustainability at the centre of economic growth.

- Page 9, paragraph four defines sustainability. It may be opportune to introduce the idea of nutrition as the fourth pillar of sustainability. IFAD’s publication with ESN Nutrition sensitive value chains could be helpful here: [https://www.ifad.org/documents/38714170/40804965/NSVC+A+guide+for+project+design+-+Vol.+I.+Web+filepdf.pdf](https://www.ifad.org/documents/38714170/40804965/NSVC%2BA%2Bguide%2Bfor%2Bproject%2Bdesign%2B-%2BVol.%2BI.%2BWeb%2Bfilepdf.pdf). Also the attached paper from the Climate Change Research Network on What is a Sustainable Diet also discusses this idea: <https://www.fcrn.org.uk/sites/default/files/fcrn_what_is_a_sustainable_healthy_diet_final.pdf>

- Using the document to explore and expand more on the analysis across the approaches, gaps and ways forward.

## Wadzanai Garwe

Not clear what it takes to use a food systems approach in a country/regional setting. What does it mean applying this type of approach for policymakers and practicioners? What does an enabling environment for the food systems approach actually entail? Put the overview in Table 1 and the analysis of linkages upfront. Also identify the gaps within a given context, when is it appropriate to use one method or can a combination of methods be applied - which method is appropriate for what?

• Section 3.2 title mentions “Interlinkages, overlaps and complementarities” – the interlinkages are not addressed. How do we use different approaches at the same time?

• How can this document be made into a living document, so that relationship between the four components of the tool box – glossary, collaborative framework, capacity development / training and collection of case studies – especially the case studies, can be brought in? How do different sets of users (policy makers, practitioners, civil society, and private sector) contribute their experiences to this document over time?

• How can this become a useful tool? It lacks the reality of what is happening on the ground – i.e. learning from the case studies

• Privates sector needs to engage more proactively e.g. links to PPPs

## Alwin Kopse, Federal Office for Agriculture, Switzerland

Dear members of the FSN Forum,

I am truly impressed by the interest and constructive debates sparked by the v.1.0 draft “Towards a common understanding of Sustainable Food Systems” over the past three weeks. This last week in particular has seen increase in discussions among different Forum members, adding greatly to the global dialogue around food systems. I would therefore like to express a big Thank You to all contributors, both on my own behalf as well as that of the entire One Planet Sustainable Food Systems (SFS) Programme.

The online consultation is now closed. As a next step, we will do an in-depth analysis of all feedback received and do our best effort to integrate all pertinent inputs in the document. In this context we may get back to some of you to expand on specific issues or in case there may be a need for clarification.

In addition, kindly note that the document is scheduled to be presented at the upcoming [2nd global conference of the SFS Programme](https://www.sfsprogramme.org/), taking place on 5-7 February, 2019, in San José, Costa Rica.

The final version will be shared with you all on this platform.

Best regards,

Alwin Kopse

Deputy Assistant Director-General

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Thank you very much, for inviting me, for this consultation process.

The document is interesting and include keypoint issues relevante for sustainable food systems approach. However, it focuses as it is, on the repetition of concepts already elaborated in other contexts.

On my perspective, It would be useful to add the following perspectives to it:

1) the contribution of culture to the food system and especially the cases and examples of peasant and indigenous productions.

2) The contribution and the role of new technologies. If the document points to a projection, the opening to the perspective of the pros & cons of new technologies in agricultural and food production this should be included. The benefits and the costs, no only mencioning modern biotechnology eg., instead, proteomic, genomic, systhetic production and the relevance of innovation (soft & hard innovation), e.g.

3) A strong orientated profile towards promoting European or first world knowledge logics is detected in the document, when an adequate balance should be available. Even the examples of systems (For example, that of Brazil), is a minor example, when Brazil has a whole national system linked to production, consumption and extension.

4) The territorial examples and their approaches only to Europeans, are too explicit in the document Need to be open to others "views" of territorios, eg., indigenous peole. This is no the same and please consider it and consult with antropologists, indigenous experst and others.

5) A strong approach and depth in the inclusion of the relevant cases of ASIA and AFRICA is lacking. CHINA, seems no exist here. And here is the driving forces that are changing the demand of natural resources and foods and where changes can drawn the wordl.

6) LATIN AMERICA is also strongly underconsidered.

7) The document by Pretty et al (2018) is interesting. However, one of the crucial issues in agriculture and food is that of ENERGY. And at this point, in terms of energy balances and especially in the eyes of EMERGIA (Brown, Campbell and others for example) this should be taken into account.

Other approach tha the document is losing is NEXUS. Particularly when in that you can find the analysis of energy, water, soils and food analysis, and this is part of the approach you are suggesting.

(Giampietro et al, e.g.).

8) The Local Economy and the Local Systems of Production and Consumption are not mentioned. This is key to sustainable food systems that are directly linked to food security and sovereignty.

9) It is striking that NATURAL RESOURCES are not mentioned in depth.

You look at the territories but not the resources. The Resource Panel and its classification should be considered.

10) Porter et al analyzes are also provided in terms of value, but not the important contribution of IPBES to the appropriate framework.

Pascual et al (2017), Diaz et al (2016), IPBES (2018), could be considered.

11) The perspective of TEEB 2018, there is a contribution on food systems and the perspective of "system" as ecoagrifoodsystem. This could be useful to be considered.

12) Three important threats and opportunities should also be considered for sustainable food systems: CLIMATE CHANGE, MIGRATIONS and WAR. Not mentioning and treating it, when it is one of the serious and global political problems, leaves the document with a naive contribution that could be improved in the recommendations.

In summary, it is an interesting document, but you should need broaden your view and approach with the incorporation of some topics that need to be tackled to be a productive and usefull document.

Congratulations for this first approach.

My best regards

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## Michelle Miller, UW-CIAS, United States of America

The report is an excellent first draft. and frames many of the issues very well. My specific comments are:

It would be helpful to take a step back and discuss the food systems as a cyclic system ideally -- for instance, including refridgeration, and packaging as part of the system, as well as ownership and labor structures.

Adding reference to FAO-ILO work on decent work in agriculture and food systems would be welcome.

Instead of the original concept of sustainable agriculture as a three-legged stool of environmental, social and economic sustainability, I've been using a systemic emergence model. The environmental sphere is the base of all social systems. And well-being (of which economic success is but one measure) emerges from social systems. Profitability and economic systems are culturally derived so language around economic sustainability is difficult to translate. In work with traditional communities I hear it expressed as the difference between community food systems and enterprise.

Market access for all scales of production is a critical piece to address, especially as buyer power increases in concentrated segments of food supply chains.

Sustainable food systems work must identify leverage points that can be used to improve food systems so that they serve our well-being.

There is mention of regional, national or subnational -- this terminology may be misconstrued in a North American context (and maybe on other continents?) where regional can mean subnational. Maybe use state, multistate or intrastate?

A holistic food systems assessment needs to include study of food flow (production and its associated supply chains) and labor.

Part of sustainable diet includes access to food and also farmer access to markets.

It is critical not to fall into the trap that the goal is to sustain the current system. Instead sustainability is aspirational - we want to sustain resources to improve well-being for all living things.

The term "value chain" has a distinct meaning for businesses, where the values (ie profit or market access or reduced business risk) accrue to the business, not to the public. Our USDA working group on Agriculture of the Middle instead uses the term "values-based supply chains" to distinquish the situation where business people share values about the public good and agree to share risk across the independent businesses in the supply chain. See the article: Values based food supply chains: strategies for agri-food enterprises of the middle (Stevenson and Pirog, June 2013).

Thank you for the opportunity to share my thoughts on this report.

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