**Data collection and analysis tools for food security and nutrition - E-consultation on the V0 draft of the Report proposed by the HLPE Steering Committee and the Project Team**

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# Topic note

During its 46th Plenary Session (14-18 October 2019), the Committee on World Food Security (CFS) adopted its four-year Programme of Work (MYPoW 2020-2023), which includes a request to the High-Level Panel of Experts on Food Security and Nutrition (CFS-HLPE) to produce a report on “Data collection and analysis tools” for food security and nutrition, to be presented at the 50th Plenary session of the CFS in October 2022 (to access the MYPoW, please click [here](https://www.fao.org/publications/card/en/c/NA703EN/)).

The report, which will provide recommendations to the CFS workstream “Data collection and analysis tools”, will:

* Identify the barriers impeding quality data collection, analysis, and use in decision-making;
* Identify specific high priority gaps in data production and analysis not covered by ongoing initiatives;
* Highlight the benefits of using data and the opportunity costs of not using data for decisions;
* Illustrate initiatives that have encouraged evidence-based decisions in agriculture and food security across the public, private, and academic sectors as well as approaches that have not worked;
* Provide insights into how to ensure data collection and its utilization give voice to the people most affected by policies stemming from that data, including farmers and other food producers.

To implement this CFS request, the HLPE is launching an open e-consultation to seek views and comments on the [**V0 draft of the report**](https://assets.fsnforum.fao.org/public/V0_Draft_HLPE_17_data_collection_analysis.pdf). To participate in the e-consultation, please visit the HLPE e-consultations links below:

EN: <https://www.fao.org/fsnforum/consultations/HLPE_data_collection_analysis_tools_V0>

ES: <https://www.fao.org/fsnforum/es/consultations/HLPE_data_collection_analysis_tools_V0>

FR: <https://www.fao.org/fsnforum/fr/consultations/HLPE_data_collection_analysis_tools_V0>

The report will be presented at CFS 50th Plenary session in October 2022. As part of the process of elaboration of its reports, the HLPE is organizing a consultation to seek inputs, suggestions, and comments on the present preliminary V0 draft (more details on the different steps of the process, are available [here](https://www.fao.org/fileadmin/user_upload/hlpe/hlpe_documents/HLPE_-_process.pdf)). The results of this consultation will be used by the HLPE to further elaborate the report, which will then be submitted to external expert review, before finalization and approval by the HLPE Steering Committee.

HLPE V0-drafts of reports are deliberately presented early enough in the process - as a work-in-progress, with their range of imperfections – to allow sufficient time to properly consider the feedbacks received in the elaboration of the report. E-consultations are a key part of the inclusive and knowledge-based dialogue between the HLPE Steering Committee and the knowledge community at large.

**How can you contribute to the development of the report?**

This [**V0 draft**](https://assets.fsnforum.fao.org/public/V0_Draft_HLPE_17_data_collection_analysis.pdf) identifies areas for recommendations and contributions on which the HLPE would welcome suggestions or proposals. The HLPE would welcome contributions in particular addressing the following questions, including with reference to context-specific issues:

1. The V0-draft introduces a conceptual framework that orders the components of the food security and nutrition ecosystem based on their proximity to people’s immediate decision making sphere, from the macro to the individual levels, and describes a four-stage data-driven decision making cycle for food security and nutrition (FSN), from priority setting to data utilization. Use of the two is illustrated through a matrix template that facilitates the concurrent operationalization of the conceptual framework and data driven decision-making cycle to address issues relevant for FSN.
   1. Do you find the proposed framework an effective conceptual device to highlight and discuss the key issues affecting data collection and analysis for FSN?
   2. Do you think that this conceptual framework can indeed contribute to providing practical guidance for data collection for FSN?
   3. Do you think that this four-stage data driven decision making cycle for FSN addresses the key steps in the data collection and analysis process for FSN? Where do you see the more relevant bottlenecks in the data driven decision making cycle for FSN?
   4. Can you offer suggestions for examples that would be useful to illustrate in a matrix template that facilitates the operationalization of the conceptual framework and data driving decision-making cycle to address issues relevant for FSN?
2. The report adopts the broader definition of food security, proposed by HLPE in 2020, which includes the two dimensions of agency and sustainability, alongside the traditional four of availability, access, utilization and stability.
3. Does the V0-draft cover sufficiently the implications of broadening the definition of food security for data collection, analysis and use?
4. What type of data will be most useful in measuring food security dimensions such as “agency” and “sustainability”?
5. The V0-draft reviews existing FSN data collection and analysis tools, initiatives and trends.
6. Do you think that the review adequately covers the existing ones? If not, what would you add?
7. Do you think that the trends identified are indeed the key ones in affecting data generation, analysis and use for FSN? If not, which other trends should be taken into account?
8. In particular, can you offer feedback on how digital technology, internet of things, artificial intelligence, big data, and agriculture 4.0 affect FSN? What is their likely impact in the coming decades?
9. The report discusses capacity constraints at local, national and global levels, with a special focus on statistical and analytical capacity.
10. Do you think that the V0-draft covers all the issues – and their consequences - of capacity constraints at the different levels?
11. If your answer a. was “no”, then what additional issues regarding capacity constraints should be added to the analysis?
12. The V0-draft discusses the role of new and emerging technologies in data collection and analysis tools for FSN.
13. Do you think that the presentation of new and emerging technologies captures the main trends? What other new and emerging technologies could be discussed in the report?
14. In what other ways can new and emerging technologies be relevant to each of the stages/aspects of the FSN data value chain/data lifecycle (i.e., Define evidence priorities and questions; Review, consolidate, collect, curate and analyze data; Translate and disseminate results and conclusions; Engage and use results and conclusions to make decisions)?
15. In what other ways can new and emerging technologies be relevant to each of the FSN dimensions (i.e., Availability; Access; Utilization; Stability; Agency; Sustainability)?
16. What are some of the issues with respect to ethical use of data, access, agency and ownership linked to these new and emerging technologies that should be further discussed in the report?
17. The report reviews issues concerning institutions and governance for data collection, analysis and use, with a focus on data governance principles, data protection, transparency and governance of official statistics, the implications for governance of an increasingly digitalized world, and examples of initiatives addressing governance challenges.
18. Are there any issues concerning governance of data for FSN that have not been sufficiently covered in the draft report?
19. What are some of the risks inherent in data-driven technologies for FSN? How can these risks be mitigated? What are some of the issues related to data privacy, access and control that should be carefully considered?
20. What are the minimum requirements of an efficient FSN data system and how should these be prioritized?
21. Which mechanism or organization should ensure good governance of data and information systems for FSN? How to regulate and mitigate potential conflicts between public and private ownership of data?
22. What are the financing needs and the financial mechanisms and tools that should be established to allow all countries to collect, analyse and use FSN data?
23. 7. Drawing on HLPE reports and analysis in the wider literature, in the next draft the report will outline examples of potential policy pathways to address challenges to data collection and analysis tools for FSN.
24. What data do the global community and international organizations need in order to gain an appropriate insight into the current state of world food security and to agree on and design international action to improve it?
25. What data do countries need for more effective decision-making for food security and nutrition and to inform policies for the transformation of food systems?
26. Please suggest references to cases that illustrate policies and initiatives aimed at:
    * improving equity in access to data for FSN policies and decisions, including at grassroot and local levels;
    * enhancing capacities with respect to data generation, access, analysis and use by different actors;
    * specifically harnessing of traditional and indigenous/first nations knowledge.
27. Please provide references and examples of success: good data leading to good policies (context-specific), or any lessons to be learned from a failed data collection/utilization attempt.
28. Please also suggest any initiative and good practice aimed at addressing:
    * the specific constraints of generating a minimum set of indicators in conflict and disaster- affected areas;
    * capacity gaps of local institutions, farmers’, producers’ and workers’ organizations in generating, sharing and analysing good quality data, as well as in using data to inform decision-making in food systems;
    * capacity gaps at country level to generate and use data in policy-making processes, monitoring and reporting related to SDG2; including with respect to financial resources, human resources, data management, legislation and the enabling environment and FSN governance.
29. Please also provide any additional references with respect to:
    * minimum data requirements (baseline) for FSN at country level;
    * qualitative data;
    * data representing traditional knowledge.
30. Please provide your feedback on the following:
31. Are there any major omissions or gaps in the V0-draft?
32. Are topics under- or over-represented in relation to their importance?
33. Are there any redundant facts or statements that could be eliminated from the V0-draft?
34. Are any facts or conclusions refuted, questionable or assertions with no evidence-base?

We thank in advance all the contributors for reading, commenting and providing inputs on this V0 draft of the report. We look forward to a rich and fruitful consultation!

*The HLPE Steering Committee*

# Contributions received

## Lizzy Igbine, Nigerian women agro allied farmers association, Nigeria

Nutrition as a basis for good health is greatly under stress due to the high inflation rate which has left families vulnerable to malnutrition. Farmers as food producers find it difficult to sell their farm produce and purchase other food items at reasonable prices. It then beholds on the government and the financial systems to give concessions to food import bills and reduce taxes on food items to make it easy for rural farmers and community workers to engage in profitable agriculture, good livelihood and adequate nutrition intake.

Governments should support agriculture and rural development by supporting farmers with minimal farming equipment, dryers, millers and fertilizers. Rural farm roads should be constructed and farms should have adequate security for the safety of farmers. Financial institutions should grant farmers financial support to do their farm businesses and the system should develop markets to enable farmers sell their produce at good prices.

Experts should work closely with farmers to develop communication tools to step down extension services and information to and from farmers to manufacturers, consumers and value additions to ginger participation of all and sundry in the business of food production as a business.

## Karin van de Braak, Sustainable Aquaculture Solutions, Netherlands

What I miss is the relation between nutrition and production costs.

With production costs, I also mean the externalized costs, such as GHG-emission, environmental degradation, use of pesticides, AMR, but also social issues, such as increasing inequalities through increasing efficiency and intensification and consolidation.

The ultimate aim to nutrition security and at the same time no degradation but regeneration.

Kind regards

Karin van de Braak | SAS

## Madhura Swaminathan, Indian Statistical Institute, India

Overall, this is a very useful report on the types of data needed, and problems with collection of good quality data in a timely fashion.

I have one general concern and that is not enough attention paid to government vs private sector in data collection.

Writing from the Indian experience, an excellent statistical system has been slowly eroded. More and more of data collection is by private agencies or NGOs and this raises serious questions about (i) privacy and use of data (ii) quality and (iii) cost of availability. Such data may not be open access.

I think there needs to be a strong commitment from governments to collect important items of data, and also to be transparent about the same.

International funding for basic data collection will thus be an important recommendation for many countries to ensure good and regular collection of data.

Secondly, a reference that may be useful in the discussion on digital divide (section 3.1.2). In a special volume of CSI Transactions on ICT on ICT and Agriculture edited by M. S Swaminathan and me, we have brought together experiences of use of different forms of digital access from computers to tablets to phone sms message to reach the poorest and most vulnerable farmers and fishers in India. What the papers showed is that the digital divide can be addressed with special effort but at the same time, digital tools cannot address pre-existing forms of economic and social inequality (such as caste discrimination in India).

<http://59.160.153.188/library/sites/default/files/ICT%20and%20agriculture.pdf>

Madhura Swaminathan

## Ravi Teja Mandapaka, India

Internal auditing should be conducted on a repeated to make external auditing a smooth running process. Seconding the aforementioned information, it has been extremely pressing on the researchers and the personnel involved with the work to change the mind sets of producers, consumers and retailers regarding the advancement of food waste management methods and their coping with it. The priority should lie in maximizing food sales, and giving away or selling foods past their prime involved risks that may undermine sales.

That said “reducing the food waste is one heck of a target of this hostile present day world”. We should, however, understand that it is achievable on financial terms. More than that, we should change our age old perceptions about the morphology of the foods we eat. It has been understood that a large amounts of food waste in the United Kingdom and most of Europe comes from packaging alone. Educating the consumers and bringing changes to the supply chains will aid us well in solving this issue. However, there will be evidences where consumers dump the trash to avoid paying for the food waste management programs.

I understand there in my chosen area of research, lies work in abundance to be done in order to evaluate and incorporate the initial phases of the food system. The agricultural sector, in the most recent times has had a major impact on environmental degradation, and it will keep having an impact in the near future, owing to the large contributions towards resource requirements, emissions and waste production. This brings us to addressing the food system of the present day and chalking out plans and proposals to modify it.

We should, hence, march ahead towards adopting a holistic approach for food security and global health. The FSRI - Food System Recycling Index will best serve as an indicator of systemic sustainability in the near future. It is mainly concentrated on giving the whole picture of the amount of available food recycled in the acceptable levels of waste management. We should also understand that food and health security is not only concerned with lack of food availability. The environmental health and our well-being solely and surely depend on how efficiently we produce our food and how best we handle the associated wastes.

Attachment:

<https://assets.fsnforum.fao.org/public/discussions/contributions/food-safety-evaluation-and-food-waste-management--an-indianperspective.pdf>

## Dr. Sazzala Jeevananda Reddy, Former Expert - FAO/UN, India

As an FAO Expert in Mozambique I developed the concept -- “Agrometeorological approach for crop early warming & drought monitoring with reference to Mozambique under family sector”. This was later as WMO Chief Technical Advisor in Ethiopia applied this methodology to Ethiopia. Details relating to collection and analysis tools for food security and nutrition were presented in project reports. Some details are presented in the following books:

Reddy, S. J. (1993): “Agroclimatic/Agrometeorological Techniques: As Applicable to Dry-Land Agriculture in Developing Countries”, 205p. -- this is available online and available in FAO & WMO libraries. The 2nd edition with the same title was published by Brillion Publishing, New Delhi (2019), 372p.

Dr. S. Jeevananda Reddy

Formerly Chief Technical Advisor - WMO/Un & Expert - FAO/UN

Hyderabad, TS, India

## Miguel Ángel Damián Huato, Mexico

**FAO, 2022. Foro Global sobre Seguridad Alimentaria y Nutrición: el modelo productor-innovador**

**(MP-I)**

El MP-I es una alternativa viable para coadyuvar a superar la crisis alimentaria, social, de salud y ambiental, que vive la humanidad que se expresa en: pobreza alimentaria que afecta a 3 mil millones de habitantes, desigualdad social, migraciones, los más de cinco millones de muertes ocasionado por la pandemia de la Covid 19 y en el calentamiento del planeta que ha derivado en sequias, inundaciones, incendios, el derretimiento de casquetes polares, la acidificación de mares, etcétera, que empeoran los problemas mencionados. El MP-I fue sistematizada como propuesta de política pública para conseguir la autosuficiencia de maiceros de subsistencia y la soberanía alimentaria de México en maíz, frijol y grano de calabaza, tres alimentos básicos de los mexicanos.

La soberanía alimentaria, permite acceder al derecho a la alimentación tutelado en la Declaración Universal de Derechos Humanos de las Naciones Unidas desde 1948 y por el artículo cuarto constitucional de México. Conseguirla, exige producir granos en cantidades suficientes, de forma sostenible, que sean saludables, nutritivos y culturalmente idóneos.

El MP-I resume 20 años de trabajo y resultó de una rigurosa evaluación de las tecnologías progresivas (campesinas) y radicales (modernas) aplicadas en el manejo de maíz de secano. Esta evaluación permitió identificar experiencias de manejo agroecológico innovadoras y exitosas a escala local, asumidas como el MP-I (ver <https://bit.ly/3BAIs3o>).

Todas las experiencias exitosas identificadas manejaron el maíz como milpa donde convergieron tecnologías campesinas y modernas trenzadas en un diálogo de saberes. Estas tecnologías, aunque distintas, se integraron entre sí. Se trata de lo que Piaget (1975) llamó el proceso de diferenciación-integración de elementos (tecnológicos) desigualmente desarrollados en el proceso histórico que devienen en una innovación con características productivas superiores a las tecnologías que le dieron origen.

La teoría-praxis más importante aplicada en el manejo de la milpa es la biodiversidad que resulta de la asociación de cultivos, donde se siembran juntos, al menos, maíz, frijol y calabaza, capaz de reproducir una gran diversidad y abundancia de flora y fauna organizados en "pisos de plantas" que imitan la funcionalidad de los “pisos de plantas” de los ecosistemas naturales. En su construcción, la mano y sabiduría indígena-campesina han aplicado el principio de biomimesis que es “una ciencia, saber, arte, y tecnología que asume a la naturaleza como pedagoga para de ella aprender formas, procesos y organización para imitarla sin dañarla” (Tamayo, 2013. <https://bit.ly/3pgsg22>).

Estos pisos de plantas albergan una gran abundancia y diversidad de flora y fauna que cumplen dos funciones esenciales para el campesino y la humanidad. La primera, recrea fuerzas productivas que proceden de miles de sinergias, pensadas como conectividades creativas, que origina lo que Capra (1998. <https://bit.ly/3FgLM65>) llamó “la trama de la vida activada por redes dentro de redes” y que en la milpa cuajan en una mayor produccion de granos que satisfacen necesidades biológicas y culturales de las familias campesinas, así como en la captura de gases efecto invernadero, de nitrógeno, de agua, de suelo, de materia orgánica, etcétera.

De la segunda función de la biodiversidad deriva la resiliencia y sostenibilidad de la milpa, porque ahí coexisten lo que Capra denominó “especies superpuestas” o “especies redundantes” según Walker, constituidas por una multiplicidad de especies con funciones ecológicas análogas que reproducen una redundancia de relaciones. En caso de ocurrir un siniestro climatológico extremo, estas especies redundantes pueden recuperar la funcionalidad y productividad del agroecosistema (resiliencia). Un cultivo resiliente será sostenible a través del tiempo.

Los resultados obtenidos de cinco estudios de caso subrayan las regularidades empíricas que representan las fortalezas del MP-I: a) emplean más tecnologías campesinas y, por ello, su manejo es más económico; b) obtienen un rendimiento por hectárea que duplica, en promedio, el de los maiceros menos eficientes que siembran el maíz como monocultivo; c) la mayoría de maiceros, independientemente de su productividad, se caracterizan porque conocen el manejo de la milpa, son minifundistas, viven en condiciones de pobreza extrema, y su acceso a los medios de producción es mínimo. Esta similitud de condiciones facilitaría la implementación del MP-I como política pública.

El MP-I como política pública consta de cuatro etapas: a) identifica los territorios especializados en la produccion de maíz de secano; b) evalúa las tecnologías aplicadas en el manejo de maíz e identifica a los maiceros eficientes y su patrón tecnológico; c) establece faros agroecológicos para escalar horizontal y verticalmente a MP-I, y d) transforma los recursos orgánicos en compostas y bioinsumos que existen en las urbes para devolverlos al campo con el fin de potenciar la fertilidad de suelos agrícolas y la producción de granos.

Se calcula que en México se siembran cerca de tres millones de hectáreas con milpa, que producen alrededor de tres millones de toneladas de maíz en promedio. Si se aplica el MP-I, se podrían producir cerca de nueve millones de toneladas de maíz, suficientes para alimentar a 54 millones de personas y garantizar la autosuficiencia alimentaria de la población rural. A este volumen, hay que sumarle otros 30 millones de toneladas de maíz al año, producidas por maiceros en transición y comerciales, que pueden alimentar a otros 90 millones de personas, aptos para garantizar la soberanía alimentaria del país.

El MP-I, también aportaría cerca de 750 mil toneladas de frijol y 600 mil toneladas de semilla de calabaza, así como una gran cantidad de arvenses comestibles, que han sido parte esencial de una dieta nutritiva y saludable para las familias indígena-campesina.

Para los milperos que viven en pobreza extrema, el MP-I constituye los cimientos sobre los cuales se puede construir una vida digna, plena, feliz, autogestionaria, fundada en un trabajo útil socialmente necesario, que produzca bienes concretos útiles, que satisfagan necesidades biológicas y culturales auténticas de las familias indígenas y campesinas. Para la humanidad el M-PI es una propuesta agroecológica que puede ayudarnos a transitar hacia al bioceno, que apunta hacia el horizonte utópico de una nueva era de la humanidad donde se valore, respete y cuide la vida en su diversidad biológica y cultural (Rozzi, 2019. <https://bit.ly/3170bQd>).

Dr. Miguel Ángel Damián Huato

Académico del Centro de Agroecología-Icuap; premio estatal de ciencia y tecnología, 2011; miembro del SNI-II y de la Academia Mexicana de Ciencias. Tercer lugar del 4º Premio Nacional “Dip. Francisco J. Mújica”, Cedrssa. Coordinador y profesor solidario de la maestría en Agroecología, Territorio y Soberanía Alimentaria, Cesder, Zautla, Pue.

## John Weatherhogg, FAO (retired), Italy

Just a plea for more support for the Poshan, IFPRI and Bill Gates supported approach for increasing the domestic ability to carry out data collection/surveys.

One of the unintended effects of the huge amount of international assistance for agriculture/rural development has been to promote employment in asset creation. Jobs in data collection/evaluation and training have consequently become "cinderellas" or even punishment postings. Even in situations where funds are allocated for such purposes these are often later diverted to civil works.

Reading the draft, one has the uneasy feeling that the hope is that much can be achieved through new digital and remote technologies so that it may be possible to leap-frog the tiresome bit of having staff on the ground, supplemented by the odd mission flown in or in extreme cases helicopter surveys.

What is required is a continuing, constant, indigenous capacity to collect good quality data and this is a very important goal that should get priority financial support.

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

Data collection and analysis is only as valuable as the parameters that are addressed. If important parameters are overlooked, important information that can guide future programs to more effective efforts can easily be lost and may have been. When it comes to food security and nutrition, I would like to suggest a couple important interwoven parameters that have been historically overlooked. Once these parameters are addressed, the data collected and analyzed, substantial improvements might be possible to the basic approach to both food security and improved nutrition.

1. First, is the operational feasibility of innovation. The agronomists, including myself, with their small plot technology do an excellent job of determining what is physical possible in an area, but say nothing about operationally feasible of their results particularly for smallholder farmers heavily relying on manual labor. That is who in the agronomic development technology transfer process is responsibility to determine:

a. The labor or access to mechanization needed to complete various agronomic activities within the estimated time allocated;

b. If that labor or access to mechanization is available;

c. If not available, what are the rational compromises farmers should make to adjust the innovations to their limited operational capacity; and

d. How close to the current practices do these compromises come?

From an agronomic data collection prospective there is a simple proxy value to measure operational feasibility. That is timing of operations particularly the spread of basic crop establishment, which is often 8 weeks or more. This is well past the normal estimate of only 2 weeks and well beyond when recommended top dressing of fertilizer and good weeding is overdue. This data is easy to collect through farmer interview or simple field observations. The difficulty here is that this has been long noted, but attributed to lack of motivation or risk avoidance, and the need for extension programs to badger smallholders on the importance of early planting. Something they are most likely aware of as their very livelihood depends on it. This of course assume early planting is fully discretionary and labor is infinitely available. Is that realistic?? Isn’t it time to assume delayed planting is non-discretionary and focus programs toward enhancing the operational capacity of smallholder so they can get their crops planted in a timelier manner??!!

<https://webdoc.agsci.colostate.edu/smallholderagriculture/OperationalFeasibility.pdf>

<https://webdoc.agsci.colostate.edu/smallholderagriculture/BrinksDrudgery.pdf>

2.  A major factor in the operational feasibility is the caloric energy balance of smallholder farmers to undertake a full day of diligent agronomic field work. It is interesting to note that we have historically recognized that smallholder farmers are poor and hungry, but rarely factored hungry as a major hinderance to crop production. We have also rarely even collected data on how many calories smallholder have access to. Why has this not been done?? What little data is available show daily caloric intake of between 2000 – 2500 kcal. If you subtract the 2000 kcal/day estimate of basic metabolism, where is the energy for agronomic field work?  With these limited dietary calories how many diligent hours of field work are possible, and what will this do to the time it takes to get basic crop establishment? To do a full day of diligent agronomic field work takes in excess of 4000 kcal. Are our extension efforts compelling people to exert more effort than the calories they have access to? If so, does that qualify for Genocide? How close are we? Should this be referred to the International Criminal Court in The Hague as a potential “Crime Against Humanity”? Very provocative, but just how accurate is it?? Should we enhance the effort to collect information of available calories, analysis that in terms of potential hours of diligent agronomic effort, impact on crop husbandry, and food security? Also, how would the need for calories to meet economic opportunity impact on the nutrition programs promoting more diversified diets? Which should get the highest priority? I fear it will be for higher levels of caloric energy to optimize economic opportunity.

<https://agsci.colostate.edu/smallholderagriculture/calorie-energy-balance-risk-averse-or-unger-exhasution/>

<https://agsci.colostate.edu/smallholderagriculture/ethiopia-diet-analysis/>

<https://agsci.colostate.edu/smallholderagriculture/affordability-of-improved-nutrition-while-optimizing-economic-opportunities/>

## Shirega Minuye, Independent consultant, Ethiopia

Dear Sir/Madam,

It is an interesting document and captures many important things. However, I like if it elaborates more about the following:

* In the case of societies where the practice of regular data recording is not available, the responses for a survey mainly based on recall basis and their willingness in providing truth data. However, from my personal experience, survey respondents, not few, are in difficulty to explain quantitative data such as revenue and expenditure data due to recalling problem and while others deliberately hide it. In this regard, some researchers pay some amount of money as form of compensation for respondents wasting time which aims to motivate the respondents to provide true information. Therefore, it is good if this document could cover such issues at least how compensation or incentives have an effect on the data collection
* There is sometimes understating or overstating of data problem. For instance, it is sometimes observed that there is a gap among different research institutions, donor organizations funded research projects, and government agencies reveal different with wide gap of national level results related to food security, nutrition security. In this case, there is a challenge among data users to select which one is relatively accurate. Therefore, this report should indicate some hints on what tactics should be followed as a solution.
* It would also be good the report should elaborate the extent of data quality using digital technologies particularly in the data collection vis-à-vis with traditional systems referring developed and developing countries.

## Asikaralu Okafor, Village Farmers Initiative (VFI), Nigeria

Dear Sir/Madam,

Having gone through the highlights of the V0 draft report, I’m sharing my personal view in the following manner:

In terms of data collection and utilisation and for equity and inclusion, the global community and international organizations need to seriously engage indigenous knowledge and innovations from the grassroot and local levels. This will provide a better opportunity to gain an appropriate insight into the current state of world food security and to agree on and design international action to improve it, leaving no one behind.

We need to decolonize our food systems by promoting indigenous food heritages. In countries with diverse geographical, climate and weather conditions, government and citizens generated data should not only be based on a particular geo-location. I have observed and noticed that researchers and policy-makers rely mostly on regions that favour their interest or are convenient for them, this attitude has led to monocropping, near-extinction, non-accessibility and unavailability of most staple foods that serve as food and raw materials for the people at the bottom of pyramids in these countries.

For a more effective decision-making for food security and nutrition and to inform policies for the transformation of food systems, especially in developing countries; we need to improve equity in access to data for FSN policies and decisions at grassroot and local levels with regards to cultural diversity and geographical locations.

## E Jayakumar, Agroprocessing Consultant, Agro Trade Link, India

After having carefully gone through the highlights of the V0 draft:

Major omission: the data collection should include metrological approach for crops that is drought monitoring, early warning. The data collection must be given to trained persons. The questionnaire must be very much simplified.

The academic sector should give training and workshops to increase semi-skilled and skilled workers in the food processing industry to address food security, since the food waste level of developing countries is more than 30%. Adequate training in the grain management system is needed.

There is insufficient fund allocation in the national statistical plan.

On nutrition: identifying the native variety of grains and populating the merits to the farmer level for breeding.

## Kameswararao Chiruvolu, Private, India

**Feedback**

Are there any major omissions or gaps in the V0-draft?

***CVK***: National guidelines for food security and nutrition will help the member states unable to prepare such guidelines on their own. There are several reports, some are annual published by WHO, FAO, UNICEF covering the data on food production, food security and nutrition and analysis[1-19]. Several academic research teams around the globe are publishing the role of healthy diets and nutrition[20-40]. There is no national guidance on pathway to reach Sustainable Developments Goals 2.1 and 2.2. WHO global guidance needs to be tailored to the specific member state’s requirements considering local situation (geopolitical, economic, armed conflicts etc.). Non-member states may consider guidelines of the nearest neighbouring member state.

Are topics under- or over-represented in relation to their importance?

***CVK***: Data science, data collection, data-based approach and data analysis is over represented in relation to their importance. In food security and nutrition, newly collected data and analysis may not be adding value, moreover matching newly collected data with already reported data from FAO may lead to controversies. One of these two could be incomplete, inaccurate, not current, or may not be a reliable indicator of what it is intended to represent. Data collection and analysis does not change consumer behaviour. For example, the COVID-19 pandemic might have worsened the situation of children with undernourishment, but the number of children with undernourishment has been increasing even before pandemic[41]. Data-driven approach play an important role in “business analytics.”[42] but not to food security and nutrition. Data collection and analysis should be followed with an action plan to change consumer behaviour. Game theory provides a mathematical framework for determining what behaviour is rational for agents interacting with each other in a partially observable environment43. Multiple Agents Influence Diagrams (MAID)[43], a tool in game theory is useful in goal-oriented approach. Exploring MAID role in progress towards SDG2 by 2030 is worth an attempt.

***CVK***: Conceptual framework in v0-draft is not connecting global targets to national and subnational consumer behaviour, businesses, and other local actors. Sensible consumption, sustainability, resilience to climate change and weather fluctuations, leaving no one behind, availability, accessibility, gender equality are some of the important topics in the food system design. These are under- represented in the proposed framework. In many countries the data collection priorities are changed with the change of regime effecting the quality of the data.

Are there any redundant facts or statements that could be eliminated from the V0-draft?

**CVK**: Success stories and examples- Reported success stories/examples should be scalable to SDG 2 which requires sustainability, availability, access, utilization and stability. Problems in few nations like armed conflicts, draughts should be analysed with specific agents in MAID for respective country/neighbouring countries /region. Many programs depending on funding from international organisations end the moment funding ends.

Are any facts or conclusions refuted, questionable or assertions with no evidence-base?

“Food systems have failed us”

***CVK***: Above statement is questionable.

“The scientific targets for healthy diets and sustainable food systems are integrated into a common framework, the safe operating space for food systems, so that win-win diets (ie, healthy and environmentally sustainable) can be identified. We propose that this framework is universal for all food cultures and production systems in the world, with a high potential of local adaptation and scalability. Application of this framework to future projections of world development indicates that food systems can provide healthy diets (ie, reference diet) for an estimated global population of about 10 billion people by 2050 and remain within a safe operating space. However, even small increases in consumption of red meat or dairy foods would make this goal difficult or impossible to achieve. Within boundaries of food production, the reference diet can be adapted to make meals that are consistent with food cultures and cuisines of all regions of the world.”[44]

Total production of primary crops in 2018 is 9.1 billion tonnes. With about one-third of the total, cereals were the main group of crops produced in 2018, followed by sugar crops (24 percent) and vegetables (12 percent). Oil crops, fruit, and roots and tubers each accounted for 9 to 11 percent of the total (Source: FAOSTAT <https://doi.org/10.4060/cb1329en-fig20> ).

Production of cereals, roots and tubers far exceeds human requirement for projected10 billion population by 2050. Rice, wheat, corn, potatoes and tubers production in 2018 is about 4800 billion Kg whereas the requirement for 10 billion people (adults) at 232 grams per day or about 85 Kgs per head per year amounts to 850 billion Kg. About one third of 4800 billion Kg, that is 1600 billion Kg is used as animal feed. Modifying the plant product processing to direct human consumption (retaining nutrients in tact) will reduce the animal feed production. Reducing 5% production of cereals, roots, tubers and sugar every year till 2030 reduces global greenhouse gas emissions and fresh water use by 50%. [45]

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Attachment:

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## Damion Dooley, Centre for Infectious Disease Genomics and One Health, Simon Fraser University, Canada

Its great to see an FAO overview and review of digital technology and agricultural information systems. We're obviously in a time of rapid information systems change with all the excitement, trepidation and transitional expense that involves!

Should some food composition database data collection schemes like INFOODS be encouraged to revisit  a much more federated / central repository internet-based vision to support data integration especially as many food items are gaining global and cross-cultural exposure?

About: "the lack of political will and hesitancy to share sensitive information prevents the collection of data such as moderate food insecurity" - I find it helpful to emphasize the distinction between vocabulary standards and sharable or private data.  A proprietary knowledge layer may exist on top of the vocabulary layer, but this does not preclude companies and agencies from using a generic data specification language throughout their own operations and those of partners, to facilitate easier data sharing when the need arises (via regulatory compliance, aquisition, public health emergency, etc.).

Somewhere between "4.1.1. Producing and collecting data" and "4.1.2. Transforming data into information" could exist a paragraph on standardized vocabulary, including open source SKOS vocabularies and OWL ontologies that are able to straddle domains of interest, such as units of measurement (<https://units-of-measurement.org/>), taxonomy, chemistry, farming practice etc. .  The concept of "nanopublications" and "micromodels" mentioned as ways of stating observations and low-level data models which are more easily agreed upon and can therefore evolve into explicit or defacto data standards.

If one considers that what data is about is entirely conveyed by language, then it becomes an essential piece of a FAIR future vision to have a common open source language that describes datasets down to the field level in order to support the automated determination of comparable information, and its analysis.  This is the problem that ontology technology lends itself to by providing global term identifiers and machine readable framework for categorizing terms (and by proxy, datasets) as materials, processes, qualities, roles, capabilities, etc.  This also helps overcome "4.4.4. Insufficient capacity and inequities" as the open source data specification language attracts a common set of freely available tools and training materials, thus reducing hidden costs mentioned below too.

One hidden cost in the general "digital technology" revolution that arises especially in "4.4.7. Interoperability of data" is the existence of so many (data) language variations that require translators (technologists) one must hire for building mappings between systems, mappings that are often not elegantly designed to avoid rapid obsolescence. The other hidden cost is the slow pace of harmonizing existing vocabularies or curating new terms in them. Another key challenge an agency must confront is whether it should take on curation of multiple domains of vocabulary, or should plan to delegate vocabulary domains out to a more distributed curation governance context.  Cost reduction occurs only after further consolidation, as well as domain vocabulary completion are reached.

Under Table 2 b) "Semantic Web", you might like to refer to the international open source vocabulary community building around OBO Foundry to supply diet (ONS, <https://doi.org/10.1186/s12263-018-0601-y>), nutrition (CDNO, cdno.info, paper in review, previous reference <https://acsess.onlinelibrary.wiley.com/doi/10.1002/csc2.20092>), nutritional study (ONE, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6628051/>), food composition (FCD, [https://wikifcd.wiki.opencura.com](https://wikifcd.wiki.opencura.com/), paper under review), food product (FOODON, foodon.org), chemistry (CHEBI), agricultural (AGRO), and environmental vocabulary (ENVO) terms, factors and micromodels, among others. The joint discussion group activity can be found in: [https://github.com/FoodOntology/joint-food-ontology-wg/ and](https://github.com/FoodOntology/joint-food-ontology-wg/%C2%A0and) here is a slideshow that highlights activity in the last few years: https://docs.google.com/presentation/d/1lh6ndpo-QGU920Gzvqzr04L1DVe3frfHS7DVOloWtME, with a paper under review.

As an aside, this needs edit: "In these cases, strengthening regional collaborations and the establishment of reference. In such cases, strengthening regional collaborations and the establishment of laboratories”

Thanks for opportunity to comment, and I appreciate reading other's feedback too.

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

Section 1:

Example 1 of the matrix: seems very general – I think examples have to be much more concrete to be helpful as an illustration.

Section 2:

On poor data quality, p 19: may add the following: often data is inconsistent, e.g. in spelling of commodities (e.g. “soybeans” and “soyabeans” in different types of FAOSTAT), etc. – this also causes problems. Furthermore, data is sometimes only available in pdf-format or in excel-sheet organised in such a way as to make systematic use by data processing and analysis programs particularly tedious.

Generally, may also put a focus regarding the data challenges to see some of them as a problem of data science and not too related to food systems – thus improvements could be sourced from the vast expertise in data science any by the help of data experts – with no specific relation to food systems. Thus, also explicitly try to learn from existing large data users on how they solve the data problems – e.g. big data in astronomy, particulate physics, neuroscience; in large companies (Amazon, etc.), in social media companies, etc.

Section 3:

Section 3.1.2 states: «Thus, while technological advances may reduce cost and widen the reach of surveys, the social divide may lead to the underrepresentation of those with poorer digital access and literacy (LeFevre et al., 2021) Policies and interventions that are based on such data generated from skewed sampling are therefore not useful to the unrepresented stakeholders who may have the utmost need for data-driven policy and support (Bell et al., 2017; LeFevre et al., 2021).» - true, but biased sampling is often a key mistake in any data collection and one should be very aware of this also in most traditional approaches for collecting data with the aim to gain a representative picture – as all too often the sampling strategy chosen does not allow this – the new digital devices may add an additional reason for bias to this, but being aware of it, this can be dealt with – what I want to emphasize here: biased sampling is also a problem in all other cases, where no new technologies are involved, and awareness of it needs to be increased also there. – This is taken up in section 3.3.2, so I would refer to 3.3.2 here in 3.1.2, and also vice-versa.

“3.1.5. Lack of stakeholder engagement

Finally, the usability of the data is limited when stakeholders have not been involved in the survey planning and there is inadequate dissemination or access to information on what data is available and how it can be used by the stakeholder. These limitations to the access and use of data for improved decision-making, make it difficult to advocate for further funding and commitments towards the collection and analysis of food security and nutrition data.”

Regarding the quote above I would say, that this very much depends on the problem at hand and solutions identified and the data needed to implement those – stakeholder interaction is not always needed, or, if needed, it has to be specified in more detail. Thus, data usability is not in all cases limited if stakeholders have not been involved in survey planning – depends on the goals and topic.

Section 3.3, p36: the following is indeed a key challenge, one has to work on: “– reveals the overall scarcity of a minimally sufficient, statistical and quantitative analytic literacy, needed to ensure the validity of the results presented and their proper use.” – even more than getting more data – we have to assure that the data we already get is of good quality, and that the people analysing it know what they do and what can and cannot be done with the data at hand. – There is e.g. a gap in literacy on how to set up useful data structures: relational database, etc. – as you quote Rosenberg at the end of the intro to 3.3. Take the data on the Infoods-page, for example – the tables are in excel and all the tables look somewhat too very different – and they do not follow the relational database guidelines, so it is difficult to work with them. This would be a first and easy step to improve. – in more detail, in Infoods, where are e.g. cells with values but also an index for a footnote besides the value, or there are merged cells, thus disrupting the matrix structure, etc. – there are empty cells implicitly to be filled with the last previous entry in the same column, etc……some tables are available in pdf-format only, etc. – so this is a very sub-optimal data structure.

3.3. Lack of data processing and analytical capabilities – important section.

The sections 3.3.1 – 3.3.6 are very important, please invest on those to make them as helpful as possible. – One input on proxies: sometimes, the art of choosing an indicator is to avoid overly costly data collection requirements while still being able to make statements about the topic of interest. – Wisely chosen proxies can be very helpful – but it is a challenge to identify those – but it is often worth the effort.

May also add a section on “robustness” – not in the sense of uncertainty or noise (3.3.1) – but relating to how good the data has to be for supporting advice on actions to be taken. In some cases, there are “robust” patterns that can be identified from a range of approaches and without much sensitivity to changes in values of relevant parameters – thus, in such cases, data requirements are much lower than in cases, where results are very sensitive to which value a specific indicator may take. – Identifying these robust areas can be very helpful, as it reduces costs for data collection while still ensuring the possibility to derive advice for actions to be taken that will lead to the intended outcome with high certainty. – I would add such aspects to the framework presented at the beginning, e.g. giving explicit advice, on how to refine step 2 on data of the 4 steps above:

Given the priority, problem to be solved, question to be answered: which data is needed; then: which data is already there and which has to be collected. From the data that needs to be collected: identify first this data, which is useful in such a robust way as just described: are there parts of the priority/problem/question, where solutions seem to be quite clear, robust to how detailed the data is – then first go for them. Also, try to identify the big leverage points that may provide much effect on the basis of relatively less data, and do not focus on minor aspects, that may lead to incremental improvements but require large quantities of data.

Related to this, maybe some thoughts on the following statement: section 3.1.2: «For example, new data analytic architectures that generate farm and field level data allows farmers and stakeholders to monitor processes and make a decision for the precision livestock farming. (Fote et al., 2020). The use of these advanced technologies provides a level of granularity and immediate access to data that was lacking in traditional surveys.» true – but the first question again needs to be: which data is needed? There is some danger that the possibility to collect some more granular, detailed data at lower costs results in collecting it – without a clear aim and without a clear rationale that this data really contributes to increased food security. Thus, also with new technologies and with the huge potential of cell-phone-based data collection etc. – the first step always needs to be (as indicated in the framework) – which data is needed to solve which problem. Then the decision is taken on how to collect it.

Section 4:

This is somewhat confusingly structured and superficial.

As stated there, there are many new technologies, approaches, etc. that produce data. But these could be named in relation to how data is generated today – but which of them is then useful has to be decided on the basis of the framework introduced: what is the problem, which data is needed, how is it collected: there, sensors of the IoT may become important – or not. So I would much more locate this discussion on how to collect data as an instrumental discussion to what is needed than as a self-contained description of what is out there. Whether sensors of IoT or crowdsourcing is the best source of data strongly depends on what is needed. Related to the source of data can then be discussed, which requirements arise to transform the data into information – but also there, it should be strongly guided by the needs. Furthermore, the chapter, as it is now, covers a variety of concepts that are not all related to this step of data-to-information, or in very different ways. The Block-Chain, for example, plays a totally different role in this than Virtual Reality or social media: so I would also here differentiate much more in relation to the needs. May even add this as a step in the framework suggested above, given that there is a deluge of data and extracting information from it gets more and more challenging: i.e. between “2. Data” and “3. Translation” may add a separate step: “X.Information” – thus highlighting the crucial need to very explicitly think about and discuss how there is information gained from the data available – always guided by what is needed –

The steps may then look as follows: 1. Problem; 2. Information needed to solve it; 3. Data needed to get this information; 4. How to collect and analyse this data; 5. Translation, et… - thus, the information step may should be addressed earlier, before collecting data, as it is the focus of interest, and only when knowing which information is needed, we are able to collect the adequate data.

Similarly for 4.1.3 “processing data” – this is not a goal in itself, thus address it again in closest connection to the goals formulated, and it is a service which becomes a topic due to the huge amount of data available and the related challenges to process it to extract the information needed. – But this can be addressed on a purely technical level.

Chapters 4.2. on new tech and 4.3. on how these support FSN are much too general – here, I would rather provide 2-4 in depth examples, presented in considerable detail, to illustrate certain key aspects of this in concrete cases, than providing extensive lists and references of examples without further contents.

4.4 and 4.5 are very important, but they could also be combined, each time discussing the risks and the mitigation approaches together, not in separate subsections.

Section 5:

Governance: this is also a central issue, I have not much to add here, beside the following point:

One aspect that could be important is to think about where data collection and analysis can be AVOIDED – e.g. by sort of “self-organised” actions on a very small-scale level. Take e.g. a remotely organised extension service based on cell-phone pictures of pests and diseases and their damages, respectively – such a system can work well without collecting and analysing the data in detail – it requires a functioning cell-phone infrastructure as well as enough and well-educated farm advisors. Thus, the answer to a problem related to pest outbreaks in a region may not be to necessarily collect data but to establish a good remotely organized advisory system (I use this example just to illustrate my point – there will be better examples). – Clearly, some data is needed at the beginning (on which pests are there, etc.) – but what I want to emphasise is that in the framework of 1. Priority – 2. Data – 3. Translation – 4. Utilization – the data part can be really small – really only as much as needed. – Clearly, in such a context, more data can be collected to have better information for other cases, or maybe to better manage the given case – but again, it whould be driven by the problems to be solved and not by the possibility that data can be collected relatively easy.

Thus, I would say, that a guiding principle should be to always collect as few data as possible to address the stated problem with the identified data need – this then also simplifies the data governance.

Some further general comments:

* May make a stronger statement somewhere at the beginning of the report, in the following direction: all these new data technologies, etc. are only a tool in the FSN context and not a goal in itself. I have the feeling that we sometimes tend to give it too much significance. We definitely should avoid adopting an approach that implicitly runs somewhat as follows: “we have the technology X – so let’s see what we can solve with it and how we can apply it.” – As displayed in section 1, the course of action really needs to be as follows: “we have problem Y, then identify which technology is most adequate to solve it!” – such thoughts could be emphasized somewhat more, I think.
* The report goes quite far from data, information and analysis into discussion of physical devices and physical aspects (e.g. EWaste, section 4.4.5)), which I would not have expected from the title and goals of the report; may rephrase to really focus on the data/info/analysis part only and drop the rest; or broaden the rest and then also state this at the beginning of the report and include things such as 3-d-printing of spare parts to mend broken machines, while avoiding the need for complicated and time-consuming transport to remote areas, etc.

Related to this is the following: I think it is somewhat unclear, whether the focus of the report should be on data and data analysis for FSN (as stated at the beginning) or whether digitalization is also a central aspect (as here and there in the text). I would more clearly separate them – as data and data analysis is one specific aspect on gaining information for management and policy design, while digitalization is more about certain TOOLs to implement this and agronomic practices, etc.. Data and data analysis is about how to get information on the situation, and digital technologies can partly help with this, but many other tools can contribute there as well – depending on the goals.

It may also be helpful to separate information provision approaches from data collection and analysis – e.g. virtual reality etc. may be stronger as educational tools than for data analysis.

## Francis Mbabazi, INGABO Syndicate, Rwanda

Certainly, FSN must take into account new emerging technologies. However, it has to take into account the specific challenges that affect some farming communities living mainly in rural areas such as ignorance, inaccessibility (cost, knowledge, geographically, etc.). Those emerging technologies can obviously affect positively the issues of climate change, droughts, by providing timely accurate information to anticipate some challenges. But how to do it differently as it is done today. How can meteorological information and data be regularly and promptly produced and be available usefully to smallholder farmers to avoid and mitigate risks. Technology is one thing, but some issues like strong institutions, governance systems, infrastructure, research, women and young farmers’ inclusion, data management, etc.

## Santosh Kumar Mishra, Population Education Resource Centre, Department of Lifelong Learning and Extension (Previously known as: Department of Continuing and Adult Education and Extension Work), S. N. D. T. Women's University, Mumbai (Retired: on June 30, 2020), India

Dear Sir/Madam,

I am pleased to send you my contribution to: HLPE e-consultation on the V0 draft of the Report on Data collection and analysis tools for food security and nutrition. The attached contribution is in MS Word (20 pages). I hope you (your office) will find my inputs meaningful.

Best regards,

Dr. Santosh Kumar Mishra

**1. The V0-draft introduces a conceptual framework that orders the components of the food security and nutrition ecosystem based on their proximity to people’s immediate decision making sphere, from the macro to the individual levels, and describes a four-stage data-driven decision making cycle for food security and nutrition (FSN), from priority setting to data utilization. Use of the two is illustrated through a matrix template that facilitates the concurrent operationalization of the conceptual framework and data driven decision-making cycle to address issues relevant for FSN.**

*a. Do you find the proposed framework an effective conceptual device to highlight and discuss the key issues affecting data collection and analysis for FSN?*

In broader terms, I find the proposed framework (published in document titled “Data collection and analysis tools for food security and nutrition” on web link: <https://assets.fsnforum.fao.org/public/V0_Draft_HLPE_17_data_collection_analysis.pdf>) an effective conceptual device to highlight and discuss the key issues affecting data collection and analysis for food security and nutrition (FSN). However, the proposed framework needs to elaborate on “research prioritization” to ensure that knowledge is generated across the complex global agri-food system with the highest positive impact for economic, public and environmental health. This will also ascertain sustainability in FSN initiatives [1].

*b. Do you think that this conceptual framework can indeed contribute to providing practical guidance for data collection for FSN?*

I am of the determined view that this conceptual framework can contribute to providing practical guidance for data collection for FSN.

*c. Do you think that this four-stage data driven decision making cycle for FSN addresses the key steps in the data collection and analysis process for FSN? Where do you see the more relevant bottlenecks in the data driven decision making cycle for FSN?*

I do not agree with the proposed four-stage data driven decision making cycle. In the conceptual framework, data driven decision making cycle suggests these four steps: (1) Priority setting: Define evidence priorities and questions; (2) Data: Review, consolidate, collect, curate, and analyse data; (3) Translation: Translate and disseminate results and conclusions; and (4) Utilization: Engage and use results and conclusions to make decisions. According to my research opinion, before suggested step 4 (Utilization), there should be element of field-testing of results and conclusions. I suggest step 4 as: Field-testing: testing of results and conclusions for accuracy and taking corrective measures. Field-testing is necessary for ascertaining more accuracy of data and research methods used in the area of FSN. All involved stakeholders should necessarily be involved in the stage of field testing of results (and conclusions). There should be, thus, five-stage data driven decision making cycle. Utilization: Engage and use results and conclusions to make decisions should become step-5.

Additional point: On page 6 of the document titled “Data collection and analysis tools for food security and nutrition” (published on web link: <https://assets.fsnforum.fao.org/public/V0_Draft_HLPE_17_data_collection_analysis.pdf>), I find this heading/sub-heading: 1.1. Using the conceptual framework and data drive decision-making cycle to address issues relevant for FSN (after 4. Utilization: Engage and use results and conclusions to make decisions). But after this, I do not find discussion or description under heading/sub-heading: 1.2 or 1.3. There seems to be something lacking. This seems to be looked into.

*d. Can you offer suggestions for examples that would be useful to illustrate in a matrix template that facilitates the operationalization of the conceptual framework and data driving decision-making cycle to address issues relevant for FSN?*

There is a critical need for developing cost-efficient methods of generating multidimensional nutrition data on immediate determinants of malnutrition as well as nutrition-sensitive sectors in the resource poor-countries. Evidence from multiple initiatives to improve nutrition shows that data presented in persuasive and interpretative ways developed awareness about the nutrition issues among the key stakeholders and influenced the decision-making process through multi-sectoral collaboration.

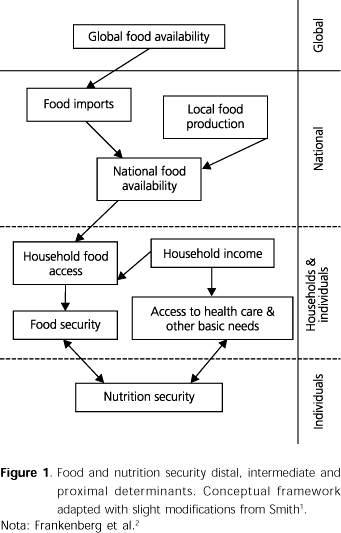
Proactive role of nutrition researchers and programmers in collating, synthesizing, and communicating nutrition information has proven to be a successful strategy of accelerating the knowledge translation into action by engaging policy makers to make sustainable political commitments for nutrition improvement. Making nutrition indicators a priority and using effective monitoring and tracking tools are, therefore, necessary to further facilitate the decision making and planning for future nutrition programs, across the regions of the globe [2].

**2. The report adopts the broader definition of food security, proposed by HLPE in 2020, which includes the two dimensions of agency and sustainability, alongside the traditional four of availability, access, utilization and stability.**

*a. Does the V0-draft cover sufficiently the implications of broadening the definition of food security for data collection, analysis and use?*

The V0-draft sufficiently covers the implications of broadening the definition of food security for data collection, analysis and use. However, one should not overlook the fact that ssuccessful nutrition programming through sustainable political commitments and multi-sectoral collaboration requires robust evidence generated from multidimensional nutrition data on immediate factors of malnutrition as well as nutrition-sensitive sectors. There is a critical need for developing cost-efficient methods of generating a range of nutrition data in resource poor countries. Evidence from multiple initiatives to improve nutrition in different countries shows that data presented in persuasive and interpretative ways developed awareness about the nutrition issues among the key stakeholders of the countries and influenced the decision-making process. Proactive role of nutrition researchers and programmers in collating, synthesizing, and communicating nutrition information has proven to be a successful strategy of accelerating the knowledge translation into action by engaging the policy makers of the countries to make sustainable commitments for nutrition improvement. Nutrition information is also essential for maintaining strategic communication among the national and international nutrition partners playing critical role in decision making. To further facilitate the decision making and planning for future nutrition programs, making nutrition indicators a priority and using effective monitoring and tracking tools are required globally [2].

*b. What type of data will be most useful in measuring food security dimensions such as “agency” and “sustainability”?*

The appropriate measurement of food security is critical for targeting food and economic aid; supporting early famine warning and global monitoring systems; evaluating nutrition, health, and development programs; and informing government policy across many sectors. Nutrition insecurity is sometimes used interchangeably with food insecurity, but in fact the definition is much broader. Food insecurity is necessary, but not sufficient for nutrition security. Nutrition security considers care, health, and hygiene practices in addition to food security [3]. In this context, it is pertinent to note that household food security is a major determinant of nutrition security that can only be fully understood through a multi-level analysis taking into account global, national/regional, as well as local, household and individual-level factors, as depicted in Figure 1 below [4]:

**3. The V0-draft reviews existing FSN data collection and analysis tools, initiatives and trends.**

*a. Do you think that the review adequately covers the existing ones? If not, what would you add?*

The review adequately covers the relevant aspects.

*b. Do you think that the trends identified are indeed the key ones in affecting data generation, analysis and use for FSN? If not, which other trends should be taken into account?*

The trends identified in the V0-draft are the key ones in affecting data generation, analysis and use for FSN. However, field-testing aspect needs to be highlighted. It is important because food security matters immensely; it is a topic of keen interest to policy makers, practitioners, and academics around the world in large part because the consequences of food insecurity can affect almost every facet of society [3].

*c. In particular, can you offer feedback on how digital technology, internet of things, artificial intelligence, big data, and agriculture 4.0 affect FSN? What is their likely impact in the coming decades?*

Big data and the Internet of things can be harnessed for a number of agricultural applications, including farmer decision support, precision farming, and insurance. However, despite the potential of big data and the Internet of things, stakeholders have expressed concern about the privacy and security concerns of agricultural data, the politics of data ownership and transparency, data breaches and access of smallholder farmers to such data. In this respect, regional and international organizations can potentially work with stakeholders to define appropriate data standards to minimize the potentially negative consequences of data sharing [5].

**4. The report discusses capacity constraints at local, national and global levels, with a special focus on statistical and analytical capacity.**

*a. Do you think that the V0-draft covers all the issues – and their consequences - of capacity constraints at the different levels?*

The V0-draft covers all the issues.

*b. If your answer a. was “no”, then what additional issues regarding capacity constraints should be added to the analysis?*

N. A.: Not applicable.

**5. The V0-draft discusses the role of new and emerging technologies in data collection and analysis tools for FSN.**

*a. Do you think that the presentation of new and emerging technologies captures the main trends? What other new and emerging technologies could be discussed in the report?*

To address the global food and nutrition security challenge both new knowledge and enhanced movement of knowledge into use are needed. A number of generic issues apply across the themes. Climate change will have profound effects not just on production, but may also impact on food safety and spoilage, international trade via weather-related disruptions and interact with nutrition to affect health. Climate change mitigation may also require changing practice along the food chain which may affect production and transport. Many of the areas highlight “wicked problems”, where there are tradeoffs between social objectives; navigating these to produce an equitable outcome can be very difficult. Delivering outcomes contributing to the three goals of simultaneously improving the economy, public health and environment may require social or institutional reform, not just research. There is thus a broad governance task of making and implementing appropriate societal choices to optimize the agri-food system [1].

*b. In what other ways can new and emerging technologies be relevant to each of the stages/aspects of the FSN data value chain/data lifecycle (i.e., Define evidence priorities and questions; Review, consolidate, collect, curate and analyze data; Translate and disseminate results and conclusions; Engage and use results and conclusions to make decisions)?*

As a fundamental factor in quality of life, food safety is crucial to people's lives and health. It is a matter of societal concern and something that governments find difficult to regulate. The lack of integrity of some food producers who are driven by self-interest and inadequate government supervision mean that the maintenance of food safety has become a global problem. Food safety issues have, however, gravely affected human life and health and have caused great harm to society and the global economy. In this context, it is pertinent to note that exploring the intrinsic relationship between digital technology and the efficiency of food safety supervision contributes to a better understanding of the role of digital technology in food safety supervision and how to maximize its influence [6]. The future of agriculture hinges on the adoption of technologies such as the Internet of Things (loT), Big Data, and Artificial Intelligence.

*c. In what other ways can new and emerging technologies be relevant to each of the FSN dimensions (i.e., Availability; Access; Utilization; Stability; Agency; Sustainability)?*

The world is today facing the pressing challenge of unsustainable food production and consumption practices. Today’s food system is the main driver of deforestation and biodiversity loss and generates a quarter of the greenhouse gas pollution globally. What is more, the world’s roughly 500 million smallholder farmers who contribute 80% of the food are amongst the poorest and most malnourished groups. In fact, climate change could force over 100 million people into extreme poverty by 2030, mostly through impacts on agriculture and food security. Hence, improving the performance of the food system is critical if the development planners and food security experts are to sustainably feed nearly 10 billion people by 2050 while raising farmer incomes, protecting them from climate change and helping them to thrive. Breakthrough digital technologies have the potential to deliver significant positive impacts across food value chains. These range from innovations that can make food systems more resource-efficient and climate-resilient such as precision agriculture, gene-editing and biological-based crop protection, or technologies that improve traceability from farm to fork [7].

*d. What are some of the issues with respect to ethical use of data, access, agency and ownership linked to these new and emerging technologies that should be further discussed in the report?*

The ethical concerns and implications of food, nutrition, and water have resonance for both planetary well-being and human health. The health of species is intertwined with that of environment. Humanity cannot survive without enough food and water to nourish the world’s people, but the planet’s resources are suffering from the ramifications of a changing climate. Food and water also hold a special status: they are essential to survival, but their inherent benefits lie in their consumption. Given that human health and nutrition thus relies on an ongoing cycle of depletion and replenishment of these resources, there is a unique moral need to ensure that food and water are constantly available [8].

**6. The report reviews issues concerning institutions and governance for data collection, analysis and use, with a focus on data governance principles, data protection, transparency and governance of official statistics, the implications for governance of an increasingly digitalized world, and examples of initiatives addressing governance challenges.**

*a. Are there any issues concerning governance of data for FSN that have not been sufficiently covered in the draft report?*

The demand for data on impact of policies, programmes and interventions on food and nutrition security is rapidly growing. Both governments and civil society have a need for information on food and nutrition conditions and trends and the impact of policies and interventions. The draft report adequately covers issues concerning governance of data for FSN. However, it needs to incorporate relevant information on monitoring/evaluation and impact assessment that are undertaken by governments, NGOs, international agencies and donors [9].

*b. What are some of the risks inherent in data-driven technologies for FSN? How can these risks be mitigated? What are some of the issues related to data privacy, access and control that should be carefully considered?*

*i. What are some of the risks inherent in data-driven technologies for FSN?*

These are risks involved with data-driven technologies for FSN. Every year governments in low- and middle-income countries invest millions of dollars in agriculture without accurate and reliable information (data). This leads to losses in productivity and income and perpetuates hunger and poor nutrition, particularly among the most vulnerable. There is an urgent need for more timely, accurate and reliable data to inform the decisions that will drive a more sustainable, equitable and inclusive food systems transformation. These are some of the risks involved with data-driven technologies for FSN [10].

*ii. How can these risks be mitigated?*

One way of minimizing and mitigating risks is data sharing and integration. It is becoming more important than ever. An analytical approach to sustainable food systems means bringing together data on many different aspects from different sources. Innovation in the area of geo-localization can be a powerful instrument for linking data across different sources to provide new insights such as by overlaying health, food and environment data sources to understand food systems interactions in a particular region or community. Yet this also has implications for data protection [10].

*iii. What are some of the issues related to data privacy, access and control that should be carefully considered?*

A huge amount of data is being produced in the food industry, but the application of big data (regulatory, food enterprise, and food-related media data) is still in its infancy. Each data source has the potential to develop the food industry, and big data has broad application prospects in areas like social co-governance, exploit of consumption markets, quantitative production, new dishes, take-out services, precise nutrition and health management. However, there are urgent problems in technology, health and sustainable development that need to be solved to enable the application of big data to the food industry [11].

*c. What are the minimum requirements of an efficient FSN data system and how should these be prioritized?*

*i. What are the minimum requirements of an efficient FSN data system?*

Statistics usually play a vital role in supporting policy. It is critical to ensure the credibility and reliability of the data we use, given that this information underpins our decision making. However, in many cases, the quality of primary data cannot be ensured, which may affect all subsequent analysis and policies. For example, the credibility of food security data can be questioned due to poor working conditions of agents and inappropriate data collection process. Evaluation, which feeds into decision making by providing evidence-based findings and recommendations, also highly relies on credible and accurate statistics [12].

*ii. How should these be prioritized?*

Increasing the incomes of the poor and tackling development challenges for countries are critical elements for achieving global food security. But policies may also be needed to prioritized in order to ensure that higher incomes translate into improved nutrition, including polices focused on health, education, social protection and infrastructure. Recommendations for policies for encouraging healthier food choices need to be made. Evaluating the effectiveness of policies and in particular the needs of socio-economic and demographic groups is hampered by inadequate and irregular food data collection, including on the prevalence of food insecurity [13].

*d. Which mechanism or organization should ensure good governance of data and information systems for FSN? How to regulate and mitigate potential conflicts between public and private ownership of data?*

*i. Which mechanism or organization should ensure good governance of data and information systems for FSN?*

Effective collaboration is fundamental for the modernization of statistical production and for enhancing trust and legitimacy of data and statistics in the food and agriculture sector. When stakeholders along the data value chain collaborate, the result is more and better data produced, more relevant and timely insights for decision-makers, and better use of the available resources, as well as enhanced digitalization. However, this requires inclusive and multi-stakeholder approaches that can enhance trust and support data governance and sharing. National governments, international agencies and other involved stakeholders working in the area of management of food security and nutrition initiatives can play a vital role in this area but is facing challenges that need to be addressed in the financing, visibility, and effectiveness of its data and statistical work and country-level support [14].

*ii. How to regulate and mitigate potential conflicts between public and private ownership of data?*

Enhanced FSN data management is essential. This will enable food security policy planners devise strategies needed to ensure that the target of zero hunger is met in all regions of the globe. I suggest following intervention areas in order to regulate and mitigate potential conflicts between public and private ownership of data at all levels [14]:

* *Lack of investment in national foundational data and statistics systems is the biggest challenge countries are facing:* Many low- and lower-middle income countries do not have sufficient financial resources to produce agri-food data and statistics, and investing in this area is rarely a political priority for donor organizations [14].
* *Investments in agri-food systems data and statistics face effectiveness and sustainability challenges:* Limited coordination internally and among development partners on agricultural data and statistics has contributed to a proliferation of initiatives and data collection activities that risk duplication or may undermine country-led efforts to use data to inform decision-making on agri-food system policies [14].
* *Inclusive and multi-stakeholder approaches are critical for data governance and sharing:* Establishing dialogue between stakeholders (both producers and users of data, state and non-state actors) increases trust and is a precondition for finding good governance solutions for collaboration on data and setting up suitable data-sharing infrastructures [14].
* *Digitalization and the use of alternative data sources are key enablers of more effective collaboration in data and statistics for agri-food systems:* The use of new technology and alternative data sources is accelerating innovation and development in general and within the agri-food sector in particular, bringing different stakeholders together around a transformative agenda. Traditional data sources such as household surveys and agricultural censuses are required to harness this potential [14].

*e. What are the financing needs and the financial mechanisms and tools that should be established to allow all countries to collect, analyse and use FSN data?*

The inter-governmental agencies (such as the Food and Agricultural Organization of the United Nations [FAO] and the United Nations Development Program [UNDP]) need to function as a well-recognized mandate. They can act as producer, convener, and standard setter on data and statistics for agri-food systems. Also, they could play a vital role inin better FSN data management. However, it is pertinent to note that there are several challenges associated with the financing, visibility, and effectiveness of data, and statistical work [14].

Governments and donors should scale up and improve the effectiveness of investments in data and statistics for agri-food systems [14]. Following strategies are suggested:

* Raise awareness among senior decision-makers within their organizations at the national and global levels on the value of data and the benefits of investing in robust national data and statistics systems [14].
* Support the development of national data systems, statistical capacity, and digital skills that enable countries to meet and monitor the Sustainable Development Goals (SDGs) [14].
* Accelerate action to support digital transformation by ensuring more predictable and sustainable investment and support for its data and statistics activities [14].

In addition, national governments should improve collaboration on data and statistics for agri-food systems at national and subnational levels by:

* investing domestic resources in the digitalization of data collection and production activities;
* developing national data strategies for collaboration on agri-food system data, including guidelines for data sharing and use, legal mandates, and the roles and responsibilities of different actors in the data value chain, including donors and international organizations; and
* adopting an inclusive and multi-stakeholder approach that strengthens data governance and sharing, and establish mechanisms to connect data producers with data users including affected communities [14].

Also, there is need to improve the visibility and effectiveness of its data and statistical work and country-level support by:

* developing a clear vision and integrated data strategy on innovation and digital transformation, supported by a framework for strategic oversight and data governance;
* providing guidance and thought leadership to the international community on how new and traditional data sources should be integrated and future-proofed; and
* promoting the establishment of a platform or mechanism for international organizations, and particularly Romebased agencies (RBAs) to regularly interact with members on data and statistics issues related to agri-food systems [14].

Innovations in digital technology and the use of alternative data sources have decreased the cost and increased the speed of data collection and use. Countries are combining satellite and ground data with weather forecasts to project food production and get early warnings of potential crop failure in order to better plan support to small-scale farmers and vulnerable communities. Harnessing this potential requires increased investment by donors and governments and a more effective approach that strengthens foundational data systems and governance frameworks and supports local knowledge and capacity development [14].

**7. Drawing on HLPE reports and analysis in the wider literature, in the next draft the report will outline examples of potential policy pathways to address challenges to data collection and analysis tools for FSN.**

*a. What data do the global community and international organizations need in order to gain an appropriate insight into the current state of world food security and to agree on and design international action to improve it?*

Without the right data it is impossible to formulate evidence-based policy, know if interventions are having the desired impact or unintended consequences, or track changes over time. For example, measuring the productivity and incomes of small-scale food producers is critical for tracking progress toward SDG target 2.3, which aims to double agricultural productivity and increase the incomes of small-scale food producers by 2030. Globally, data on the productivity of small-holder farmers is available in only 11 countries and data on the livelihoods of small-holder farmers is available in just 38 countries. Understanding the impact of policies on different population groups is essential for meeting the commitment to leave no one behind. However, less than 10 percent of countries are able to collect or publish agri-food systems data at the required level of disaggregation [14].

*b. What data do countries need for more effective decision-making for food security and nutrition and to inform policies for the transformation of food systems?*

Effective decision-making is closely linked with filling the gaps in data. Some iinitiatives are playing a key role in bridging some of these data gaps and supporting the capacity of low and lower-middle-income countries to produce and use foundational agricultural data for policy making and SDG monitoring. At the same time, advances in technology are also changing the way that data are (a) collected, (b) shared, and (c) used. Governments and non-state actors are increasingly using digital technologies and adopting new and alternative data sources and approaches to fill data gaps, provide insights on complex development challenges, and support innovation [14].

*c. Please suggest references to cases that illustrate policies and initiatives aimed at:*

* improving equity in access to data for FSN policies and decisions, including at grassroot and local levels;
* enhancing capacities with respect to data generation, access, analysis and use by different actors;
* specifically harnessing of traditional and indigenous/first nations knowledge.

An analysis of data needs and gaps on agri-food systems is outside the scope of this report and will vary from country to country. There is need to generate (though traditional and alternative data sources) the types of data and statistics that can be used to (a) support decision-making for food security, and nutrition: and (b) inform policies for the transformation of food systems. Estimating the value of data to calculate a return on investment and incentivise investment is notoriously complex. Nevertheless, new partnerships are being developed, such as the Africa-Europe Digital Economy Partnership, which places the data economy at the heart of digitalization efforts. More work will be needed in terms of investment, capacity development, governance structures, technical infrastructure and sharing and integrating data in an inclusive and equitable manner to ensure that all countries can benefit from these opportunities. The 2021 World Development Report has called for a new social contract for data, founded on value, trust and equity, which supports integrated national data systems and requires proper financing and incentives to produce, protect, and share data and bridge the digital divide [14].

*d. Please provide references and examples of success: good data leading to good policies (context-specific), or any lessons to be learned from a failed data collection/utilization attempt.*

“The Bern Network on financing data for development” is one example of success. The Bern Network is an open, multistakeholder alliance that promotes more and better financing for development data to advance the 2030 Agenda for Sustainable Development. The Network is developing a Clearinghouse for Financing Development Data, an online platform to help countries, donors and development partners identify funding opportunities, bring projects to scale, advocate for support to data and statistics and *connect to new partners [14].*

*e. Please also suggest any initiative and good practice aimed at addressing:*

* the specific constraints of generating a minimum set of indicators in conflict and disaster- affected areas;
* capacity gaps of local institutions, farmers’, producers’ and workers’ organizations in generating, sharing and analysing good quality data, as well as in using data to inform decision-making in food systems;
* capacity gaps at country level to generate and use data in policy-making processes, monitoring and reporting related to SDG2; including with respect to financial resources, human resources, data management, legislation and the enabling environment and FSN governance.

***Initiative and good practice-1:*** Real time agriculture data for COVID-19 response in Kenya:

During the pandemic, Kenya’s Ministry of Agriculture set up a Food Security War Room and deployed a mobile-based Food Staples Survey to track the availability of food stocks from stockists, farmers, traders, and other agricultural food operators in the country at the subnational level. The data was used to guide decision-making on food availability and prices, communicate to the public on supplies, distribute relief food to vulnerable communities and support value-chain actors to take advantage of trade opportunities. More importantly it enabled the government to re-think its strategic approach to how data can and should underpin agricultural transformation [14].

***Initiative and good practice-2:*** The Africa Regional Data Cube:

The Africa Regional Data Cube, now known as Digital Earth Africa, piloted the use of Earth observation (EO) data and satellite technology to support Ghana, Kenya, Sierra Leone, Senegal, and Tanzania as they develop policies for agriculture, food security, deforestation, urbanization, and water access. In Senegal, by combining EO data with traditional data on agricultural productivity, the Ministry of Agriculture was able to identify regions that were at high risk for low or no agricultural productivity due to scant, delayed, or no rainfall and, in partnership with the FAO, provide climate resistant crops to farmers [14].

*f. Please also provide any additional references with respect to:*

* minimum data requirements (baseline) for FSN at country level;
* qualitative data;
* data representing traditional knowledge.

The COVID-19 pandemic and its socioeconomic implications have intensified the urgency of not only scaling up financing for data and statistics at both the country and global levels, but also ensuring that financing is spent more efficiently and effectively. Stakeholders are keen to understand where data gaps are, how these could be potentially filled with innovative sources of data, and how better collection and use of data can support the implementation of the SDGs and lead to better development outcomes. Current financing models are inadequate and there is a need to explore options for a new approach to financing data and statistics in the agri-food sector that supports country leadership, fosters greater alignment with country priorities and drives coordination among donors. Effective collaboration on data by stakeholders is fundamental for the modernization of statistical production and enhancing trust and legitimacy of data and statistics in the food and agriculture sector. However, support to date has faced challenges surrounding prioritization, coordination, country ownership, and sustainability, which have limited its effectiveness [14].

Governments and donors should scale up and improve the effectiveness of investments in data and statistics for agri-food systems [14]. Following actions are needed:

* Raise awareness among senior decision-makers within their organizations at the national and global levels on the value of data and the benefits of investing in robust national data and statistics systems;
* Prioritize and/or integrate agri-food data and statistics within cooperation strategies, sectoral dialogues on agriculture and food systems, national planning processes, and global forums; and
* Support the development of national data systems, statistical capacity, and digital skills that enable countries to meet and monitor the sustainable development goals (SDGs) [14].

In addition to the points made above, national governments, from across the regions of the globe, should improve collaboration on data and statistics for agri-food systems at national and subnational levels [14]. This will require:

* Investing domestic resources in the digitalization of data collection and production activities [14].
* Developing national data strategies for collaboration on agri-food system data, including guidelines for data sharing and use, legal mandates, and the roles and responsibilities of different actors in the data value chain, including donors and international organizations [14].
* Adopting an inclusive and multi-stakeholder approach that strengthens data governance and sharing, and establish mechanisms for feedback on data quality and dissemination [14].
* Exploring mechanisms that ensure that information produced on agri-food systems meets users’ needs by connecting data producers with academia, policymakers, service providers, affected communities, and other data users [14].
* Ensuring the sustainability and long-term financing of digital and data platforms [14].

**8. Please provide your feedback on the following:**

*a. Are there any major omissions or gaps in the V0-draft?*

No, there are no major omissions or gaps in the V0-draft.

*b. Are topics under- or over-represented in relation to their importance?*

No, topics are either under- or over-represented in relation to their importance.

*c. Are there any redundant facts or statements that could be eliminated from the V0-draft?*

No, there are no redundant facts or statements that could be eliminated from the V0-draft.

*d. Are any facts or conclusions refuted, questionable or assertions with no evidence-base?*

No, there are no facts or conclusions refuted, questionable or assertions with no evidence-base.

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## Manuel Barange, FAO, Italy

Dear colleagues,

On behalf of the Fisheries and Aquaculture Division please find attached our comments to the V0 draft of the HLPE Data collection and analysis tools for food security and nutrition report.

Kind regards,

Manuel Barange, PhD

**CFS HLPE Report V0 Draft**

**Data Collection and Analysis Tools for Food Security and Nutrition**

**Questions from CFS:**

**1. The V0-draft introduces a conceptual framework that orders the components of the food security and nutrition ecosystem based on their proximity to people’s immediate decision making sphere, from the macro to the individual levels, and describes a four-stage data-driven decision making cycle for food security and nutrition (FSN), from priority setting to data utilization. Use of the two is illustrated through a matrix template that facilitates the concurrent operationalization of the conceptual framework and data driven decision-making cycle to address issues relevant for FSN.**

*a. Do you find the proposed framework an effective conceptual device to highlight and discuss the key issues affecting data collection and analysis for FSN?*

The framework in Figure 3 is a step towards operationalizing the interpretation of the Food Systems framework and the various levels for data collection/analysis, etc. However we find that the 3rd, 4th and 5th columns are not useful as they refer to other parts of the document rather than giving information. We would suggest that the key points are summarized in these columns rather than referring to other parts of the document, to ease understanding for readers. Example 1 about the application of the conceptual framework to look at meat consumption is a good example to apply the framework, we are interested to see the development of Example 2 (“Fish consumption identified as problematic in populations with domestic access to fish”)**: please share it with NFI when completed.**

*b.* *Do you think that this conceptual framework can indeed contribute to providing practical guidance for data collection for FSN?*

Yes we think it can contribute to providing practical guidance, but the framework itself (Figure 3) should be improved to ease understanding and application (see above).

*c.* *Do you think that this four-stage data driven decision making cycle for FSN addresses the key steps in the data collection and analysis process for FSN? Where do you see the more relevant bottlenecks in the data driven decision making cycle for FSN?*

We think that the four steps generally summarize the key steps for data collection and analysis, however some bottlenecks that we could foresee are balancing the budget and time for data collection/analysis/interpretation and the capacity of data collectors, analyzers, and others involved in the process. These can be major bottlenecks and should be considered early in the data collection and analysis process… we see that these are detailed in section 3.1. on local and country-level capacity constraints, however.

*d. Can you offer suggestions for examples that would be useful to illustrate in a matrix template that facilitates the operationalization of the conceptual framework and data driving decision-making cycle to address issues relevant for FSN?*

We think that the three proposed examples are good, and am interested to see the development of Example 2 in particular (Fish consumption identified as problematic in populations with domestic access to fish). Another example could look at ensuring healthy diets in school feeding programs, with a focus on utilization of locally-procured foods (School Meals are a key action area following UNFSS).

Note: The table for Example 1 – in the top left box, there is an asterisk \* by ASF but we do not see if this is supposed to be a note? How are nutritious ASF defined here? (Does it include fish and aquatic animals, or meat, as stated in the caption for the table?)

**2. The report adopts the broader definition of food security, proposed by HLPE in 2020, which includes the two dimensions of agency and sustainability, alongside the traditional four of availability, access, utilization and stability.**

*a. Does the V0-draft cover sufficiently the implications of broadening the definition of food security for data collection, analysis and use?*

We think that the draft could integrate agency and sustainability more sufficiently, starting from the beginning. The introduction seems to be framed in a top-down way, taking the point of view that food systems have failed us, with statements such as “…existing food systems worldwide are unable to guarantee food security and adequate nutrition for all…” However as we see from the sustainable food systems framework (CFS HLPE 2017 and 2020), components of food systems are not connected in a uni-directional way, but are intertwined with drivers and feedbacks, and these introductory statements somewhat sidestep the 6th pillar of food security (**agency**) as food systems here are seen as something that is supposed to guarantee food security and nutrition (as if we are passive consumers waiting for change from the top-down). Thus raising the questions, what is our (individuals, governments, civil society, other stakeholders) role in the food system, how do we act as agents, and how have we failed food systems/played a role in food systems failure? (This discussion comes in chapter 1 but could maybe be introduced in the introduction as well?)

In relation to the food security dimension of **sustainability**, the report could better include the dimensions of sustainability – not only environmental but also social and economic sustainability – how can data systems better account for all dimensions of sustainability, and the trade-offs between them?

*b. What type of data will be most useful in measuring food security dimensions such as “agency” and “sustainability”?*

[Clapp et al. 2021](https://www.sciencedirect.com/science/article/pii/S0306919221001445) have provided a summary of measurement of agency and sustainability, as well as the need for need for multiple means of measurement to account for tradeoffs between the different components of food security and across food systems. To summarize from Clapp et al. 2021 (with some points added from NFI):

Measuring Agency

Individual and Household Level agency:

* Women’s Empowerment in Nutrition grid (WEN)
* Women’s Empowerment in Nutrition Index (WENI)
* Women’s Empowerment in Agriculture Index (WEAI)
* Women’s Empowerment in Livestock Index (WELI)
* **NFI would also suggest adding the Women’s Empowerment in Fisheries Index (WEFI), this was not mentioned in the Clapp et al. 2021 paper.**
* Household Food Insecurity Access Scale (HFIAS)
* Food Insecurity Experience Scale (FIES)
* “Additional measures of the agency dimensions at the individual, household and community scales could include conditions that empower consumers over food purchase and consumption, such as more precise labelling and nutritional information as well as information on social, economic and environmental conditions under which the food was produced” (Clapp et al., 2021).
* “Data on participation in local food systems decision-making and governance could also be incorporated in such indices as a way to capture collective agency at the community scale, such as municipal food security councils in some countries ([Chappell, 2018](https://www.sciencedirect.com/science/article/pii/S0306919221001445#b0140) in Clapp et al., 2021)”.
  + **In NFI, some efforts have been made to not only measure participation in food systems governance (for example small-scale fisherfolk’s participation in meetings on governance), but also to measure whether people feel that their voices were heard and that there were changes that reflected their inputs.**

National – Level Agency:

* national commitments to uphold the right to food and other human rights;
* levels of national food self-sufficiency;
* numbers and types of food producers;
* measures of domestic market concentration;
* participation in member-based associations; cooperatives and unions;
* availability of opportunities to engage in food system governance;
* rates of farmer suicide;
* national rates of hunger, malnutrition and obesity.

Global Level Agency: Market share and corporate concentration, prevalence of fair trade, and effective global social movement campaigns such as boycotts, might be seen as indicators of agency and power at the global scale (Clapp et al., 2021).

Measuring Sustainability

The following fisheries indicators can start to provide a possible insight of sustainability: Catch (by species), Aquaculture production (by species), Total fish production, in combination with Fish Imports. For the part of the fish consumed that is produced locally, we could consider adding SDG national indicator SDG14.4.1. In addition to production, food loss and waste in fish value chains should be tracked, to show how value chains become more or less sustainable over time. In measuring sustainability, it is also important to consider where gender or nutrition are cross-cutting – for example, gendered issues in fish value chains which contribute to greater loss and waste. NFI is currently working on a gender-sensitive methodology for assessing fish loss and waste and will pre-test this in Ghana in 2022.

**3. The V0-draft reviews existing FSN data collection and analysis tools, initiatives and trends.**

*a. Do you think that the review adequately covers the existing ones? If not, what would you add?*

Table 1 includes many of the existing data initiatives for FSN in relation to Fisheries and Aquaculture, **with the major exeption of FAO FishStat data (see below suggestion),** however we would also add INFOODS (and uFish) as a global food composition database, which provides data on the nutrient composition of foods, on which FSN programs and policies may be based.

**To add the row in red to page 4 (after FAOSTAT)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Initiative/group | Domain (from figure 1.1) | Step in data cycle (from Figure 1.2) | Primary objective | Host | Members/Partners | Funding | Resource (s) |
| Multi-country sources of data for FSN | | | | | | | |
| FishStat | Distal, Proximal, and immediate | Data consolidation and curation | Provide open access to fisheries and aquaculture data covering 245 countries and territories.  It comprises 9 different data domains:   * Aquaculture production * Capture fisheries production * Global fisheries and aquaculture production * Disposition of fisheries and aquaculture production * Aquaculture and fisheries processed and preserved production * Food Balances Sheets * Trade * Fishers and fish farmers (Employment) * Fleet |  |  | FAO Regular Programme | https://www.fao.org/fishery/en/statistics |

In addition, on the same table, on page 5, please correct FAO – FIAF with FAO.

*b. Do you think that the trends identified are indeed the key ones in affecting data generation, analysis and use for FSN? If not, which other trends should be taken into account?*

On page 12, in the last paragraph, the mentions of assessment of trends being challenging in relation to lack of sufficient data on food composition, food availability, and those relating to impact of pests, natural calamities, climate change, conflicts or other shocks on food security and nutrition. In addition to food availability, is it possible to also add lack of sufficient data on nutrient availability (which would tie together food composition data and food availability data, as we see many documents say that there is enough food but still nutrition problems persist, we should be striving for data that tells us more about nutrient availability).

c. *In particular, can you offer feedback on how digital technology, internet of things, artificial intelligence, big data, and agriculture 4.0 affect FSN? What is their likely impact in the coming decades?*

Big data can help to better understand trends (where it exists), and likely will become more used in future decades. However it is important to remember that data systems should have a purpose (data should be collected to help answer questions for new research, monitoring, evaluation, etc.) and overly-extractive data systems should be avoided (both as it can overburden respondents such as farmers as well as enumerators and analysts). Big data is most useful when it can be analyzed, thus the capacity for timely analysis is of utmost importance. We do not see agriculture 4.0 mentioned in the text (only in the reference list) and many readers may not familiar with it. Additionally, please note that the sustainability component in Table 3 is only interpreted as environmental sustainability, however should consider other aspects of sustainability as well.

Today, information assets are freely available that give actionable insight in aquatic food systems: data, models, glocal weather, production, processing and consumption. Cell phones provide the key technology to deliver actionable information also directly into the hands of even poor producers, and this has profoundly changed the data landscape, also for FSN networks. Ignoring communication and social media is as difficult as using them correctly in systems design and analysis.

With a cell phone, producers and consumers are connected to a network. This network drives data demand in unanticipated ways, as farmers now can access information such as extreme weather info, do payments, but also learn about foods and practices. Their actions now directly result in Big Data, and capturing this multi-directional information is a huge challenge for the coming decade.

The social and environmental changes, such as climate change affects food-systems in a multitude of ways. This increases the uncertainty in each step in production and livelihoods cycles. To cope with these risks, producers become risk averse. Complex food systems connecting input providers, service providers, fishers/aquaculturists, buyers, processors, and wholesale/retail need a data framework driven by the need to reduce risk, and make production sustainable and the system resilient.

FSN Management is about information. Modern agricultural value chain requires in-time information to adapt to variability and only by mobilizing Big Data (which is NOT the same as ‘a lot of data’) from data generating tools in the hands of consumers and producers can information help the value chain become robust.

With ICT’s, food security system can be tied to rapidly collected, on-the-ground information to enable targeted responses tailored to the actual need, but that is a future vision.

**4. The report discusses capacity constraints at local, national and global levels, with a special focus on statistical and analytical capacity.**

*a. Do you think that the V0-draft covers all the issues – and their consequences - of capacity constraints at the different levels?*

No – the report includes only 2 small paragraphs on this issue under 4.4.4. related to high investment costs for data-driven technologies and thus likely leading to inequalities (digital divide), and the capacity of personnel. We think that these are two very important issues when considering data, however the consequences of these issues is not well elaborated in the text.

*b. If your answer a. was “no”, then what additional issues regarding capacity constraints should be added to the analysis*

We would only suggest adding one other piece – capacity for core data competencies starts from the beginning (not from analysis as noted in the examples), with designing the data system (what data is going to be most useful, and to whom?) The capacity of local actors should be built so that they can collect, analyze, visualize, interpret and make decisions on the data that is most important to them.

**5.** The V0-draft discusses the role of new and emerging technologies in data collection and analysis tools for FSN.

*a. Do you think that the presentation of new and emerging technologies captures the main trends? What other new and emerging technologies could be discussed in the report?*

*b. In what other ways can new and emerging technologies be relevant to each of the stages/aspects of the FSN data value chain/data lifecycle (i.e., Define evidence priorities and questions; Review, consolidate, collect, curate and analyze data; Translate and disseminate results and conclusions; Engage and use results and conclusions to make decisions)?*

*c. In what other ways can new and emerging technologies be relevant to each of the FSN dimensions (i.e., Availability; Access; Utilization; Stability; Agency; Sustainability)?*

*d. What are some of the issues with respect to ethical use of data, access, agency and ownership linked to these new and emerging technologies that should be further discussed in the report?*

**6. The report reviews issues concerning institutions and governance for data collection, analysis and use, with a focus on data governance principles, data protection, transparency and governance of official statistics, the implications for governance of an increasingly digitalized world, and examples of initiatives addressing governance challenges.**

*a. Are there any issues concerning governance of data for FSN that have not been sufficiently covered in the draft report?*

Section 5.4 (New data technologies entail new governance challenges) seems like it is still in somewhat of notes format, with bullets and a small paragraph explaining some of the bullet points. The bullets could be expanded a bit to explain (at least in some cases they may need explanation), or they could be incorporated/explained in the text.

*b. What are some of the risks inherent in data-driven technologies for FSN? How can these risks be mitigated? What are some of the issues related to data privacy, access and control that should be carefully considered?*

If data-driven technologies for FSN are not also human-centered, there may be more risk on the side of analysis and interpretation of data, for example in the case of automated analyses or if there is a lack of analytical capacity, there is a risk that data may be over-generalized or misinterpreted. For example, diets in Asia are very different from diets in Africa, driven by various factors, just like the diet of one ethnic group in a region could differ greatly from another ethnic group in the same region, or a child’s diet may differ from the adults’ diets in the household. Big data may mask these important differences (or may not even include consideration for collection of detailed data from the beginning) or a lack of analytical capacity could result in overgeneralization or misinterpretation.

*c. What are the minimum requirements of an efficient FSN data system and how should these be prioritized?*

*d. Which mechanism or organization should ensure good governance of data and information systems for FSN? How to regulate and mitigate potential conflicts between public and private ownership of data?*

*e. What are the financing needs and the financial mechanisms and tools that should be established to allow all countries to collect, analyse and use FSN data?*

**7. Drawing on HLPE reports and analysis in the wider literature, in the next draft the report will outline examples of potential policy pathways to address challenges to data collection and analysis tools for FSN.**

*a. What data do the global community and international organizations need in order to gain an appropriate insight into the current state of world food security and to agree on and design international action to improve it?*

Many of the indicators and data mentioned in 2b above for agency and sustainability would be valuable in order to gain an appropriate insight into the current state of world food security, in addition to data on food availability and access (considering production, food loss and waste, trade, cost of various types of foods for consumers, income, expenditure, etc.), stability (this could include consideration for seasonal trends such as rainy seasons which may have an large impact on ability to preserve and store fish for example in Africa, data on processing and preservation methods used, access to technologies and infrastructure such as processing and storage equipment, etc.) In relation to fisheries **and aquaculture**, data on utilization can be strengthened through greater attention to consumption data by species of aquatic foods and parts consumed (fish consumed as only fillet or whole?) as well as strengthened data on nutrient composition. Understanding what food is available and accessible, as well as the issues in the supply chain, and consumer demand/what consumers are actually consuming *is needed in order to gain insight into food security and design international action to improve it.*

*b. What data do countries need for more effective decision-making for food security and nutrition and to inform policies for the transformation of food systems?*

The same categories of data as above would apply, however may be used differently by countries for decision-making and to inform policies for the transformation of food systems. For example, improved food composition data and consumption data which actually reflects consumption patterns in the country may inform food-based dietary guidelines, or may serve to improve food-based dietary guidelines to be aligned with habitual dietary practices in the country and encouraging improvements that are culturally appropriate and context-specific. In combination, improved data on food availability and access can ensure that demand-side policies or programs such as food-based dietary guidelines or nutrition-sensitive public procurement programs are supported by supply-side interventions to ensure that nutritious foods are available and accessible to consumers.

*c. Please suggest references to cases that illustrate policies and initiatives aimed at:*

* + improving equity in access to data for FSN policies and decisions, including at grassroot and local levels;
  + enhancing capacities with respect to data generation, access, analysis and use by different actors;
  + specifically harnessing of traditional and indigenous/first nations knowledge.

*d. Please provide references and examples of success: good data leading to good policies (context-specific), or any lessons to be learned from a failed data collection/utilization attempt.*

*e. Please also suggest any initiative and good practice aimed at addressing:*

* + the specific constraints of generating a minimum set of indicators in conflict and disaster- affected areas;
  + capacity gaps of local institutions, farmers’, producers’ and workers’ organizations in generating, sharing and analysing good quality data, as well as in using data to inform decision-making in food systems;
  + capacity gaps at country level to generate and use data in policy-making processes, monitoring and reporting related to SDG2; including with respect to financial resources, human resources, data management, legislation and the enabling environment and FSN governance.

*f. Please also provide any additional references with respect to:*

* + minimum data requirements (baseline) for FSN at country level;
  + qualitative data;
  + data representing traditional knowledge.

**8. Please provide your feedback on the following:**

*a. Are there any major omissions or gaps in the V0-draft?*

*b. Are topics under- or over-represented in relation to their importance?*

On page 1, the context is laid out as- The CFS requested that the report will:

* Identify the barriers impeding quality data collection, analysis, and use in decision-making.
* Identify specific high priority gaps in data production and analysis not covered by ongoing initiatives (Box 4 covers some gaps in data for nutrition assessments, but otherwise we don’t think this piece is well covered)
* Highlight the benefits of using data and the opportunity costs of not using data for decisions.
* Illustrate initiatives that have encouraged evidence-based decisions in agriculture and food security across the public, private, and academic sectors as well as approaches that have not worked.
* Provide insights into how to ensure data collection and its utilization give voice to the people most affected by policies stemming from that data, including farmers and other food producers.  This is not well covered in the draft.

We also think that the future digital technologies part of the V0 draft in its current form is quite long / over-represented in comparison to what was requested to be covered by CFS – it could be cut down (summarize what these technologies are a bit more, as currently the explanations of what the technologies are is a bit long), and then give practical examples of how these technologies are currently being used, what are the benefits and opportunity costs for using them for FSN data (in relation to bullet number 3 in the context on page 1, copied above).

c. *Are there any redundant facts or statements that could be eliminated from the V0-draft?*

*d. Are any facts or conclusions refuted, questionable or assertions with no evidence-base?*

**Other suggestions:**

Even if mentioned in the glossary, it could be good that the first time the term agriculture is mentioned it is clearly stated that it includes as well fisheries, aquaculture and forestry?

**Page 14**

The example reported on page 14 could be expanded to include as well the fisheries/aquaculture component as for example:

Similarly, agricultural data mainly obtained through interviews with farmers or through surveys, often lead to biases over time due to the over-representation of the larger farm holders and lack of sufficient representation of the small farmers. The same can be valid as well for the collection of fisheries and aquaculture data, with often underreporting of the small scale fisheries and fish farms component. Such ~~cropland~~ data when used by policymakers for decision making to meet the growing demand for food is inaccurate and does not represent the needs of the smaller farms and small scale fisheries. Smallholder farmers and fishers in developing countries also lack quantitative and qualitative data on their production and sales of ~~all crops~~ due to limited access to information technologies.

Page 22, under 4.1.2. Transforming data into information add

Computer vision and deep learning can be used to support visual perception. It has therefore become possible to develop applications for detection, recognition and identification of weeds, pests, plant diseases, and other types of species and objects. The same technologies can be useful for identifying processes such as growth and ripening, and for controlling quality and safety of products. Moreover, the foregoing technologies can be combined with the use of satellite technology and sensors to monitor phenomena that are of specific relevance for food security, such as biodiversity, natural resource use (e.g., land, water, forests, fish banks, aquaculture facilities, etc.), crop production, the climate, etc.

**Page 27, on C) Translate and disseminate results and conclusions**

**Row:** Information visualization

**Under Examples of Initiatives and References**

Add as well FishStat

## Kálmán Zoltán, Former Permanent Representative of Hungary to UN in Rome, Hungary

To whom it my concern.

I wish to express compliments to the HLPE and its Project Team and Steering Committee Members, along with the HLPE Secretariat and Drafting Team for the comprehensive document.

I fully agree that availability of reliable data is essential for any decisions to transform our failed/broken food systems. The zero draft provides an excellent basis for further discussions and in this regard the inclusive and transparent preparatory process is much appreciated.

I am making now some comments only on the **collection/control/ownership of data** and the **privacy/security/protection of data**. These are undoubtedly the most important issues and the Authors touched the related valid concerns in Chapter 4.1.1. However, it would be indispensable to make further efforts to provide a deeper analysis of the situation and include in the conclusions some guidance and recommendations in this regard.

**Ownership of data and information means power** to control and it would be unacceptable and a **huge mistake to give this power to corporations and monopolies**, for obvious reasons.

In addition, some data to be collected might contain confidential, sensitive personal data, including data of smallholders, family farmers, consumers and others.

For the above reasons, **guarantees and appropriate safeguard mechanisms are required, to protect privacy and security but also to build confidence and trust**.

As the document itself mentions, there is a risk that people may have concerns that “…their data may end up in the wrong hands, be used against them, be used to exploit them, or put them in precarious positions in the future.” This issue should be duly addressed in the next version, because it is a real danger, again as acknowledged by the authors: “This can also lead the risk of agro-food market dominance by few monopolies that have control or ownership of data.”

There is another challenge mentioned in the chapter 4.4.2. Trust and transparency issues: “If the decision-making process is hidden from the person directly affected by the outcomes, then the underlying technologies can raise trust issues.” This again confirms the need for respecting the principle of inclusivity.

I think the above short comments can clearly confirm and justify the need for elaborating this part in more details, in addition to the summary of governance challenges mentioned in chapter 5.4.

It would be also necessary that in its last (“to be completed”) chapter on Conclusions and Recommendations, the document could provide clear guidance, including on the needed appropriate safeguard mechanisms.

I am looking forward to the revised version of the draft.

Best regards,

Zoltan Kalman

## Dario Lucantoni, Italy

Dear colleagues,

I would like to contribute by pointing out the lack of any references to agroecology, which is the most promising approach for achieving sustainable food systems that enhance FSN. Agroecology goes hand in hand with participatory methodologies for data collection and analysis, which are also lacking in the text, where a top-down approach to data collection seems to be preferred.

Regarding FSN tools, the V0 draft lack any reference to FAO's Tool for Agroecology Performance Evaluation (TAPE), which has proven to be a simple, yet innovative and comprehensive framework that uses agroecology to evaluate the sustainability of production systems in agriculture and can be used to generate evidence on their multidimensional performance.

Kind regards,

Dario Lucantoni

## Irma Angélica Hernández Velázquez, CONABIO, Mexico

Online consultation on the V0 Draft of the Report proposed by the HLPE Steering Committee and the Project Team

Dear High-Level Panel of Experts on Food Security and Nutrition (CFS-HLPE),

We appreciate your work towards Data collection and analysis tools for food security and nutrition- V0 Draft.

As the Agrobiodiversity Coordination and the Directorate of the Mexican Agrobiodiversity GEF Project of CONABIO (GCP/MEX305/GFF) - Mexico (Comisión Nacional para el Conocimiento y Uso de la Biodiversidad; English: National Commission for the Knowledge and Use of Biodiversity), we would like to share with you the following comments and messages in relation to the draft:

With respect to - **Identify the barriers impeding quality data collection, analysis, and use in decision-making-** we would like to express the following:

The first studies developed on food composition were realized with the objective of identifying and determining the chemical characteristics of the main food products and its relation with human health and diet, and as well focused on determining the mechanisms with which the chemical compounds of food interact in the human body.

Despite advances in scientific knowledge, analysis methodologies, and findings on nutrition, today, information about the composition of foods is still incomplete and new studies are required, often with an increasing level of complexity, as well as on the role of its components and their interactions in health and disease (Greenfield & Southgate, 2003).

It is well known that, given the complexity of a food matrix, the nutritional value of food goes far beyond the content of its macronutrients, results of a bromatological study or Proximal Chemical Analysis; today various scientific studies regarding the relationship between diet and health have emphasized the importance of biologically active compounds present in food such as micronutrients, antioxidants, phytochemicals, and bioactive compounds.

It is important to consider that some tools related with food science (i.e. food composition tables, nutrition, and health surveys) should be analyzed and used considering that the data provided is from specific samples. However, foods generally vary in their nutritional content, depending on the country and climate where they are grown, the type of food tested, how the food has been prepared before it is eaten (which varies among different cultural groups), and many other factors (Latham, 2002).

Worldwide, there are various tables of food composition, such as those of FAO/INFOODS, those of USDA Food Data Central, and for Mexico the “Tables of the composition of foods and food products (condensed version 2015) published by the INCMNSZ (National Institute of Medical Sciences and Nutrition Salvador Zubirán)”, reflecting a great effort of information, as well as the platform of the Food Base of Mexico.

With respect to

* **Illustrate initiatives that have encouraged evidence-based decisions in agriculture and food security across the public, private, and academic sectors as well as approaches that have not worked;**
* **Provide insights into how to ensure data collection and its utilization give voice to the people most affected by policies stemming from that data, including farmers and other food producers.**

we would like to express the following for your consideration:

The knowledge about the content of macronutrients, micronutrients, and bioactive compounds of the great diversity of native species and varieties that are grown and/or harvested in a country (i.e. Mexico) could be part of a strategy for the revaluation and promotion of their consumption. The development of projects that allow the obtention of information about eating habits, market opportunities, crop genetic diversity, and its conservation, production of local varieties, and its importance for self-consumption and food security is also very important.

The foregoing to be considered in:

* Development of scientific data that could improve or be taken into account in the design of public policies focused on food security.
* Development of diets or menus for different age groups and socioeconomic conditions, focused on achieving food security.
* In the design of intervention strategies for food and nutritional security.
* In actions aimed at nutritional education and guidance to consumers.

In Mexico, the “Mexican agrobiodiversity GEF Project” operated by the National Commission for the Knowledge and Use of Biodiversity (CONABIO) in Mexico and financed by GEF (Global Environment Facility) is in execution. The main aim of this project is to build and strengthen mechanisms that help to conserve agroecosystems where traditional agriculture is practiced in Mexico, a country that is the center of origin and diversity of more than 130 plant species important to agriculture. These agroecosystems contain wild and domesticated species adapted to a host of agroecological conditions. Here, several processes are carried out with human invention, allowing the species to evolve in response to decisions taken over the selection, management, and utilization as well as in response to environmental conditions.

The “Mexican Agrobiodiversity” project is implemented through 4 components; the first one corresponds to “Information and knowledge management” having as the main outcome the development of the Agrobiodiversity Information System (SIAgroBD).

For more information about the project, please visit

<https://www.biodiversidad.gob.mx/diversidad/proyectos/agrobiodiversidadmx>

and

<https://www.thegef.org/projects-operations/projects/9380>.

With respect to **Question 3a (data collection initiatives)**, we propose for consideration the Agrobiodiversity Information System (SIAgroBD) developed by the National Commission for the Knowledge and Use of Biodiversity (CONABIO) in Mexico.

SIAgroBD is a national effort that has supported data generation and utilization related to various aspects of FSN (**Box 1 of the V0 draft** seeks examples of such initiatives). SIAgroBD is part of the Mexican Agrobiodiversity GEF project, with FAO as the implementing agency, and it aims to inform food security and agrobiodiversity conservation policies. SIAgroBD integrates data on native crops of global importance, food composition, and nutritional data, qualitative and quantitative agronomic data, qualitative assessments of local use of agrobiodiversity for food and commerce, among others. These data are often collected in collaboration with local communities.

SIAgroBD implements a workflow for Open and FAIR (Findable, Accessible, Interoperable, Reusable) data, including the adoption of digital field data collection tools, vocabulary standards, reproducible practices, open data training for participants, and the development of a custom data integration platform. This information system is intended for academic researchers, policymakers and the general public. Hence, SIAgroBD contributes to enhancing capacities with respect to data generation, access, analysis and use by different actors.

By prioritizing native crops and small-scale agriculture, SIAgroBD fills a gap in the current trends in big data for agriculture, which focus on conventional breeding and production.

SIAgroBD is also a key reference for Questions 7c and 7f: initiatives aimed at improving access to data for policy, enhancing data literacy, data representing traditional knowledge, and qualitative data.

For additional information, please see the following references:

* Webinar as part of the Interest Group for Agricultural Data - Research Data Alliance.

Video: <https://www.youtube.com/watch?v=vJLC3eaIBOQ>

Slides: <https://doi.org/10.6084/m9.figshare.16764679.v1>

* SIAgroBD infographic for the 2nd International Agrobiodiversity Congress:

https://doi.org/10.5281/zenodo.5762394

* Poster on agrobiodiversity data generation and reuse in policy at CONABIO - RDA

Plenary Meeting: https://doi.org/10.6084/m9.figshare.16840585.v1

With respect to **Question 8a (major gaps)**, we consider that agrobiodiversity is an underrepresented topic as it concerns all levels of the conceptual framework in Fig. 1, as well as all dimensions of food security. For example, Mexican maize smallholders mainly grow local landraces and are the custodians of maize genetic diversity. Although on average their production at farm level has lower yields than commercial agriculture, their aggregated production at the national level is enough to feed the people directly involved in small-scale agriculture with enough surpluses to also feed millions of people at the local and regional levels, making them crucial for national food security (Bellon et al. 2018, Bellon et al. 2021).

We also propose the following initiatives/projects realized in Mexico for consideration for box 1 of the V0 draft:

* “Mexican Agrobiodiversity” Project, (explained in previous paragraphs).
* The Agrobiodiversity Information System (SIAgroBD) developed by the National Commission for the Knowledge and Use of Biodiversity (CONABIO) in Mexico (explained in previous paragraphs).

Regional Healthy Wellbeing Food Baskets. Mexico is very diverse culturally and environmentally. For thousands of years, farmers have evolved a variety of food plants. This has especially been in the maize, pumpkin/squash, pepper/chilli, and bean groups, of which Mexico is the place of origin and diversification. In the different cultural landscapes, peasants have generated a great diversity of foods and with it, their inhabitants have created a diversity of dishes, diets, and cuisines. Diverse traditional diets are the basis of healthy eating everywhere. Modern eating is undermining this. For this reason, the National Commission for the Knowledge and Use of Biodiversity (CONABIO) began an initiative to document the diversity of foods, dishes, drinks, and diets around Mexico known as [Regional Healthy Wellbeing Food Baskets](https://www.biodiversidad.gob.mx/diversidad/alimentos/canastas-regionales). This initiative documents the diversity of foods, dishes, and drinks in an area (could be a specific community or a region). It gathers information on which plants, animals, and fungi are grown and what dishes or drinks they are used for. There is practical written information on each as well as photographs of the food, dishes, and drinks. The data obtained from this project is going to be integrated at SiAgroBD. The wider aim of this Regional Baskets program is to promote the recognition and appreciation of diverse and seasonal foods related to customs, traditions, and identity of the people in the different regions of Mexico. This will lead to better health for Mexicans. It will also encourage that a great diversity of species continues to be grown, harvested, and picked up by peasants. For more information please visit <https://www.biodiversidad.gob.mx/diversidad/alimentos/canastas-regionales>.

* “Tables of the composition of foods and food products (condensed version 2015) published by the INCMNSZ (National Institute of Medical Sciences and Nutrition Salvador Zubirán)”. This publication focuses on the composition of the foods consu med in Mexico, mostly as a result of the analysis carried out at the INCMNSZ and others compiled from different sources cited. The information may be useful for nutritionists, the industrial sector, researchers, civil society organizations; and even for the authorities as guiding information in decision-making on nutrition issues for the current Mexican population and to promote an increasingly adequate food culture. The publication is available at:

<https://www.incmnsz.mx/2019/TABLAS_ALIMENTOS.pdf>

The database "Extended Food Composition Table 2019", which corresponds to the updated data, has been included in the Agrobiodiversity Information System (SIAgroBD) developed by the National Commission for the Knowledge and Use of Biodiversity (CONABIO) in Mexico.

* The National Health and Nutrition Survey (ENSANUT) ENSANUT is a tool that offers an overview of the health and nutrition conditions of a representative sample of the population of Mexico. ENSANUT was made as a collaborative effort between the National Institute of Public Health (INSP) and the National Institute of Geography and Statistics (INEGI), with the financial support of the Ministry of Health (SS) and several federal entities. The ENSANUT allows evaluating the performance of the National System of Health, as well as providing an evaluation of the public policy actions designed to improve the health and nutrition of the population. During the last 30 years, the information collected from ENSANUT has allowed us to have knowledge on the magnitude and distribution of health and nutritional status of the Mexican population, as well as the determining factors of these conditions. Also, changes have been identified in the state of malnutrition, both malnutrition and specific deficiencies, such as for overweight and obesity, in addition to the fact that with ENSANUT there have been reports of an increase in the prevalence of various chronic diseases that contribute significantly to overall mortality in the country, such as diabetes mellitus, hypertension, and dyslipidemia (Shamah-Levy et al., 2020). The official website, reports, and files are available at: <https://ensanut.insp.mx/index.php>

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## James Henderson, Global Partnership for Sustainable Development Data

**HLPE Report Response**

The Global Partnership welcomes the opportunity to comment on the V0 draft of the HLPE report on “Data collection and analysis tools for food security and nutrition.”

We have identified four gaps in the report that we would like to highlight and comment on as an organization with experience collaborating with a wide range of stakeholders engaged in creating, curating, and analyzing agricultural data and statistics. Furthermore, we have several suggestions for case studies for national-level data collaboration and have included links to further information that the authors could incorporate into the draft where applicable.

We inform our input based on a series of informal dialogues and informant interviews with key stakeholder groups over the period December 2020 to April 2021 as part of our research for the publication of the following reports: [Data for Food Security: How can the international community drive transformative change?](https://www.data4sdgs.org/sites/default/files/2021-06/DataFoodSecurity_Report_June-2021.pdf) (June 2021) and [From local Needs to Local Knowledge: Better data to End Hunger](https://www.data4sdgs.org/sites/default/files/2021-07/From%20Local%20Needs%20to%20Local%20Knowledge-%20Better%20data%20to%20End%20Hunger_July%202021.pdf) (July 2021).

Our comments on the report are as follows:

**1. Absence of a defined strategy for the production and use of data that explicitly addresses the incentives, privacy, safety, and agency of smallholder producers.**

Chapter 5 of the V0 report highlights the intricacies of good data governance. It also considers governance principles, data protection, transparency, mechanisms, links to conventional and novel data sources, and the global and regional initiatives addressing governance challenges. However, there is a gap and a potential opportunity to build consensus on the norms and principles of good data governance for Food Security and Nutrition (FSN) as it pertains to the needs of smallholder producers as the most vulnerable members of the FSN system.

Creating a clear vision and integrated strategy supported by a data governance framework that protects smallholder producers' privacy, safety and agency is key to reducing inequalities in global food systems. Using the V0 report as an opportunity to share real-world best practices and case studies while addressing the balance between government, corporate, and farmer interests is critical to reducing systemic inequalities in the FSN system.

There are many examples of initiatives that promote good data governance norms and principles that integrate the needs of smallholders, such as in Tanzania, where the Ministry of Agriculture, Livestock and Fisheries, and FAO worked together with farmers and the Tanzania Bureau of Statistics to use data to improve the [uptake of extension services and livestock vaccination](https://www.data4sdgs.org/resources/agriculture-data-shaping-policy-and-changing-lives-kenya-tanzania).

An example of a platform with a clear vision and integrated strategy for data governance is the Africa Regional Data Cube, now known as [Digital Earth Africa](https://www.digitalearthafrica.org/). This project piloted the use of Earth Observation (EO) data and satellite technology to support Ghana, Kenya, Sierra Leone, Senegal, and Tanzania to develop policies for agriculture, food security, deforestation, urbanization, and water access.

Ensuring that data collection and analysis benefit those impacted by those most marginalized in the global food system of the global food system and that all stakeholders see direct benefits to data sharing as an incentive, instead of only as a means of gathering aggregated statistics, is critical to avoid exacerbating inequalities and building trust amongst stakeholders.

As it stands, the HLPE draft recognizes the need for multi-stakeholder collaboration in section 4.5.2 but does not address the issue at a global level, nor does it explicitly mention smallholder producers.

Therefore, we recommend the report reflect upon whether a global multilateral dialogue on FSN data and agricultural statistics issues, including issues pertaining to smallholder rights and governance, could be of use, what value this type of forum could add, and how it could be established. The report should also consider the role of Rome-based agencies, member states, and other stakeholders in facilitating dialogue and building trust and consensus.

**2. Insufficient emphasis on the importance of national data and statistics systems and local capacity building.**

As the report highlights, the capacities of national statistical offices (NSOs) are often lacking at the country level. Despite the limitations of the NSOs, they rely heavily on agricultural surveys and censuses, which due to their time and resource-intensive nature, lead to data quality and timeliness challenges to data collection and analysis at national and sub-national levels.

Resource constraints at the national level are also detrimental to the digitalization of data and statistics pertaining to FSN and impact the quality and availability of data and data infrastructure and the ability to train and upscale staff, resulting in a vicious circle of insufficient resource allocation towards national data and statistics systems.

Furthermore, the inadequate and unsustainable funding of activities undertaken by national statistical systems often leaves them reliant on external financing, which is often short-term and project-based.

Without nationally trained staff and alignment on data and statistics for agri-food systems at national and subnational levels, there is a risk of financing projects and initiatives that do not align with country priorities and that leave projects with high national importance underfunded or discontinued.

Strengthening countries' capacities requires time, resources, and persistence to facilitate realistic solutions that collect, analyze, and maintain country-level FSN data and statistics. The HLPE report could be an opportunity to discuss the importance of developing national data strategies for collaboration on agri-food system data, including guidelines for data sharing and use, legal mandates, and the roles and responsibilities of different actors in the data value chain, including donors and international organizations.

A good example of country level work initiated by a national statistical office partnering with public and private sector actors collaborating on agri-food system data can be found in Ghana where the country’s Statistical Service set up a [multi-stakeholder data collaborative](https://www.data4sdgs.org/news/how-climate-smart-agricultural-services-can-improve-lives). This collaborative brings public and private actors together to enable the use of mobile technology and data on weather patterns and crop market prices to provide climate-smart agricultural services to farmers.

Novel approaches bolstered by digital skills and the ability to use new technologies for data collection and analysis are fundamental as countries transition from paper-based data collection to digital data collection. These points can be elaborated further when considering the benefits/opportunity cost (aim number 3 of the HLPE report).

**3. Addressing the need for a framework for aligning and coordinating assistance from international organizations and donors.**

There is a deluge of projects in the FSN space, each focused on different issues or aspects of the global food system. The draft report mentions this problem, but a gap remains in addressing the need for a framework to align donor support and extrabudgetary contributions to international organizations like FAO and the other Rome-based agencies (RBAs).

Emphasizing country-level alignment and collaboration is needed between donors, government, and other stakeholders. This alignment is essential at the country level, as projects funded by international organizations and private donors can produce positive results but are often limited to the end of project cycles, thus severely limiting their sustainability.

Several of our national partners reported an overreliance on donors to fund and sustain digital innovations, creating a scenario where their national statistical offices are left chronically underfunded.

A forum for the RBAs to regularly interact with member states on data and statistics could be a valuable starting point to build mutual understanding on FSN data and statistics, governance issues, and a consensus on the principles and norms that should guide resource allocation.

Global Partnership emphasizes this need and outlines arguments for this forum in our [Data for Food Security report](https://www.data4sdgs.org/sites/default/files/2021-06/DataFoodSecurity_Report_June-2021.pdf). We argue that this approach can have a knock-on effect in accelerating action to support FAO’s digital transformation by ensuring more predictable and sustainable investment and support for its data and statistics activities and improving the visibility and effectiveness of its data and statistical work and country-level support using flexible approaches to strengthen national capacities.

**4. Failure to connect key sections with the overarching goal of the report.**

The HLPE V0 draft addresses many challenges and issues related to different aspects of FSN data and statistics but fails to link these discussions across the different sections and create a coherent call to action with clear steps for different stakeholders.

Currently, the conversations surrounding new technologies, ethics, data governance, collaboration, and partnerships with key stakeholder groups, ranging from smallholder farmers to the diplomatic community in Rome, are driven by the perceived risks in the system. There is a particular concern about data extraction and the motivations of powerful actors, leading to significant mistrust in the system.

A discussion that emphasizes the incentives and benefits of being part of the solution to these concerns and addressing even the most marginalized stakeholders in the FSN data ecosystem could provide a powerful way to contextualize the report's content with current policy failures.

Given the timeliness and continuing concerns about the impacts of the COVID-19 pandemic on FSN, solutions focused on real-time and accurate data that benefit marginalized stakeholders can serve as a compelling narrative to link several aspects of the V0 draft with real-world best practices.

For example, the Kenyan national government has worked with government and non-government stakeholders to find data-driven solutions to enable the Ministry of Agriculture to [track the availability of food staples at the subnational level and identify appropriate subnational responses](https://www.data4sdgs.org/resources/real-time-agriculture-data-covid-19-response-kenya-lessons-build-case-more-and-better) to food security challenges as a result of the COVID-19 pandemic.

Highlighting legal and regulatory frameworks and emphasizing the role that partnerships and multi-stakeholder collaboration have in building trust, giving all stakeholders a voice, and evening the playing field could serve as a compelling way to frame the conclusion section of the report in a way that connects several key sections of the report.

## Pierre-Marie Bosc, CIRAD, France

Comments of the HLPE Report V0 draft

Data collection and analysis tools for food security and nutrition (Dec 2021)

By

Pierre-Marie Bosc, Cédric Gaillard, Sandrine Dury and Mathieu Roche

January 26th 2022

**About the conceptual framework**

**In the setting the stage part, the macro factors are too narrow and limited to public national policies.** The role of international economic and political actors (public- States- or private corporations-) and their activities is missing.

The following activities related to food and agriculture have a direct impact on FNS of individuals though availability, accessibility of products and should be mentioned.

- Trade of agricultural inputs and commodities and other agricultural products, + International & regional trade regulations and activities of private actors

- Foreign investments, both public and private. Ex : Land acquisitions for large scale production.

- Level of the debt

Other « distal » factors may also be mentioned, such as the level of the debt accepted by the IMF and the global level of investment by international and other financial institutions. Recent expertise on the effects of Covid-19 on FNS in southern Cameroon showed the key role of imports (of chemicals from China) to the production stage of fruits and vegetables and the dramatic consequences of the border closure (from other African countries) for farmers who are unable to export their produce and lead to bankruptcy and poverty (Mathe et al, 2021).

Regarding the approach proposed page 17. We suggest to present together Meat, Fish and aggregate with poultry as recommended by FAO and FHI (2016) because lack of micronutrient is one of the most stringent nutritional problem. But even aggregate d it remains a “product” approach, which is not holistic and therefore we suggest to develop another example about the **lack of dietary diversity, with a focus on rural settings and farming households.** (as it is suggested to give an example).

Looking now at the proposed conceptual framework, we only see the levels of potential factors and outcomes.

The framework seems lacking some key elements. The observation unit is the individual “citizens, individuals” which means the report deals with the global population as a whole. But, as far as the report has the ambition to deal with the food system globally, the production stage should deserve a specific attention. Producers are often consumers of the food products they also sell. They are key stakeholders of the system and most of the smallholders are considered poor and vulnerable regarding food and nutrition security. The leads to some questions: What is the population from which data is produced? What is the place of the agricultural / rural sector? Wouldn’t it be useful to distinguish urban vs rural sector? What about the farm level, the smallholders [holding level] and the household and their interrelations? In the agricultural / rural sector food and nutrition security does not depend only on agricultural or natural resources-based activities.

The geographical dimension is not clearly apparent from the farm / household level with specific territorial settings within national and regional levels. The territories present highly diverse potentials that shape the possibility to achieve food security.

In the literature we can identify various conceptual frameworks developed on agriculture/food linkages (or even those on sustainable livelihoods) that could be used to enrich the proposed framework. We quickly identified three frameworks that the authors could consider. There might be others and they are suggested for possible adaptation and fine tuning to the scope of the report. A good example is in my opinion the FAO/FIVIMS (2008). It still seems difficult to integrate the agency dimension in these conceptual frameworks.

Another example that could be inspiring is provided by Kanter and al. (2015) or by HLPE (2017) that focused on Nutrition.

In these frameworks, we have potential impact paths and indicators at each stage of the process (or for each observation unit). This is missing from the proposed framework.

**About the indicators**

One key and essential dimension for which FAO has a key role to play, is the use and promotion of standard scientifically grounded indicators, in national or international surveys or even in the work of researchers.

In the field of economics, indicators that measure household assets (agricultural or not), women's empowerment (WEAI), wealth proxies (Wealth index). Indicators of perceived food security (such as the HFIAS) or for nutrition, proxies of nutritional adequacy (such as measures of diversity with the HDDS or MDDW indicators). This harmonization would also allow a better interoperability between the different surveys without standardizing the surveys which would keep their specificity according to the geographical areas and the research questions.

**About the existing initiatives**

The list of initiatives presented in table 2 is wide, heterogeneous (nutritious contents data bases) and sometimes overlaps (50x30 is a funding mechanism to support Agricultural Censuses). Most of them concentrate on individual levels. The are some missing initiatives such as LSMS (Living Standards Measurement Surveys).

Under FAOSTAT are multiple components which have various focus, various levels of data collection…: what are the observation units? They are different and obviously not coordinated. These systems are not handled by FAO but by the countries. Data are part of the sovereignty of each country and collected by their respective administration. FAO produces guidelines like for the Agricultural Census but the production of data is under the responsibility of each country. Analysis of the existing data sets is missing. Are data sets up-to-date? Which countries produce data on a regular basis? Are there countries without data? This could be a useful addition to Table 1. See Viberti and Bosc (2020) for a review of actual data availability.

There is much more information on the constraints to data collection than on an in-depth analysis of the existing data sets. Which is obvious is the total absence of coordination among all these initiatives and the donor community is part this lack of coordination.

**About capacity constraints (page 26)**

The first paragraph underlines the insufficient capacity that exists… This is quite in contradiction with the previous chapter showing the blooming initiatives and regretting the disconnection and lack of use.

Concerning the whole document, we feel like there is a need to go further in the analysis of the final users of the existing statistics. Who is using which statistics and for what purpose? this should be added for example at minima in the table 1: two columns: 1. who are the users of the statistics. 2. For which decision?

**About the decision cycle**

The decision cycle as proposed is very generic. Could it be more focused? In the decision cycle, I could be important to enter into more detail, following "Define priorities evidence and question" to define the availability of data. Even a partial availability of data can considerably alleviate the strategy of collecting additional information.

**About the new technologies**

We agree that there are many new opportunities to collect data, monitor and inform on food security and nutrition using new computing powerful methods. For instance, in order to automatically predict food insecurity, new pipelines based on Artificial Intelligence approaches (i.e. machine learning) can integrate multisource heterogeneous data like rasters (e.g., population densities, land use, soil quality), GPS points (hospitals, schools, violent events), line vectors (waterways), quantitative variables (maize prices, World Bank variables, meteorological data) and time series (Smoothed Brightness Temperature (SMT), rainfall estimates, maize prices) (see for example (Deléglise et al, 2022)).

Even if we agree that it is important to be forward looking, the balance of the report should acknowledge the fact that there is still a lot to do to improve the existing tools – including the introduction of the digitalization – before developing new tools.

**Regarding Ethical issues**

As it is mentioned, but we want to stress that point, here is a bias regarding the use of new technologies. The most vulnerable have not the means to be connected and to be include in the processes that became even more disconnected from these technologies that can be run 100% with no local inputs. Citizens and even public national bodies get out of control on these technologies. However, as mentioned in one of the contributions, quantitative analyses alone are insufficient to guide public policies. Understanding contexts, through multidisciplinary approaches, partnerships and qualitative surveys, remains essential.

**Governance**

As for now the civil society organizations including farmers’ organizations are not part of the governance of data production and use. As information is a key asset for strategic decision making and in order to cope with this situation many of them tend to develop their own information system. As the CFS is now open to CSO and farmers’ organization the report should address this issue.

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Attachment:

<https://assets.fsnforum.fao.org/public/discussions/contributions/News%20items-Ag4Dev40-Summer-2020-News-field-02%20PC%20(1).pdf>

## Willow Battista, Environmental Defense Fund, United States of America

This effort to bring together data streams and to address challenges and gaps in data collection and analysis across the food system is extremely valuable and timely. We like the conceptual food and nutrition system framework presented in section 1 and applaud the effort to combine previous frameworks (food systems, nutrition, food security, etc.) and to capture and simplify the systemic complexity. However, we note three key gaps in this proposed framework, which are also reflected in the subsequent sections on data collection and analysis:

**1. The impacts of global food systems on the environment are not sufficiently represented or discussed.** Given the clear need, articulated so well here in this report, to tackle the multiple linked challenges that relate to our current food system structure and functioning, it’s critical that we begin to conceptualize and target the multi-directional nature of systemic drivers and outcomes. See, for example, the [recent report](https://rivers-of-food.panda.org/#challenge) on how inland activities, including agriculture, are damaging rivers and freshwater fisheries, which are important food sources in their own right. Specifically, there is almost no discussion in this report of the impact of the global food system on the climate, or on biodiversity or ecosystem health at any scale. These outcome metrics should be given equal weight and attention as metrics of hunger, malnutrition, and food insecurity.

In addition to global-scale trends, data on environmental impacts of specific policies and management decisions are needed in order to avoid the risk of investing in food system interventions that appear to be improvements to the current techniques, but that actually worsen problems. For example, there has been a strong push to integrate fish into rice paddies in rice-growing regions around the world, and specifically throughout Asia. However, there is evidence that doing so can actually increase the methane off-gassing from rice paddies, thereby increasing the already significant climate change impact of this crop.

We recommend reviewing and including the following key references:

Benton, T. G., Bieg, C., Harwatt, H., Pudasaini, R., & Wellesley, L. (2021). Food system impacts on biodiversity loss: Three levers for food system transformation in support of nature (p. 75). Chatham House. <https://www.unep.org/resources/publication/food-system-impacts-biodiversity-loss>

Tubiello, F. N., Rosenzweig, C., Conchedda, G., Karl, K., Gütschow, J., Xueyao, P., Obli-Laryea, G., Wanner, N., Qiu, S. Y., Barros, J. D., Flammini, A., Mencos-Contreras, E., Souza, L., Quadrelli, R., Heiðarsdóttir, H. H., Benoit, P., Hayek, M., & Sandalow, D. (2021). Greenhouse gas emissions from food systems: Building the evidence base. Environmental Research Letters, 16(6), 065007. <https://doi.org/10.1088/1748-9326/ac018e>

References re: emissions from rice-fish systems:

Frei, M., Razzak, M. A., Hossain, M. M., Oehme, M., Dewan, S., & Becker, K. (2007). Methane emissions and related physicochemical soil and water parameters in rice–fish systems in Bangladesh. Agriculture, Ecosystems & Environment, 120(2), 391–398. <https://doi.org/10.1016/j.agee.2006.10.013>

Sun, G., Sun, M., Du, L., Zhang, Z., Wang, Z., Zhang, G., Nie, S., Xu, H., & Wang, H. (2021). Ecological rice-cropping systems mitigate global warming – A meta-analysis. Science of The Total Environment, 789, 147900. <https://doi.org/10.1016/j.scitotenv.2021.147900>

**2. Although blue/ aquatic foods are mentioned in this report, their treatment feels cursory and is insufficient.** Despite their importance for meeting food and nutrition goals in the face of climate change, aquatic food production and consumption are not represented or included in the high-level framework, or in the discussion around it (e.g., there are repeated references to agriculture in the Introduction section, but none to fisheries), and while there are a handful of references to aquatic foods or to fisheries in the subsequent report sections, the report misses an important discussion of the diversity of aquatic resources which have differential nutritional values, a focus on small-scale fisheries and inland fisheries, which both have a unique and important role in this challenge, and any mention of the problem of IUU fishing, which is a serious challenge to the sustainability of the world’s fisheries, and also a serious challenge to accurate data collection and analysis. Significant new data sources on the nutritional content of aquatic foods and their diversity which have recently been published in the peer reviewed literature emphasize the potential for aquatic foods to fill nutritional and food security gaps via local production, and highlight the need to continue gathering and analyzing new data as it emerges

In more detail, we recommend:

Expanding the focus of the report to better capture needs in the realm of aquatic resource monitoring and management. A key barrier to good food system planning and coherent management of wild caught fish is lack of good stock status data, which is driven by the difficulty of (a) assessing a fishery stock at any point in time, and (b) predicting it into the future, given the unknowns of climate change impacts that are without precedent.

A specific recommendation related to this gap is to expand access to data collected through the Nansen surveys (which are referenced in your report) through open access agreements. The report calls for more open access data streams, and we applaud this movement. We note that the Nansen survey data have been particularly difficult to access, even for countries who have participated in them directly. Addressing this challenge would be extremely valuable to efforts to more sustainably manage aquatic resources.

Broadening data collection efforts to capture the diversity and differential nutritional potential of different aquatic foods in order to enable informed decision-making. For example, we might prioritize a given depleted species for recovery based on its nutritional value relative to national nutritional goals, rather than on its economic value on the export market.

Disaggregating the data on aquatic foods based on fishery type, sector, scale, and gender. Small-scale and inland fisheries provide the majority of aquatic foods that are eaten directly/ locally, and the fish they catch tend to be lower-trophic level species which tend to be more nutrient dense (and are also often eaten whole, which drastically increases the nutrient intake). In addition, small-scale fishing communities, especially those throughout the equatorial tropics, tend to be among the most food and nutrition insecure, and the most vulnerable to climate change.

Similarly, disaggregating the data based on gender would be an important improvement. Women tend to make up a significant, and sometimes majority, percentage of the fishery workforce, and they also tend to make many of the food decisions for a given household, but they generally lack ownership or fishery management decision-making authority. Increasing the amount and quality of gender disaggregated production data is critical to improving gender equity across this sector as well as food systems more generally.

​​​​​​​Examining the problem that IUU fishing, which is often occurring at unknown and unregulated levels, presents to accurate and useful data collection, and which may be seriously distorting what we think we know about stock biomass and sustainable fishing levels.

To address these gaps, we recommend adding the following emergent and innovative data streams to your report:

​​​​​​​FishNutrients component of Fishbase, which captures or estimates the specific nutritional content of a vast array of aquatic species caught around the world: <https://www.fishbase.in/Nutrients/NutrientSearch.php>

Illuminating Hidden Harvests, which seeks to quantify and standardize the immense contribution of small-scale fisheries to global fishery yields and livelihoods: <https://sites.nicholas.duke.edu/xavierbasurto/our-work/projects/hidden-harvest-2/> (forthcoming)

The Global Fishing Watch platform, being designed to enable the use of multiple open-source technologies and data sources to evaluate and manage fisheries: <https://globalfishingwatch.org/news-views/mapping-a-new-world/>

As countries operationalize their programs to comply with the Port State Measures Agreement, they are also developing systems for documentation and tracking of seafood which will create new and better sources of data that can contribute to the knowledge base for the HLPE. Since PSMA systems are in early stages of development now, those planning to use data for decisions could seize the moment while data being collected for oversight and compliance assurance are being designed to see that the systems are designed to be useful for both insofar as possible.

As well as the following references:

​​​​​​​Bennett, A., Basurto, X., Virdin, J., Lin, X., Betances, S. J., Smith, M. D., Allison, E. H., Best, B. A., Brownell, K. D., Campbell, L. M., Golden, C. D., Havice, E., Hicks, C. C., Jacques, P. J., Kleisner, K., Lindquist, N., Lobo, R., Murray, G. D., Nowlin, M., … Zoubek, S. (2021). Recognize fish as food in policy discourse and development funding. Ambio. <https://doi.org/10.1007/s13280-020-01451-4>

Fluet-Chouinard, E., Funge-Smith, S., & McIntyre, P. B. (2018). Global hidden harvest of freshwater fish revealed by household surveys. Proceedings of the National Academy of Sciences, 115(29), 7623–7628. <https://doi.org/10.1073/pnas.1721097115>

Gephart, J. A., Henriksson, P. J. G., Parker, R. W. R., Shepon, A., Gorospe, K. D., Bergman, K., Eshel, G., Golden, C. D., Halpern, B. S., Hornborg, S., Jonell, M., Metian, M., Mifflin, K., Newton, R., Tyedmers, P., Zhang, W., Ziegler, F., & Troell, M. (2021). Environmental performance of blue foods. Nature, 597(7876), 360–365. <https://doi.org/10.1038/s41586-021-03889-2>

Golden, C. D., Koehn, J. Z., Shepon, A., Passarelli, S., Free, C. M., Viana, D. F., Matthey, H., Eurich, J. G., Gephart, J. A., Fluet-Chouinard, E., Nyboer, E. A., Lynch, A. J., Kjellevold, M., Bromage, S., Charlebois, P., Barange, M., Vannuccini, S., Cao, L., Kleisner, K. M., … Thilsted, S. H. (2021). Aquatic foods to nourish nations. Nature, 598(7880), 315–320. <https://doi.org/10.1038/s41586-021-03917-1>

Harper, S., Adshade, M., Lam, V. W. Y., Pauly, D., & Sumaila, U. R. (2020). Valuing invisible catches: Estimating the global contribution by women to small-scale marine capture fisheries production. PloS One, 15(3), e0228912. <https://doi.org/10.1371/journal.pone.0228912>

Hicks, C. C., Cohen, P. J., Graham, N. A. J., Nash, K. L., Allison, E. H., D’Lima, C., Mills, D. J., Roscher, M., Thilsted, S. H., Thorne-Lyman, A. L., & MacNeil, M. A. (2019). Harnessing global fisheries to tackle micronutrient deficiencies. Nature, 574(7776), 95–98. <https://doi.org/10.1038/s41586-019-1592-6>

Maire, E., Graham, N. A. J., MacNeil, M. A., Lam, V. W. Y., Robinson, J. P. W., Cheung, W. W. L., & Hicks, C. C. (2021). Micronutrient supply from global marine fisheries under climate change and overfishing. Current Biology, 31(18), 4132-4138.e3. <https://doi.org/10.1016/j.cub.2021.06.067>

Vianna, G. M. S., Zeller, D., & Pauly, D. (2020). Fisheries and Policy Implications for Human Nutrition. Current Environmental Health Reports. <https://doi.org/10.1007/s40572-020-00286-1>

**3. The report and framework are missing the “group” and “farm/ fishery” scales/ levels of analysis.** In both the introductory framework and the subsequent report there are discussions of data collection challenges and gaps at macro, systemic, global, national, community/household, and individual scales, but the specific challenges and data needs associated with the “group” and “farm/fishery” scales of analysis are overlooked. Many of the issues discussed in this report around barriers to data collection and use at the national and global level are even more pronounced at the “group” and “farm/fishery” levels.

And in addition:

**The “group” level** may be larger or smaller than “community,” as “group membership” can be defined by, for example, culture, race, gender, Indigenous status, income, or scale of production (for producers), among other factors. However, despite its imprecision, a focus on the “group” level is critical when approaching food system challenges, as group membership has relevance for both food system drivers (e.g., social norms and cultures around food that drive demand) and for how the current food system will be experienced across the 6 FSN dimensions (agency, stability, sustainability, access, availability and utilization). Explicit inclusion and examination of the food system at the scale of the “group” will help ensure inequities are identified and addressed.

**The “farm/ fishery” level** is especially critical to explicitly discuss in relation to data collection. We strongly suggest the incorporation of a section in this report dedicated to the need for measurement, metrics, and indicators of the climate forcing, biodiversity, and other environmental impacts of various methods of food production at the farm/fishery level. Such data are desperately needed, especially throughout the small-scale farms and fisheries of the world, to enable more accurate and appropriate valuation of different food resources, and to facilitate the creation of policies and management plans that incentivize more sustainable and regenerative practices. If we seek to make progress on the challenges of food system transformation in an equitable way, we must be able to account for farm-level differences in performance along a variety of metrics. Without this precision, policies and market incentives will favor larger-scale, industrialized operations that can afford to adopt expensive new technologies, and smaller-scale farmers and fishers will be left behind.

## Claudia Tonnini, Permanent Representation of the Federal Republic of Germany to the UN Organizations in Rome, Germany

**CFS Policy Recommendations on Data collection and analysis tools for food security and nutrition**

*Here*: GER position on the e-consultation on the V0 draft of the corresponding HLPE Report

**General remarks**

We thank the CFS and HLPE for submitting the V0 draft of the report “Data collection and analysis tools for food security and nutrition” and for the possibility to provide input. We welcome that the CFS addresses the issue of data and data processing, especially in the context of food security and nutrition. We emphasise that data collection needs to be considered in a way that it can be used for policy making from the outset. In this context, the Complex Risk Analytics Fund (CRAF'd) is an important multilateral instrument that aims to support a stronger data ecosystem and build shared capacity to use data to better anticipate, prevent and respond to complex risks in fragile and crisis-affected areas.

With regard to the distributed V0 draft of the HLPE Report we would like to suggest that it could be more goal-oriented in terms of how improved data collection and analysis can contribute to the overall goal of improved food security and nutrition, considering the following aspects related to the current structure of the report:

* Identify priority data gaps and analyse existing initiatives in terms of their distinct added value.
* Focus on how capacities at the national and international level could be strategically improved – particularly, more work regarding the international level is needed.
* Particularly consider initiatives, technologies and other solutions that could make a significant impact for food security and nutrition globally.
* Focus not on what an ideal governance would look like but particularly on how key aspects of data governance could be strengthened strategically.

**Remarks with regard to the individual chapters of the report:**

*Chapter One*

* The conceptual framework is well-developed in order to capture the relevant gaps and overlaps of information at different levels.
* However, additional dimensions could be added to this analysis regarding the quality of existing information.

*Chapter Two*

* Regarding the list of existing initiatives, specification in terms of the selection of criteria is necessary. Rather than being complete, the list could include the most relevant initiatives.
* Besides, criteria could be developed to determine the distinct added value of existing initiatives. This could be based on question such as: Who elevates primary data and what is the geographical scope? Who has capacities to analyse data? Ultimately, this analysis could contribute to the identification of priority gaps in data collection and analysis.
* Moreover, it would be helpful if the report came back to visualize at which level there are crucial gaps or overlaps of information.
* In addition, it should discuss missing pieces for strategic decision-making, not only at the national, but also at the global level (e.g. regarding what we really know about hunger and all other forms of malnutrition and which kind of information is needed).
* Finally, the establishment and the objectives of the FAO’s International Platform for Digital Food and Agriculture should be considered.

*Chapter Three*

* This chapter provides a thorough and sound analysis of many pressing challenges for data collection and analysis. While it is true that national level capacity is probably the principal challenge for improving global data on food security and nutrition, at the same time, the international level constraints in terms of, for example, lack of coherent indicators and comparable data deserve more attention.
* Chapter 3.3 could further discuss issues around ownership of national statistical system as well as challenges and opportunities for integrating data from different sectors. In this regard it could also address incentives for governments to improve and make use of data for decision-making.

*Chapter Four*

* The relevance and potential of several of the mentioned technologies as well as future technological innovations is undisputed.
* In the framework of this report, however, it would make sense to focus, firstly, on generally conducive framework conditions for policy makers to make better use of technological opportunities that could serve advancement of public goods and, secondly, focus on those specific technologies that have a clear relevance in terms of adaptability, geographical coverage etc. as well as potential to make a significant difference for food security and nutrition globally.

*Chapter Five*

* This chapter is particularly important and should be further developed in terms of opportunities and priorities for political engagement to improve data governance. It should detail how international governance mechanisms can provide incentives and put the right mechanisms in place to improve and develop global data and information systems strategically.
* Chapter 5.6 could identify possible pathways on how data governance could be improved to make a difference in terms of food security and nutrition, rather than providing a list of ideal conditions needed to be in place for “good data governance”.

*Chapter Six*

* The proposed recommendations should not only be directed at single Member States but also at the global governance level in order to identify pathways to contribute to improving data collection and analysis collectively.

## Megha Desai, Self Employed Women's Association (SEWA), India

**Feedback of SEWA**

In the global south, the family farmers who are small and marginal farmers have larger contribution but do not have access to technology or infrastructure and therefore can’t afford access to the technologies. As a result, informal sector relevant data collection, dissemination and usage framework needs to be developed.

Feedback and suggestions by SEWA from the perspective of informal sector women worker’s contribution in the food supply chain.

* + 1. The table of conceptual framework on page 16 needs to cover member-based organisations and farmers organisations under the translate and disseminate field and use findings to make decision field.
    2. The example of a conceptual framework table for vegetable / grain / pulses may need to be included to better understand the system. This shall also cover all sources of food supply and not only specific government schemes where the data gathering sources are specific.
    3. Informal sector workers and their organisations need to be included both in urban and rural areas to bring out their contribution in the food supply chain and their consumption patterns as consumers in the entire framework including data dissemination and decision making.
    4. Gender disaggregated data needs to be collected at each stage of the supply chain. The data transmission should also reach to informal sector workers in their understandable language which can help them make information-based decisions.
    5. The new technologies producing and processing data relevant to FSN needs to be informal sector and women user friendly. This means it needs to be accessible to small and marginal farmers. The small and marginal farmers shall afford it and be able to actively use it in their small fields and informal sector in entire food supply chain.
    6. To access new technology, infrastructure needs be created in rural areas of developing countries which can map the smallest individual villages for weather information, pest information, irrigation status and crop loss data gathering for insurance which are part of the food supply chain. The infrastructure will cover the electricity, sensing stations, mapping availability of affordable accessible local population friendly tools and equipment and capacity building institutes.
    7. To make these tools inclusive, infrastructure investments need be allocated specifically in rural areas.
    8. To ensure that the framework and tools are used by the supply chain actors of the informal sector to gather data, the ownership and knowledge of usage is important and thus local rural and urban women and youth from informal sector need to be included in the process of creation of such facility and need to be given tasks through their member-based organisation to create such database and infrastructure e.g. in mapping of villages, installing infrastructure, data hubs, using of new technology.
    9. Skill building programmes need to be designed for informal sector workers in the food supply chain who can use such technology and gather authentic and relevant data and information and can benefit from data driven infrastructure investment.
    10. The system shall bring out the contribution of women in the food supply chain, remove the digital and gender divide which can help to make policies for bringing equal status, accessibility and ownership to women workers of food supply chain.
    11. The new framework shall fill in the digital gap and divide to ensure the accessibility affordability and ownership to get authentic and relevant data. Women have a larger contribution in the informal sector and thus women friendly (affordable, access and infrastructure) needs to be considered in the framework.

## Elaine Borghi, World Health Organization, Switzerland

Dear High-Level Panel of Experts on Food Security and Nutrition,

Congratulations for the initiative for developing a comprehensive and cross-cutting data process framework. I am providing comments on behalf of the WHO Department of Nutrition and Food Safety (NFS).

The final product, I believe, can provide significant contribution to the food security and nutrition. NFS is interested to contribute in more details, in special within the context of WHO's data governance framework, so that it can be an alignment. The WHO framework is been developed in partnership with some of the key stakeholders for global health estimates, such as Health Data Collaborative. I attach two slides that describe the steps involved in that case.

Before specific comments, I would like to highlight the fact that food safety only appears very late in the document, while perhaps it should be one of the cross-cutting areas, put more in evidence. It is an area that is of increasing interest in terms of data collection, and it would profit of being a more significant part of this kind of document.

My initial comments are attached for your consideration. Overall, I had difficulties to understand Chapter 1 main objective – for the proposed framework. Would that be to define pathways to build evidence for decision making through setting research priorities? Or the actual steps in terms of data process harmonization? Or both?

Chapter 2 on the potential sources for data and current initiatives is very useful, however I thought the text per se are too much focused on limitations rather than opportunities.

Chapter 3 is my favorite, as it describes at lengthy all our every-day challenges in collating and analysing data, and common issues with data processing all areas face. Section 3.1.1 contains useful information but heavy to read, with long paragraphs. Perhaps is possible to break a bit or provide less details… In Section 3.3, I believe one needs to be careful not to put all "sophisticated" analysis in one basket with a rotten potato. Robust analyses can be critical to address key gaps and several can be made interpretable if communicated in the right way. When assumptions used can be explained in a transparent manner and are aligned with evidence, sophisticated analysis hold well and help the building of good and so well-needed evidence.

In turn, in Chapter 4, innovation is encouraged and this is good, I believe. Perhaps bringing more the idea that standardized methods to carry out these new forms of data collection are needed, as well as how to make use of them without jeopardizing quality of evidence gathered.

Thank you very much for the opportunity for all of us to contribute to this report. I look forward to further collaboration and the next version.

Kind regards,

Elaine Borghi, PhD

Unit Head, Monitoring Nutrition Status and Food Safety Events Unit

Department of Nutrition and Food Safety, World Health Organization

Geneva, Switzerland

Attachments:

<https://assets.fsnforum.fao.org/public/discussions/contributions/Data%20journey%20and%20framework_Sept21.pdf>

<https://assets.fsnforum.fao.org/public/discussions/contributions/V0_Draft_HLPE_17_data_collection_analysis_WHO_EB_0.pdf>

## Mohammed Masud Parvage, Stockholm Environment Institute, Sweden

Dear HLPE on FSN,

Thanks for sharing the draft of this very timely initiative. It is truly appreciable. Please find my feedback in the attached file and hope that you would consider the points highlighted.

Best wishes,

Masud Parvage

Thanks to the HLPE Joint Steering Committee / Secretariat drafting team for sharing this draft for comments and feedback. The V0 draft is indeed an excellent start, very informative and covers most of the key issues relevant to FSN. Also, it was nice to read the recommendations from other experts in the feedback portal. Anyway, I would like to raise (please see below) few issues which could improve the draft’s content.

1. Section 2 Box 2 nicely illustrates the difficulties of data accusation, interpretation, or decision process. However, it lacks strategies to overcome the limitations. Data about the major causes of the conflicts, parties/countries involved, and each party’s contribution to the problem should also be documented unbiasedly and equivocally so that logical and sensational pathways of peace can be found (e.g., more cooperation between local/regional parties than UNSC or non-regional parties). Overlooking such datatype would prolong or even lead to failure the goals of FSN in those contexts which has been observed throughout the history, and it’s time to learn from the past.

2. Section 5: Data collection through new and emerging technologies should not draw too much focus as its affordability and operability would mostly be limited to the rich countries. Also, the computational models/algorithms used in the technologies are often simplified which may not capture all the social, economic, cultural, and natural complexities of a country. Furthermore, there is a need of a critical, unbiased and evidence based (through complete life cycle analysis (LCA) in terms of social, environmental, and economic consequences) analysis of those technologies as compared to the manual data collection process. Finally, on spot data collection from the most vulnerable groups revel much valuable practical aspects of food insecurity and malnutrition which could be overlooked in digital platforms.

Omissions:

3. This report simply lacks emphasizing data collection from the key component of the food system**, the soil**. A healthy diet comes from a healthy soil and the role of soil is often discussed, for example, in the ongoing meeting of The Global Forum for Food and Agriculture (GFFA) in Germany. However, the necessity of global soil data is overlooked or underrepresented in previous FSN-related documents, for example. Hence, one chapter should be dedicated to discussing the necessity of soil data, types of data to be included and how to obtain and harmonize that to the assessment of FSN. A general outline could be soil fertility data coupled with meteorological information from different agroecological zones, preferably within a country, if not, from the major regions. Like the previous comment (by Dario Lucantoni), to capture the greater diversity of nutritional data in a country, data should be collected primarily from different agroecological zones followed by different social and ethnic class as well as rural, peri-urban, and urban settings.

4. Also, youth engagement data (measured through disaggregated approach, e.g., <https://www.youthpower.org/sites/default/files/YouthLead/files/resources/Measuring%20Youth%20Engagement.pdf>) could be crucial and deserves major attention for the sustainability of FSN.

5. Furthermore, there is a great need of a common and accessible nutritional data of all edible foods (including food of the tribal and indigenous people, and from both plant and animal sources) at its natural/wild growth conditions, semi-intensive and intensive farming systems. This would help developing a simplified assessment tool.

6. To harmonize data integration and interpretation, it is crucial to develop a standardized format of data collection, (e.g., data type, sample category and numbers (e.g., per unit of measurements) and it should be integrated as a prerequisite of receiving fund related to data acquisition.

## Ioannis Fermantzis, European Commission, Belgium

First of all, allow me to express my appreciation to the HLPE Steering Committee and the project team for producing this first draft report on data collection and analysis tools.

The comments and observations submitted here are on behalf of the European Commission Services. Several collogues who have reviewed the draft have contributed their input during an internal consultation process, the results of which can be found in the attached document.

**HLPE Consultation V0 draft Report on Data collection and analysis tools for FSN**

1. The V0-draft introduces a conceptual framework that orders the components of the food security and nutrition ecosystem based on their proximity to people’s immediate decision-making sphere, from the macro to the individual levels, and describes a four-stage data-driven decision-making cycle for food security and nutrition (FSN), from priority setting to data utilization. Use of the two is illustrated through a matrix template that facilitates the concurrent operationalization of the conceptual framework and data driven decision-making cycle to address issues relevant for FSN.

*a. Do you find the proposed framework an effective conceptual device to highlight and discuss the key issues affecting data collection and analysis for FSN?*

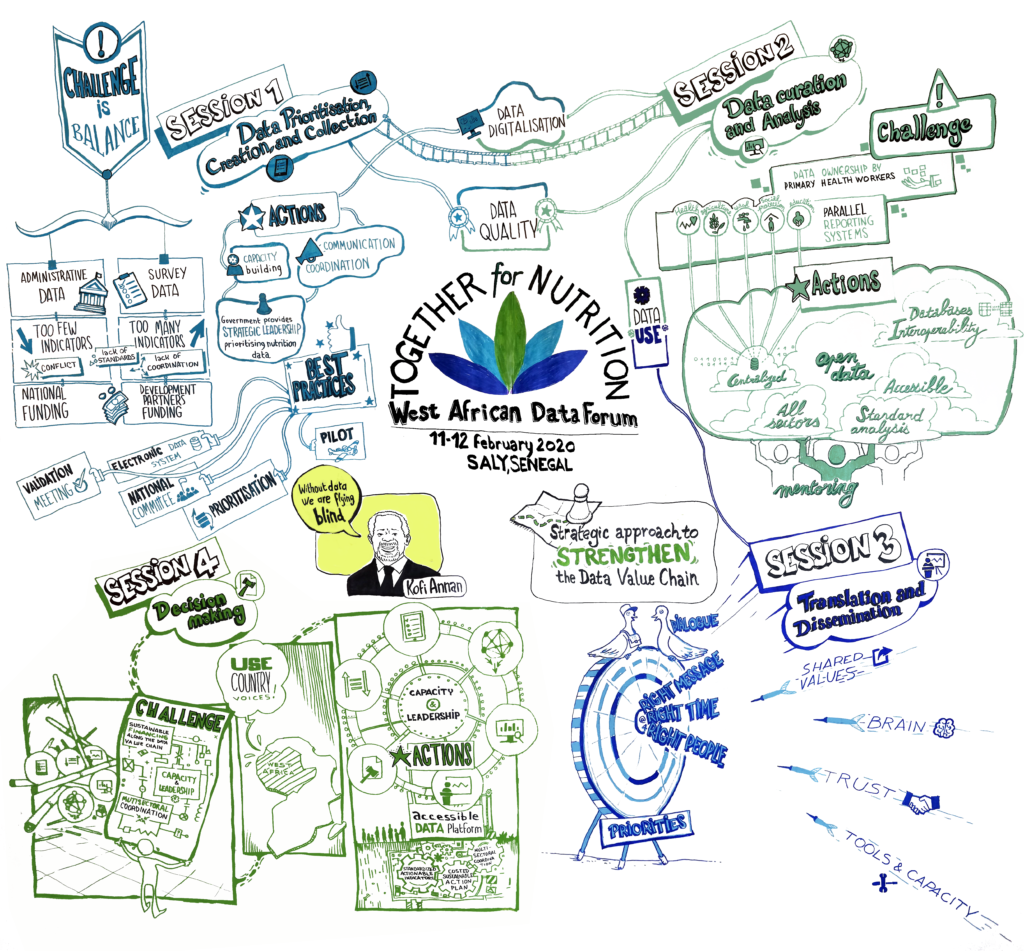
Potentially yes, but a more in-depth analysis on how these three frameworks were brought together would be useful. Furthermore, references to the nutrition and food security frameworks would be helpful, as well as a matrix showing overlap between constructs for each of the retained level in the final framework as well. A proper framework synthesis would be useful (even as an annex/reference). It would strengthen the validity of yet “another framework” being presented. Placement of the crosscutting dimensions of FSN is also not very well elaborated.

*b. Do you think that this conceptual framework can indeed contribute to providing practical guidance for data collection for FSN?*

The conceptual framework is towards the right direction, but it would require more work to clarify the different crosscutting dimensions. Which indicators are used to measure e.g. availability and accessibility, and which level (individual to household to community, regional, and national level) they reflect, as well as which components (quantity, quality, safety,…). The purpose and the level of data collection are key to make statements for food security. If the purpose is to provide practical guidance, an overview that maps each indicator for the different dimensions with different purposes (e.g. screening, early warning, diagnosis, M&E) would be very useful, and help to feed an information system that can bring various data together. Moreover, as you bring together different information systems that would clearly delineate which data is needed, from which sector, at which frequency, to allow for timely decisions across the different fields.

*c. Do you think that this four-stage data driven decision making cycle for FSN addresses the key steps in the data collection and analysis process for FSN? Where do you see the more relevant bottlenecks in the data driven decision making cycle for FSN?*

Extended version should be used (see here for image: <https://globalnutritionreport.org/blog/has-revolution-arrived-why-2020-crucial-year-nutrition-data/>). For a practical country exercise that used this data value chain (applied to nutrition in the broad sense), it would be good to refer to the West African Data Forum: <https://westafrica.transformnutrition.org/event/together-for-nutrition-west-african-data-forum/>. Several outputs detail the challenges, opportunities, and exemplars across the region for each of these steps that are visualized below. The biggest bottleneck was reaching an agreement on definitions and standardization of indicators (within and across sectors).



*d. Can you offer suggestions for examples that would be useful to illustrate in a matrix template that facilitates the operationalization of the conceptual framework and data driving decision-making cycle to address issues relevant for FSN?*

Figure 2 in Leroy et al. 2015 (<https://journals.sagepub.com/doi/pdf/10.1177/0379572115587274>). By levels and the different dimensions, which indicators are available (for which purpose) and what type of data is required for each.

2. The report adopts the broader definition of food security, proposed by HLPE in 2020, which includes the two dimensions of agency and sustainability, alongside the traditional four of availability, access, utilization and stability.

*a. Does the V0-draft cover sufficiently the implications of broadening the definition of food security for data collection, analysis and use?*

As these two dimensions are still new, it is recommended to re-iterate the definition table in a box as introduced in HLPE 2020. It would help set the scene.

*b. What type of data will be most useful in measuring food security dimensions such as “agency” and “sustainability”?*

Clapp et al. 2022 provide a first suggestion on how these could look like. <https://www.sciencedirect.com/science/article/pii/S0306919221001445>

Existing indicators should be used as much as possible, such as the WEIA-index.

3. The V0-draft reviews existing FSN data collection and analysis tools, initiatives and trends.

*a. Do you think that the review adequately covers the existing ones? If not, what would you add?*

It is not clear how these initiatives were identified. Examples to add at global/regional/country level are: Countdown 2030, NIPN, POSHAN (India), TNWA (West Africa, although project is over still has useful overview of data availability), Nutrition/Health observatory from WAHO and WHO.

*b. Do you think that the trends identified are indeed the key ones in affecting data generation, analysis and use for FSN? If not, which other trends should be taken into account?*

For input from stakeholders in the WA region see the Call to Action that resulted from the Data Forum: <https://westafrica.transformnutrition.org/wp-content/uploads/2020/10/West-Africa-nutrition-data_Call-to-Action_English.pdf>

*c. In particular, can you offer feedback on how digital technology, internet of things, artificial intelligence, big data, and agriculture 4.0 affect FSN? What is their likely impact in the coming decades?*

4. The report discusses capacity constraints at local, national and global levels, with a special focus on statistical and analytical capacity.

*a. Do you think that the V0-draft covers all the issues – and their consequences - of capacity constraints at the different levels?*

Not always clear how these constraints have been identified. Perhaps through a literature review, through consultations with country implementers, etc? More details on the nutrition end for each step of the data value chain can be found in the full meeting report of the Data Forum here: <https://westafrica.transformnutrition.org/news/investing-in-the-data-value-chain-for-nutrition-in-west-africa-a-call-to-action/>

*b. If your answer a. was “no”, then what additional issues regarding capacity constraints should be added to the analysis?*

6. The report reviews issues concerning institutions and governance for data collection, analysis and use, with a focus on data governance principles, data protection, transparency and governance of official statistics, the implications for governance of an increasingly digitalized world, and examples of initiatives addressing governance challenges.

*a. Are there any issues concerning governance of data for FSN that have not been sufficiently covered in the draft report?*

Optimizing the use of existing data

*b. What are some of the risks inherent in data-driven technologies for FSN? How can these risks be mitigated? What are some of the issues related to data privacy, access and control that should be carefully considered?*

Disconnecting decision-making between national and regional/global level

*c. What are the minimum requirements of an efficient FSN data system and how should these be prioritized?*

*d. Which mechanism or organization should ensure good governance of data and information systems for FSN? How to regulate and mitigate potential conflicts between public and private ownership of data?*

*e. What are the financing needs and the financial mechanisms and tools that should be established to allow all countries to collect, analyse and use FSN data?*

8. Please provide your feedback on the following:

*a. Are there any major omissions or gaps in the V0-draft?*

The question of the disaggregation of information in terms of geographical settings but also of decision making with regard to the FSN is not sufficiently developed in the document. Food security and/or nutrition problems are not the same everywhere in a country, or even within a sub-national region. These disparities are rarely captured during collection of survey data mainly for cost-related issues; and administrative data have the limitations we know. This problem could be identified/addressed in what is listed as figure 3 in the document, by adding a geographical dimension in column 1, to clearly express the need to analyze FSM issues at the smallest possible geographical level.

*b. Are topics under- or over-represented in relation to their importance?*

We would like to see the EU-funded National Information Platforms for Nutrition (NIPN) project being mentioned in the list of existing initiatives on data for FSN (Table 1).

*c. Are there any redundant facts or statements that could be eliminated from the V0-draft?*

*d. Are any facts or conclusions refuted, questionable or assertions with no evidence-base?*

General comments and proposals

**Specific comments for Section 4**

Section *4.1.1 Producing and collecting data* may be restructured to better highlight the difference between Earth Observation (EO), ground based sensors, and crowd/personal sensing.

EO data are already used in food security analysis as they secure a reliable flow of timely and synoptic observations of indicators of food production (and their anomalies) such as land cover/use, precipitation, crop development and health. On the contrary, although ground-based sensors can provide a wealth of data for specific locations, they do not provide a wall-to-wall cover (including difficult to access areas) and they are typically scarcely deployed in food insecure areas.

Section 4.1.1 may thus have the following distinct subsections: Earth Observation data, Ground sensors, Crowd-sourcing, sensing and personal sensing.

Section 4.1.2 *Transforming data into information* is a mix of: approaches for information production (Artificial Intelligence, analytics & information visualization), data sources and structures (Online social media, Semantic Web), information technology (Blockchain technology), communication approaches (Virtual Reality and Augmented Reality), analysis/representation systems (Digital twins). Subsections about sources and structures (Online social media, Semantic Web), information technology (Blockchain technology) and analysis/representation systems (Digital twins) may better fit in the previous Section *4.1.1 Producing and collecting data*.

Section *4.2. New data-driven technologies and the FSN data value chain* reiterates that data-driven technologies (those mentioned in 4.1.2) can support the collection, production, curation, analysis and dissemination of data. It is thus not clear what is the difference with section *4.1. New technologies producing and processing data relevant to FSN*. This section may be omitted and table 2 transferred to the end of section 4.1.

Table 2 is poorly structured. Part A), Not clear how ML and AI can propose priorities and questions. The paper of Di Vaio et al. does not seem to address this. Part B) Unclear what “Visual perception technologies” are in this context (computer vision?). No examples of initiative given for IoT and digital twins (and digital twins are found again below). Entries “Big data” and “ML etc” are poorly described, e.g. on ML it is only mentioned their application for outlier detection in its first appearance in the table. Later more on analyzing and predicting (by referencing the Ameriflux website, which is not helpful for the reader). Part C), the entry “Big data and cloud computing” is vague and does not seem appropriate under translate and disseminate without further explanation than “Making data available and accessible.” Part D), if DT and AI are used to generate data this point should go under B) or C).

It is suggested to add an intro so as to make clear what is the purpose of Section *4.3. How the various dimensions of FSN can be supported by new data-driven technologies support,* i.e. to summarize the information given in the previous sections and classify technologies according to their possible employment under each of the FS dimension. In the list, it is suggested that the relevant technology is linked to the action mentioned (e.g. To map and monitor agricultural fields and other natural food resources {EO}. Some sentences are so vague that it is difficult to have a real understanding (e.g. Determine, monitor, or predict elements that may negatively or positively affect the environment and climate; Report activities and events that may negatively or positively affect the environment and climate)

It is suggested to explain to which technologies are the associated risks reported as sub sessions of Section 4*.*4 *Risks inherent in the use of data-driven technologies for FSN*. For example, ethical risks mentioned the first subsection (4.4.1 ) only apply to selected technologies, not all; section 4.4.2 only applies to AI and ML, quality of data (4.4.3) is an issue that is not limited to new technologies and the section does not add on this (little specificity to new digital technology, it could be more focused on the subject).

Section 4.5.3 does not contain relevant information; content must be developed (and current text removed).

Section 4.5.4 is a very relevant one but text should be developed focusing on the subject of the session, new technologies. Examples exist in FAO also, for example e-learning (e.g. <https://elearning.fao.org/course/view.php?id=155>)

Table1 (sources): ASAP should be there: “JRC ASAP Early Warning System (<https://mars.jrc.ec.europa.eu/asap>)”.  Other sources to be considered for Table 1: (i) IPC and its [IPC mapping tool](https://www.ipcinfo.org/ipc-country-analysis/ipc-mapping-tool/), [IPC population tracking tools](https://www.ipcinfo.org/ipc-country-analysis/population-tracking-tool/en/), (ii) The World Bank and its [LSMS](https://www.worldbank.org/en/programs/lsms) and [LSMS-ISA](https://www.worldbank.org/en/programs/lsms/initiatives/lsms-ISA) data repositories, (iii) Global Food Security Index, <https://impact.economist.com/sustainability/project/food-security-index/>

Table 2, Part B), page 26, add reference to ASAP (as there is WFP DataWIZ): “JRC ASAP Early Warning System (<https://mars.jrc.ec.europa.eu/asap>)”.

Same for Table 3 (various possible entries)

**Specific comments for Section 5**

The scope of sections 5.3 (open science/ open data) and 5.4 (new data technologies) needs to be sharpened and the delineation has to be clear – currently it is not clear which questions will be addressed under which of the two sub-sections; many of the points raised under section 5.4 may better fit in Section 5.3

In Section 5.3, it might be pointed out that confidentiality in data handling is in the context of FSN also relevant for business data, e.g. production data (not only personal data, such as health data)

In Section 5.4, the opportunities and challenges of AI might be mentioned.

Two projects that might be relevant for further elaboration of the report:

[FLINT](https://www.flint-fp7.eu/): some interesting insights on the barriers

[SUSFANS Visualizer](https://www.susfans.eu/susfans-visualizer): some interesting insights on the gaps in data

**Governance**

FNS is a complex concept with many dimensions. To get a meaningful picture requires a new type of governance system transcending the boundaries between policy domains (eg from agriculture to food system) and between data providers (both public and private). All this comes with challenges.

A few challenges identified within the framework of FNS are:

- Data gaps: for various dimensions of FNS data are simply not yet collected (e.g. access to micronutrients or logistics), not publicly available (eg real time consumer price data) or the right quality cannot be guaranteed (especially when collected privately/voluntarily)

- Lack of interoperability of data sources: this is still a problem even within a specific Organization, let alone when speaking about cross-country/global problems and comparisons. More interoperability would allow to assess the problem more efficiently and more holistically.

- Time lags: (official) data only become available with a delay, while the analysis of complex problems is also time consuming. Often this time is not available, and decisions have to be made based on a “partial picture”. Relying on non-official data for decision making comes with a legitimacy challenge.

- Need for solid baselines.

- Data skills and illiteracy: this is both a problem in administrations and in the farming community. The issue of digital divide is important and could result into increasing inequality if we don’t invest into building skills. This will only get exacerbated with the new data/technologies which become available (remote sensing, AI, machine learning, …) and still need to be mainstreamed in both public administrations and private business decision making processes.

- Ownership and access to data have to be set against privacy issues

The EU collects data on agricultural markets operation across a range of products, based on Art. 223 of the Common Market Organisation [regulation](https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32013R1308&from=FR), and defined in Regulation (EU) [2015/1183](https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32017R1183&from=FR) and Regulation (EU) [2015/1185](https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32017R1185&from=fr). Much of this data is now available through the Commission’s [Agri-Food Data Portal](https://agridata.ec.europa.eu/extensions/DataPortal/agricultural_markets.html), which is the main venue for publication and visualisation of data. This data is key to monitoring market developments, this was illustrated in the early stages of COVID, where it was possible to follow production and some processing market developments with a relatively short time lag. From 1 January 2021 the data covers more buying and selling prices at the processing stage and some buying prices at the retail stage (retail-consumer data not part of the remit, covered by Eurostat instead).

The European Commission adopted in November 2021 the EU [Contingency Plan](https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/market-measures/agri-food-supply-chain/contingency-plan_en) for Food supply and Food Security in time of crisis, a commitment made in the Farm-to-Fork strategy. This is one of the strategy’s actions that contributes to food system resilience. The Contingency Plan sets out a series of [actions](https://ec.europa.eu/info/sites/default/files/food-farming-fisheries/key_policies/documents/com2021-689-annex_en.pdf), among which to ‘develop specific dashboards for the monitoring of food supply and food security’ by Q4/2022.

Some further reflections:

* ***barriers impeding quality data collection, analysis, and use in decision-making;***

Availability – e.g. input data, data on logistics, data on operations within the food supply chain – often some of these data do not exist for decision makers

Timeliness – a lag of a couple of weeks can mean that much of the info loses relevance in a fast-changing situation – need to explore data collection automation / real-time data, big data and AI, including an understanding of early indicators.

Quality – (meaning reliability) – in some cases the way data are collected mean low confidence it reflects actual market developments; data quality should be robust to disruptive events (to not lose access to data precisely when the data is most needed).

Expertise, open communication, trust – need to have systems in place to communicate with stakeholders and across public authorities effectively – for example, to understand what is driving the data when decision makers are not ‘close to the ground’, need to talk to businesses, producers, etc. These relationships need to be built before the crisis occurs, and to be based on mutual trust.

Systems approach - quick decision making = good ex ante processes, cross sectoral (food system approach, in a broad sense incl. e.g. logistics, workers)

* ***high priority gaps in data production and analysis not covered by ongoing initiatives;***

Inputs, downstream operator data (processor, retailer). Improved automation, timeliness.

* ***benefits of using data and the opportunity costs of not using data for decisions;***

Need to use early indicators (input markets, futures markets) – try to assess if problem may be short-lived. Public intervention where the market would naturally self-correct can introduce further problems.

From a food security perspective, the problem is often logistics rather than food availability (at a macro scale). This should inform food security policy, including data collection approach.

* ***insights into how to ensure data collection and its utilization give voice to the people most affected by policies stemming from that data, including farmers and other food producers.***

This is also something that needs to be built over time. Farmers and others need to be organised, to have regular contact with administrations within robust and transparent institutional frameworks, during ‘normal’ times so discussions can get going quickly in abnormal times. There needs also to be expertise on the administration side to know what is and what is not a damaging policy (for example, attempts to implement export bans, despite evidence that these can be highly disruptive to food security).

## Abram Bicksler, FAO, Italy

Dear HLPE Steering Committee and Project Team,

Thank you very much for this timely draft report which is a welcome addition to the HLPE lineup of reports. Please find attached the comment matrix with comments and suggestions highlighted. I hope they are useful for the continued refinement of the document.

Kind regards,

Abram J. Bicksler

NSPED, FAO

1. The V0-draft introduces a conceptual framework that orders the components of the food security and nutrition ecosystem based on their proximity to people’s immediate decision making sphere, from the macro to the individual levels, and describes a four-stage data-driven decision making cycle for food security and nutrition (FSN), from priority setting to data utilization. Use of the two is illustrated through a matrix template that facilitates the concurrent operationalization of the conceptual framework and data driven decision-making cycle to address issues relevant for FSN.

a. Do you find the proposed framework an effective conceptual device to highlight and discuss the key issues affecting data collection and analysis for FSN?

b. Do you think that this conceptual framework can indeed contribute to providing practical guidance for data collection for FSN?

d. Do you think that this four-stage data driven decision making cycle for FSN addresses the key steps in the data collection and analysis process for FSN? Where do you see the more relevant bottlenecks in the data driven decision making cycle for FSN?

e. Can you offer suggestions for examples that would be useful to illustrate in a matrix template that facilitates the operationalization of the conceptual framework and data driving decision-making cycle to address issues relevant for FSN?

2. The report adopts the broader definition of food security, proposed by HLPE in 2020, which includes the two dimensions of agency and sustainability, alongside the traditional four of availability, access, utilization and stability.

a. Does the V0-draft cover sufficiently the implications of broadening the definition of food security for data collection, analysis and use? It could use to be broadened even more.

b. What type of data will be most useful in measuring food security dimensions such as “agency” and “sustainability”? Multi-dimensional data that incorporates complexity

3. The V0-draft reviews existing FSN data collection and analysis tools, initiatives and trends.

a. Do you think that the review adequately covers the existing ones? If not, what would you add? No- there is much more to add in terms of multi-dimensionality, systems tools, and tools that better take complexity into account since these are complex systems issues. See FAO’s TAPE tool. <https://www.fao.org/agroecology/tools-tape/en/> as an example of missing tool for complexity of food and agriculture systems that collects data at the farm and household scale but can be aggregated to higher level scales

b. Do you think that the trends identified are indeed the key ones in affecting data generation, analysis and use for FSN? If not, which other trends should be taken into account? Lack of governmental support and willpower. Data collection is voluntary- it is up to countries to provide it and ensure it is accurate and precise. For good data collection, it needs to be normalized and binding or it is hard for countries to spend time and money collecting good data.

c. In particular, can you offer feedback on how digital technology, internet of things, artificial intelligence, big data, and agriculture 4.0 affect FSN? What is their likely impact in the coming decades?

4. The report discusses capacity constraints at local, national and global levels, with a special focus on statistical and analytical capacity.

a. Do you think that the V0-draft covers all the issues – and their consequences - of capacity constraints at the different levels?

b. If your answer a. was “no”, then what additional issues regarding capacity constraints should be added to the analysis?

5. The V0-draft discusses the role of new and emerging technologies in data collection and analysis tools for FSN.

a. Do you think that the presentation of new and emerging technologies captures the main trends? What other new and emerging technologies could be discussed in the report?

b. In what other ways can new and emerging technologies be relevant to each of the stages/aspects of the FSN data value chain/data lifecycle (i.e., Define evidence priorities and questions; Review, consolidate, collect, curate and analyze data; Translate and disseminate results and conclusions; Engage and use results and conclusions to make decisions)?

c. In what other ways can new and emerging technologies be relevant to each of the FSN dimensions (i.e., Availability; Access; Utilization; Stability; Agency; Sustainability)? Participation and participatory data collection was entirely missing. As was any discussion about FPIC considerations and how to involve multiple evidence bases. IPBES does a good job with this. As an example, see <https://stats4sd.org/> as an example of an NGO doing this

d. What are some of the issues with respect to ethical use of data, access, agency and ownership linked to these new and emerging technologies that should be further discussed in the report? There has already been a lot of work on FPICs and Indigenous Peoples and their rights- these seem to be missing from the report

6. The report reviews issues concerning institutions and governance for data collection, analysis and use, with a focus on data governance principles, data protection, transparency and governance of official statistics, the implications for governance of an increasingly digitalized world, and examples of initiatives addressing governance challenges.

a. Are there any issues concerning governance of data for FSN that have not been sufficiently covered in the draft report?

b. What are some of the risks inherent in data-driven technologies for FSN? How can these risks be mitigated? What are some of the issues related to data privacy, access and control that should be carefully considered?

c. What are the minimum requirements of an efficient FSN data system and how should these be prioritized?

d. Which mechanism or organization should ensure good governance of data and information systems for FSN? How to regulate and mitigate potential conflicts between public and private ownership of data?

e. What are the financing needs and the financial mechanisms and tools that should be established to allow all countries to collect, analyse and use FSN data?

7. Drawing on HLPE reports and analysis in the wider literature, in the next draft the report will outline examples of potential policy pathways to address challenges to data collection and analysis tools for FSN.

a. What data do the global community and international organizations need in order to gain an appropriate insight into the current state of world food security and to agree on and design international action to improve it? I think we need disaggregated data that is multi-dimensional and we need help utilizing the data well- we often lack the expertise and ability to analyze it as such

b. What data do countries need for more effective decision-making for food security and nutrition and to inform policies for the transformation of food systems?

c. Please suggest references to cases that illustrate policies and initiatives aimed at:

* improving equity in access to data for FSN policies and decisions, including at grassroot and local levels; see IPBES about multiple evidence bases and the FAO Indigenous People’s team for FPIC considerations
* enhancing capacities with respect to data generation, access, analysis and use by different actors;
* specifically harnessing of traditional and indigenous/first nations knowledge. see IPBES about multiple evidence bases and the FAO Indigenous People’s team for FPIC considerations

d. Please provide references and examples of success: good data leading to good policies (context-specific), or any lessons to be learned from a failed data collection/utilization attempt See FAO’s Tool for Agroecology Performance Evaluation and upcoming Elementa article about data-driven decision making <https://www.fao.org/agroecology/tools-tape/en/>

e. Please also suggest any initiative and good practice aimed at addressing:

* the specific constraints of generating a minimum set of indicators in conflict and disaster- affected areas;
* capacity gaps of local institutions, farmers’, producers’ and workers’ organizations in generating, sharing and analysing good quality data, as well as in using data to inform decision-making in food systems; See <https://stats4sd.org> as an example of an NGO doing this and the McKnight Foundation’s CCRP program
* capacity gaps at country level to generate and use data in policy-making processes, monitoring and reporting related to SDG2; including with respect to financial resources, human resources, data management, legislation and the enabling environment and FSN governance.

f. Please also provide any additional references with respect to:

* minimum data requirements (baseline) for FSN at country level;
* qualitative data
* data representing traditional knowledge.

8. Please provide your feedback on the following:

a. Are there any major omissions or gaps in the V0-draft? Agroecology and systems complexity approaches are missing, as is participatory data collection. See FAO’s Tool for Agroecology Performance Evaluation and upcoming Elementa article about data-driven decision making <https://www.fao.org/agroecology/tools-tape/en/>

b. Are topics under- or over-represented in relation to their importance?

c. Are there any redundant facts or statements that could be eliminated from the V0-draft?

d. Are any facts or conclusions refuted, questionable or assertions with no evidence-base?

## Justine Mwanje, Uganda Forestry Association, Uganda

Dear Sir or Madam,

Thanks for this important discussion.

My contribution is as follows:

1a. No. Food security and Nutrition is profoundly diverse. A holistic framework is required, in order to capture all the components of the FSN system. That framework is the Sustainable Livelihoods Framework (SLF). The Sustainable Livelihoods Framework, if implemented well, would significantly transform global food systems.

1b. No. Because it is not holistic. Too much relevant data would not be collected.

1c. No. The four-stage-cycle does not mention critical issues, such as assessing information needs, team formation, planning, finding and using data, data collection techniques, etc. Further expounded in the FAO e-agriculture strategy guide.

1d. The Costa Rica Food and Nutrition Policy.

2a. No. Because it is not holistic.

2b. Data on production (and productivity), storage, marketing, business, finance, policy and legal factors.

3a. Yes.

3b. No. Trends such as climate change, pandemics, pestilences, empowerment, governance, and root causes of food and nutrition insecurity.

3c. Technology is empowering. Digital technologies would enable communities on the global continuum to effectively and efficiently participate in food security and nutrition, if properly applied. Inclusion and Innovation result in empowerment.

4a. No. Capacity constraints emerge from underlying or root causes. Also, there are connectivity and content hindrances. These include poor basic infrastructure, poor production and storage services, poor marketing and business services, poor financial services, and lack of or inappropriate policy and legal framework.

5a. Yes. Others: Unmanned Aerial Vehicles, Nanotechnology.

5b. Data is collected on: (i) Basic infrastructure. (ii) Production and storage services. (iii) Marketing and business services. (iv) Financial services. (v) Policy and legal framework. In each of these stages, the FSN data value chain is applied, in accordance with conventional data collection and analysis practice.

5c. See (b).

5d. Respect for human rights, good stewardship (including professionalism), gender equality, good governance, persons with special needs, non-discrimination, social protection.

6a. Yes, Transparency and accountability; responsive service delivery; authentic institutions; and the rule of law.

6b. Risks of data-driven technologies: (i) Subjective algorithms. (ii) Unpredictable behaviour of advanced technologies. (iii) 'Usurping' of human work. (iv) Lack of conscience. (iv) Data privacy (v) Data security.

6c. (i) Equitable benefit-sharing (ii) Governance. (iii) Climate change adaptation and/or mitigation. (iv) Empowerment of communities. (v) Value chain approach. Note: These factors are intricately woven.

6d. - The United Nations Food and Agriculture Organization (FAO). - Conflict Analysis and Management.

6e. Financing needs: Often context-specific and subject to assessment. But, in general terms, financing for basic infrastructure, production, marketing etc., as aforementioned.

Financial mechanisms and tools: Policies, markets and institutions which enhance FSN.

7a. Data on the following: (i) Demographics. (ii) Economics (iii) Technologies. (iv) Politics. (v) Institutions. (vi) Culture.

7b. Data on the following (country): In addition to the above (7a), data on infrastructure, production, storage, marketing, business, finance, and policy and legal frameworks.

References:

* Community Food Security Assessment Toolkit (United States Department of Agriculture)
* Community-based Adaptation to Climate Change (Participatory Learning and Action-60).
* Costa Rica and its commitment to sustainability. In: Challenges for food and nutrition security in the Americas.
* Data Management and Mapping tools and systems for food security; Food and Agriculture Organization, Project GCP/RAS/247/EC.
* Empowerment theory, research, and application; American Journal of Community Psychology, 1995.
* Factors affecting implementation of good government governance (GGG) and their implications towards performance accountability; International Journal of Business and Social Science, 2013.
* Food Security and Food Production Systems; . In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.
* Food security and Nutrition Data Collection Framework: Inter-agency Social Protection Assessment (ISPA)
* Innovation for Inclusive Growth; Organization for Economic Cooperation and Development, 2015.
* Quantitative methods for integrated Food and Nutrition Security measurements.
* Sustainable Livelihoods Guidance Sheets; Department for International Development, 1999.
* The Costa Rica Food Security and Nutrition Policy.
* The Food and Agriculture Organization E-Agriculture Strategy Guide.
* The Future of Food and Agriculture: Trends and Challenges (Food and Agriculture Organization)

## Don Syme, New Zealand Embassy Rome

**NEW ZEALAND COMMENTS ON V0 DRAFT OF HLPE REPORT ON DATA COLLECTION AND**

**ANALYSIS TOOLS FOR FOOD SECURITY AND NUTRITION**

*General New Zealand comments:*

Re: “food systems have failed us” - as for our comments in previous HLPE and CFS papers, and in the context of the UNFSS – the paper needs to have a balanced narrative around food systems to reflect the achievements of food systems as well as the gaps and problems. We prefer the OECD Narrative in its “Making Better Policies for Food Systems” report “the frequent claim that food systems are “broken” overlooks important achievements across all three dimensions, although important challenges exist and require urgent attention”.

We also note the premise in the introduction that that data and information might be part of the problem, in the sense that, despite the incredible amount of data and information available nowadays, these are not sufficiently timely, accurate or relevant, or are not properly analysed and used to guide the actions of all agents involved in the management and functioning of food systems’. Part of this needs to acknowledge that in many cases, uncertainty, inconsistency and/or misinterpretation of the data can result in the scale and nature of the problem being overstated or incorrectly stated. This relates to our concerns around the “food systems have failed us” narrative being too simplistic, and the lack of nuance around the example of meat consumption used in the report.

For the most up to date analysis of data issues and uncertainty concerned with comparison of food items through Life Cycle Assessment (LCA) methodologies we recommend that the authors refer to the recently published FAO report “Integration of environment and nutrition in life cycle assessment of food items: opportunities and challenges” ([Read the Publication Here](https://www.fao.org/documents/card/en/c/cb8054en)). Many relevant aspects of the report relating to uncertainty and data intersect with the issues in the HLPE paper. Refer in particular to Chapter 4 for data related issues with LCAs, in particular section 4.5.

We welcome that there is a reference to data on Traditional and indigenous knowledge in the report. The UNFSS process rightly acknowledged that data on traditional and indigenous worldviews are often not well translated in scientific terms and this pertains to data as well. Ongoing engagement with indigenous peoples and recognition of indigenous worldviews is needed in order to capture these perspectives in data and food systems, food security and nutrition indicators.

We consider that the report would benefit from more discussion of the range of actors within domestic

food systems that are collecting FSN data (i.e. across local government, central government, academia, private sector, indigenous groups etc.) including the incentives they have for doing so. Policy makers need a good understanding of these incentives if they are to encourage integrated data systems that are capable of providing useful insights into the performance of food systems.

The report could also provide further context around how food systems data is currently, and should be, aligned with national data strategies (the ‘macro level/distal determinant’ level from the conceptual framework). This could help with exploration later in the document of the policy approaches for ensuring institutional settings support FSN data systems. For instance, some governments have a centralised function (such as out of its statistical agency) that have a mandate for this national data system and advancing it (New Zealand has a Chief Data Steward position that is responsible for releasing the Government Data Strategy and Road Map).

**Conceptual Framework**

*Comments*

Generally, the methodology in the conceptual framework used makes sense (evidence, data, disseminate etc.) however based on Example 1 the application is too high a level to support national level policy-making in any detail. National level capacity constraints are well outlined in the wider document, however further thought needs to go into how to support policy makers to utilise the framework given the level of complexity, uncertainty, context specificity and data gaps they face in reality. Many of the points in the table are very complex in their own right, and there is the added complexity of interpretation of data, and analysis of trade-offs.

We have a number of questions and suggestions on the table:

* The document (and table) does not adequately capture the essential role of international trade to support food security and nutrition – with an apparent singular focus on local food systems/farmers markets etc. International trade can help improve the “matching” of supply and demand. Trade not only enables food to move from surplus to deficit regions, but also will be necessary to ensure the efficient and sustainable use of global food and agricultural resources. However, import tariffs for agricultural goods remain higher than for industrial goods, creating distortions which limit this “matching” function of international agricultural trade. The supporting role of international trade and impact of import tariffs and harmful subsidies on food security and nutrition is currently absent from the analysis, and should be part of any country data gathering and analysis relating to food security and nutrition using a systems approach.
* The links between nutrition and sustainable production and the assumptions around these need further clarification. The problem identified (too high or low meat consumption leading to poor health outcomes) and assumptions need further clarification (i.e. is “unsustainable” meat production assumed to reduce the nutritional content of the meat? Are environmental externalities (water, GHG emissions) linked to certain livestock systems assumed to be linked to particular health outcomes? (or simply to the consumption preferences of some consumers?).
* The current approach does not reflect the holistic approach to policy, which the rest of the report is promoting. I.e. Under a systems approach poor health outcomes would be identified in populations, then the full range of factors contributing to this would be identified (including interactions and feedback loops) – policy makers should then look at interventions holistically, considering all relevant factors. Meat consumption would be one of those factors in some populations, but there will be many other factors (dietary and otherwise) contributing to health outcomes. It does not reflect a ‘systems’ approach to policy making to frame the example using one factor. Our first preference would be for the report instead use an example from real life (i.e. within x country it was found that y. If this framework was used, then z…). If the preference is to keep it hypothetical, then perhaps the example could be nuanced to reflect the above point around multiple factors contributing to health outcomes.

**2. The report adopts the broader definition of food security, proposed by HLPE in 2020, which**

**includes the two dimensions of agency and sustainability, alongside the traditional four of**

**availability, access, utilization and stability.**

*Comments*

There was a range of differing views on broadening the definition of food security in the 2020 HLPE report development process. For example, the issue of including Agency as one of the elements was a contentious issue, and this paper notes that it is difficult to measure through current data. The paper currently does not cover the rationale and implications in depth and requires referral back to the 2020 HLPE paper.

a. What type of data will be most useful in measuring food security dimensions such as “agency” and “sustainability”?

*Comments*

For sustainability, the LCA report we refer to in our general comments provides a useful detailed analysis of the current state of play regarding knowledge gaps, inconsistencies and assumptions in LCA analysis and data.

**4. The report discusses capacity constraints at local, national and global levels, with a special**

**focus on statistical and analytical capacity.**

*Comments*

We support comments on page 15 around the importance of engagement with stakeholders when using digital technologies to address ethical concerns and ensure accuracy ground trothing at farm level (He Waka Eke Noa example below). We agree with 3.1.5 on “usability of the data is limited when stakeholders have not been involved in the survey planning and there is inadequate dissemination or access to information on what data is available and how it can be used by the stakeholder”. We support the comment on page 18 on the findings of the Independent Evaluation on FAO’s support to countries and the need for better capitalising on regional statistical expertise. For the Pacific region, we are glad that the FAO is engaging with the Pacific Data Hub at the Secretariat for the Pacific Community (SPC).

**7. Drawing on HLPE reports and analysis in the wider literature, in the next draft the report will outline examples of potential policy pathways to address challenges to data collection and analysis tools for FSN.**

*Comments*

We suggest that this work should consider and build upon relevant OECD reports that overlap with this area including:

* Overcoming evidence gaps on food systems, OECD 2021
* Making better policies for food systems, OECD 2021 – especially chapter 3.2.

Several ongoing initiatives within New Zealand relate to the points under question 7. We are happy

to provide further information on specific initiatives if it would be helpful to the report.

* **He Waka Eke Noa** is a partnership between the New Zealand Government, Industry and Māori to work towards pricing agricultural emissions. The programme that will equip farmers and growers with the information, tools and support they need to reduce emissions and build resilience to climate change. Part of the workplan includes ‘Developing criteria, methodologies and definitions for calculating on-farm emissions and a system for farm-level emissions accounting and reporting.’
* **Integrated farm planning** is a complementary programme to He Waka Eke Noa that seeks to pull management practices and information on business planning; animal welfare; biosecurity; employee wellbeing and management (including health and safety); agricultural greenhouse gas emissions; freshwater; intensive winter grazing; biodiversity; waste management; nutrient management; adverse event plan (to ensure an agribusiness can keep operating during a storm); Te Mana o te Wai; consents and permits; food safety.
* **The Sustainable Food and Fibre Futures fund:** which supports problem-solving and innovation in New Zealand’s food and fibre sectors by co-investing in initiatives that make a positive and lasting difference. This includes initiatives that will help farmers and growers, including Māori to better collect and utilise data.

Māori (the indigenous peoples of New Zealand) collect and hold data relating to FSN separate to and in partnership with Government. Should the authors be interested in such examples then we can reach out to see what examples may be appropriate to contribute.

## Stefano Mifsud, USUN Mission, Rome, United States of America

**U.S. comments on Data Collection and Analysis Tools for Food Security and Nutrition**

The United States thanks the High-Level Panel of Experts (HLPE) for their work in producing this Zero Draft Report on data collection and analysis tools for food security and nutrition. We appreciate the opportunity to provide feedback early in the process and look forward to continued engagement and consultations as the workstream develops. Our general comments are below, followed by more specific comments, and finally comments that respond to question eight posed in the consultation.

**General Comments:**

* The United States believes the Introduction should be re-written with a more balanced tone. Statements such as, “food systems have failed us” overlook the complexity of international food security and overlook significant food security goals that have been achieved over the last twenty-five years – despite challenges associated with COVID-19. The Introduction should set the scene, but also seek to identify achievements and opportunities rather than simply disparaging the agricultural sector writ large.
* The United States believes that it is critically important for the HLPE to use internationally recognized and agreed concepts and definitions for issues that underpin the reports it produces. The four pillars of food security are well known and internationally accepted and therefore must provide the basis for this and future reports. We note that the concept of “agency” is vaguely defined and the linkages between this concept and food security remain unclear, and the definition of “sustainability”, as utilized by Clapp et al., fails to sufficiently consider all three pillars: economic, social, and environmental and seems to already be partially captured by the dimension on stability. Further, the evidence base for the use of this new definition is severely limited. The HLPE citing itself and a journal article published in 2022 (several of the authors of which also sit on the HLPE) that simply makes the case for six dimension of food security is insufficient and inappropriate for underpinning a Report that is designed to provide the foundation for multilaterally agreed policy guidance. We strongly urge the HLPE to stick to internationally agreed definitions so as to reduce confusion and ensure the panel’s credibility as a science-policy interface.
* Overall, in the Report, there is not enough focus on available measures. Validated measures are necessary in order to collect data. If the position of the HLPE is that adequate measures are already available, that should be made clear. In reading the report, the assumption seems to be that measures are available, but that high-quality data is not being collected. We are not sure that is the intended message. We suggest adding a chapter to the report between current chapters one and two that focuses on measures or indicators that could or should form the basis of data collection initiatives. This will help to make later discussions more concrete.
* The Report recognizes that a major challenge with many data sources is the timeliness of the data.  However, we did not see explicit recognition of what can be a larger challenge: that most data collected is a lagging indicator – a snapshot of how things were at a moment in time in the past, rather than how things necessarily are now, or how they may become.  Current developments may not be reflected in data, due to sudden developments (e.g., civil strife).  Thus, the value of sets of indicators that are forward looking or predictive, in addition to those that measure at a past moment in time.
* We are glad to see discussions of data quality (4.4.3 and mentioned in 3.3) but believe the report would benefit from further consideration of data integrity. The discussion regarding interpretation in Sec 3.3 and in Sec 4.4.1 on use of the data for political purposes is on target, thought it only looks at the post-collection use of the data and not ensuring unbiased data collection. Sec 5.1 doesn’t fully elaborate on this either.

**Specific Comments**

* P. 10-11: The discussion on “Conceptual framework for a systemic view of FSN determinants and outcomes,” including Figure 1, does not appear to explicitly recognize the role of war and other armed conflict or civil disturbance as a proximate driver of food insecurity. Yet we know that it is a major driver in some countries / regions (as recognized in the first sentence in Box 2 on Page 20).  But it should perhaps also be reflected explicitly in the -macro and/or -meso level determinants discussion on page 10 and in Figure 1 on page 11.
* P. 10 of 63, Par 6: Why is the focus only on “local food, health, and environment systems”? This should be explained or broadened.
* P. 16 of 63, Example 1:
  + What is “ASF” intended to convey in this table?
  + Column 3, row 2: what is meant by “Relevant policy (e.g., exist, and/or enforce)”? Please explain.
  + Column 2, row 4: Inappropriate focus on “local producers”. In isolation, this undermines the importance of supply chains in addressing shared objectives.  Please broaden.
  + Column 3, row 6: what does “risk to access” mean? Please explain.
* P. 17 of 63, Example 4: Consider adding an example related to the intersection of food security and water security or an example related to ensuring food security in the context of poor sanitation or lacking clean water.
* P. 19 of 63: We do not agree that anonymizing the data will make it appropriate to be freely accessible. This is true for personally identifiable information (PII), but not for business confidentiality. Will later drafts of the report address confidential business information, including that collected by the government for regulatory, oversight, or other purposes?
* P. 20 of 63, Box 2: We agree with the premise of Box 2 that drawing crisis, fragility, and conflict data into the FSN data context would be useful. The fact that a country has had multiple humanitarian crises over time can be argued to be a salient data point in informing discussion of FSN development objectives. Without endorsing any particular data source, examples of sources of fragility and conflict data might include the Fragile States Index and the Heidelberg Institute for International Conflict Research’s Conflict Barometer.
* P. 21 of 63: Table 1 begins with a list of multi-country sources of data for FNS. Suggest starting with a list of available multi-country validated measures that can be used in data collections in Table 1.
  + One such measure that is missing from the report is the Food Insecurity Experience Scale (FIES). The FIES can be implemented in national data collections relatively inexpensively as it is a set of 8 survey questions, that are already translated into more than 170 languages. The scale has already been validated as an experiential measure of food insecurity and included successfully in other surveys. Further, FAO already has resources on their website for survey implementation and data analysis <https://www.fao.org/in-action/voices-of-the-hungry/fies/en/>
  + Another measure that is missing is the Water Insecurity Experience Scales. Access to safe water is closely related to food and nutrition outcomes, and the scale has already been validated. <https://www.ipr.northwestern.edu/wise-scales/about-the-scales/index.html>
* P. 30 of 63, para 2: “Both the European Food Safety Authority (EFSA) and Codex Alimentarius have databases containing…” – Inappropriate to call out one government’s database in this context.
* P. 39 of 63: We are glad to see reference to the potential role of artificial intelligence and machine learning, particularly as a tool for data interpretation and forecasting.

**Responses to Guiding Questions**

The following comments are organized around question 8 (although some of the comments may overlap with the other questions)

**8. Please provide your feedback on the following:**

**a. Are there any major omissions or gaps in the V0-draft?**

* As highlighted in the data life cycle/ data value chain, analyses of FSN data as well as dissemination of results to end users is of great importance and empirical assessment of FSN outcomes is hard. This is partly because of how FSN outcome is measured and what proxies are used to measure FSN outcomes, as it often the case in practice. For example, it is common to see various studies use varying measures of FSN outcomes, although most would agree on the conceptualization of the FSN outcomes. We find in the literature varying measures that seem to refer to the same FSN outcomes, including, but not limited to, Food Insecurity Experience Scale (FIES), the level of calorie consumed (e.g., 2100 Kcal/capita/day, and some other measures indicating the level and intensity of food and nutrition insecurity (food gap and food severity index) etc. Therefore, it will be imperative to develop a commonly agreed upon metric for measuring food security that is simple and less data intensive to help facilitate data driven decision making. The implication is that while designing data collection for FSN purposes, it will be vital to use demand driven and end user informed approach and incorporate this into the data value chain / data life cycle.
* In the conceptual framework, example in Figure 1, “Individual food security and nutrition outcomes:” it may be important to highlight the level of disaggregation (by household members as well as by gender), which may have repercussions to many aspects of the data life cycle.
* In terms of the Data Value Chain, it could prove useful to add ‘model and analyze data’ as part of the 4 components of the data life cycle (Figure 2). This is important for the conceptual framework because the modeling aspect of data life cycle informs the type of data to be collected and how it should be handled as well.
* BOX 2: may also include some coverage in relation to countries with complete lack of data reporting systems (e.g., the Democratic People's Republic of Korea (DPRK), the State of Eritrea, etc.…)
* The introduction of new data related technologies are disruptive by their nature and there is so much unknown, especially going forward. As we go forward, newer and better digital technologies will only accelerate this disruption. Regarding the AI/ML and agricultural data in general, and FSN data, it will be good to think about putting the right data strategy along the data value chains to take advantage of future opportunities and challenges that will surely be presented because of these technologies. It is important to think beyond what is currently possible and prepare our data system to reinvent every aspect of the FSN. It is important to have agile and robust data system and well-trained workforce to handle the impact of AI’s impact in the future.

**b. Are topics under- or over-represented in relation to their importance?**

* Although the text contains a note on the ‘Lack of coordination between agencies (Section 3.1.3), more could be done here including some existing examples. For example, the lessons from the U.S. Government’s global food and nutrition security initiative (<https://www.feedthefuture.gov/>) provides a good example of how multiple stakeholders are brought together to achieve shared objective of sustainably reducing global hunger and malnutrition, also addressing agency and sustainability aspects of FSN. The U.S. Government’s global food and nutrition security initiative as indicated in the website states that the initiative was developed by 12 U.S. Government agencies and departments, with the input of multi-sectoral partners to present an integrated, multi-disciplinary approach to combating the root causes of hunger, malnutrition, and poverty in the target countries around the world.
* Moreover, the use of women’s empowerment, although briefly mentioned in the draft report, could be elaborated a bit more to include examples and evidence of the positive linkages between women’s empowerment (agency) and FSN indicators.
* On Page 17 of 63 of the report, “EXAMPLE (3): Emergency / conflict situation in which healthy dietary intake is compromised”, the following could be added:
  + Example (5) food consumption and dietary intake level by children (and women)
  + Example (6) women’s empowerment (agency) and intrahousehold food consumption and allocation
* More could be said about ‘capacity and inequities’ (Section 4.4.4: Insufficient capacity and inequities), especially as one of the growing demands in the wake of such newer and better data related technologies is the manpower needed to make sense of the data. Training and upgrading the human capacity aspects could be strengthened.
* Regarding chapter 5, “INSTITUTIONS AND GOVERNANCE FOR DATA COLLECTION, ANALYSIS, AND USE”, although well outlined, it can be expanded and enriched. This aspect has always been important, but it will become even more so with the increasing introduction of new data related technologies. Specifically, the draft report may need to include a dedicated section or subsection on existing data governance conceptual frameworks (example see Abraham et al. 2019), applicable to FSN, or propose a new one that should help clarify outcomes and expectations.
* Comprehensive and up to date country level estimates on price and income elasticities, and in general supply and demand dynamics as well as comprehensive price information on food consumed by consumers is necessary. This is of utmost importance, including its use for accurate assessments of economic, social, and environmental changes related to FSN.
* Presentation of new and emerging technologies: This can be elaborated with some more relevant applications for FSN, including using machine learning in combination with publicly available data sets such as LSMS data and remote sensing data for poverty predictions and other applications in low-income countries with inherent data quality problems. One important data point that is hard to collect is prices of commodities. The use of emerging technologies such as smart phones in combination with other tools could be leveraged to collect data. The key point is to empower individual consumers to report data points, if appropriate incentives are put in place, directly to central systems where information could be aggregated and harmonized for use.
* Food accessibility: food security has been mostly measured by income, especially in the low- and middle-income countries. Food insecurity, in terms of availability and nutrition intake does occur in the developed nations. It would be a good to have a central database that captures food deserts across countries. This data could be collected from grassroot (local) level.
* Rural-Urban food price dispersion: This is a variable that can provide information about differences in rural and urban dwelling across countries. Lack of infrastructures connecting rural and urban dwellings create differences in food cost and accessibility. This is important for food aid policy towards low-income countries. Since most countries’ port of entry for food aid shipments is in major cities. Lack of infrastructure linking the rural communities can also affect accessibility to these food aid provisions.
* Food waste and post-harvest loss: Reliable data on food waste (food loss) and post-harvest loss would be beneficial to researchers and policy makers.

**c. Are there any redundant facts or statements that could be eliminated from the V0-draft?**

* Although timely and relevant, the generic use of terms such as machine learning and AI related technologies seems to be overly used and may need to be refined.
* Finally, regarding the contents in Table 1 Existing initiatives on data for FSN, some additional data sources to consider are:
* [USDA ERS - Food Consumption and Nutrient Intakes](https://www.ers.usda.gov/data-products/food-consumption-and-nutrient-intakes/): ERS provides data on food consumption and nutrient intake by food source and demographic characteristics
* [USDA ERS - Food Availability (Per Capita) Data System](https://www.ers.usda.gov/data-products/food-availability-per-capita-data-system/): Food Availability (Per Capita) Data System-The ERS Food Availability (Per Capita) Data System (FADS) includes three distinct but related data series on food and nutrient availability for consumption: food availability data, loss-adjusted food availability data, and nutrient availability data.
* [Data.gov](https://www.data.gov/): The home of the U.S. Government’s open data. Here you will find data, tools, and resources to conduct research, develop web and mobile applications, design data visualizations, and more

**References:**

Abraham, R., Schneider, J., & Vom Brocke, J. (2019). Data governance: A conceptual framework, structured review, and research agenda. International Journal of Information Management, 49, 424-438.

## Thor Olav Iversen, University of Bergen, Norway

There is substantial potential for improving the transparency of the data basis of global estimates of food security. In particular, the Prevalence of Undernourishment-model of FAO is dependent on household survey data to estimate the distribution and inequality of caloric consumption in the population. Yet timely survey data are infrequently available for many countries. As witnessed in the 2020 China revision of estimates, which substantially reduced the number of estimated undernourished in China and globally (Cafiero et al 2020), this lack of survey data can have dire consequences for the exactitude and uncertainty of estimates.

The significant instability that can be observed in historical estimates requires transparency in the data basis for the estimates of the PoU (Iversen in prep). Yet FAO does not publicly list exactly what survey data its estimates are based on. Such opacity breeds mistrust and uncertainty as evidenced by Pogge (2016), and would be easy to remedy by being much more transparent about the data basis of PoU estimates.

This commenter has repeatedly reached out to FAO to get an oversight into the relevant household survey data, with no response forthcoming from the agency.

References:

Pogge (2016) The Hunger Games. Food Ethics 1(1).

Cafiero, Feng and Ishaq (2020) Methodological Note on New Estimates of the Prevalence of Undernourishment in China.

Iversen (in prep) Chronology of Global Hunger Estimation. Manuscript in preparation.

## Franck Da Ros, FRANCE-PREMIER MINISTRE, France

Madame, Monsieur,

La France remercie les membres de l'équipe du projet et du Comité directeur du HLPE pour cette consultation électronique sur le projet version 0 de rapport.

Veuillez trouver en pièce jointe et dans le cadre ci-dessous, la position de la France sur le projet de version 0 du rapport du HLPE.

Sincères salutations,

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Commentaires de la France sur le projet version zéro du rapport du Groupe d’experts de haut niveau (HLPE) sur les outils de collecte et d’analyse de données pour la sécurité alimentaire et la nutrition

1 février 2022

La France remercie le HLPE pour ce projet version zéro du rapport sur les outils de collecte et d’analyse de données pour la sécurité alimentaire et la nutrition (SAN), qui présente une approche équilibrée entre, d’une part, les nombreuses opportunités offertes par les progrès dans la collecte et l’analyse des données pour améliorer l’efficacité des politiques de sécurité alimentaire et de nutrition et, d’autre part, les risques, notamment éthiques, juridiques mais aussi les biais qui peuvent fausser l’information qui sous-tend les programmes et politiques publics.La collecte régulière de données statistiques sur l’agriculture et l’alimentation est importante pour évaluer l’efficacité des politiques et des programmes en faveur de la sécurité alimentaire et la nutrition et pour nourrir les réflexions des décideurs.

**Le projet relève des points importants, tels que :**

* les contraintes financières pesant sur la majorité des pays à faible revenu et à revenu intermédiaire de la tranche inférieure pour la production et le traitement de données agricoles et alimentaires ;
* le besoin de formation en capital humain pour permettre à tous les acteurs de bénéficier des opportunités offertes par les technologies émergentes ;
* le risque que les avancées technologiques accentuent la fracture sociale, notamment au détriment de ceux qui disposent d’un faible accès et/ou habileté numériques ;
* les problèmes éthiques soulevés en l’absence de structures de gouvernance solides ;
* le besoin d’engager le plus possible les utilisateurs dans l’élaboration des technologies et des systèmes de collecte et traitement des données ;
* la nécessité de vérifier la robustesse des données et l’absence de biais, et expliciter le cas échéant les limites du système de collecte et de traitement utilisé et l’importance de l’interopérabilité des systèmes.

**Sur la définition des priorités à l'utilisation des données**

*Le Document ne fait pas référence aux recommandations politiques du CSA sur l’ « agroécologie et les autres approches innovantes» adoptées en juin 2021 qui proposent déjà des recommandations en matière d’utilisation des données. (cf. paragraphe 3u)*

*L’état des lieux proposé par le rapport du HLPE est essentiel et sera très utile pour l’ensemble des parties prenantes pour connaitre les principales bases de données existantes et travailler à l’interopérabilité et à la mise en place de synergies tout en limitant les doublons.*

*Le rapport souligne que la principale difficulté réside dans la collecte de données de qualité, notamment pour ce qui concerne les populations les plus vulnérables, souvent les moins équipées et les plus éloignées de la prise de décision. Le manque de données rend ces populations souvent « invisibles » ce qui ne facilite pas la remontée d’alerte et l’action préventive en matière de SAN.*

La France salue l’importance qui sera donnée à la dimension éthique de la collecte, du traitement et de l’utilisation des données, ainsi que l’attention qui sera accordée à l’ensemble des risques relatifs, entre autres, à la protection des données sensibles, au respect de la vie privée et à la prévention contre les utilisations malveillantes des données.

*Si le document met en avant des constats, à ce stade, il ne met pas suffisamment en avant les sauvegardes et les mises en garde contre une utilisation néfaste des données (sous-section 4.4.1. Ethical and data security issues) et ne donne pas d’exemple de pratiques et moyens de s’en prévenir.*

**Initiatives et tendances existants en matière de collecte et d'analyse des données relatives à la SAN.**

Un historique du traitement des données des systèmes alimentaires pourrait être proposé pour mieux comprendre la situation actuelle et le progrès qu’il reste à accomplir, ainsi que les opportunités, les avantages mais aussi les risques et inconvénients liés aux récentes innovations technologiques (en lien avec la numérisation notamment) en matière de collecte de données. La collecte de données massive via les outils numériques peut en effet entrainer certains biais, le rapport pourrait utilement se pencher sur les évolutions en termes de traitement statistique et de méthodologie permettant d’éviter les biais statistiques.

L’agriculture 4.0, qui est censée permettre la collecte automatique, l’intégration et l’analyse de données provenant des champs, de capteurs ou d’autres sources tierces n’est accessible qu’à une faible part de la population agricole (1%) ; ces données pourraient être mieux documentées. La question de la propriété et de l’utilisation de ces données, et de la transparence des algorithmes de traitement est un sujet central, notamment pour les agriculteurs, qui doivent pouvoir rester les décisionnaires éclairés sur leurs exploitations.

Dans la sous-section 3.1.1 (insufficient resources for data collection), page 14, la France reconnaît le manque de données sur l’agriculture familiale, qui joue pourtant un rôle déterminant pour assurer la sécurité alimentaire et la nutrition, notamment dans les pays en développement. A ce titre, la France souhaiterait attirer l’attention des auteurs sur **l’Observatoire de l’Agriculture du Monde** (World Agriculture Watch - <https://www.fao.org/world-agriculture-watch/fr/>), qui devrait être coté parmi les initiatives existantes sur les données pour la sécurité alimentaire et la nutrition. L’OAM vise à mettre en place un cadre méthodologique harmonisé pour fournir des informations appropriées sur la structure et les performances des exploitations familiales.

Cette section indique également, p. 13, que les données concernant la sécurité sanitaire des aliments sont lacunaires. Si la France tient à souligner le rôle central joué, dans ce domaine, par le Codex Alimentarius, il pourrait être précisé que le Codex ne procède pas en propre à la collecte de données mais repose sur des bases de données externes (concernant les régimes alimentaires, l’exposition à des agents chimiques ou naturellement présents dans les aliments) qui lui sont transmises de manière transparente. L’EFSA ouvre régulièrement l’accès à ses propres bases de données (expositions aux contaminants chimiques), de même que d’autres entités ; il est cependant à noter que peu de données sont transmises par les pays moins développés ou à économie de transition, ce qui peut résulter en une représentativité limitée de certaines données à l’échelle mondiale. Enfin, l’assertion – non démontrée -selon laquelle la fixation de limites inférieures aux seuils résultant de l’évaluation des risques sanitaires peut occasionner des perturbations commerciales occulte une très large part des normes du Codex, qui ne correspondent pas à de telles limites.

Il serait également utile de mieux connaitre les initiatives privées qui existent et les bases de données à l’échelle nationale performantes et déterminantes pour la production comme pour la distribution.

**Sur les contraintes en matière de capacités**

Il est essentiel que les données statistiques soient accessibles de manière équitable. La question des logiciels d’analyse et de traitement pour disposer de tableaux de bords facilement utilisables est également essentielle.

Sur les données qualitatives, la France rappelle que le risque de biais pour ce type d'enquête est encore plus élevé et des stratégies spécifiques doivent être mises en place pour les contrôler.

Enfin, afin d’assurer que le plus grand nombre de parties puisse tirer profit des bénéfices liés à la collecte et au traitement des données, nous suggérerions que le rapport traite de la question de la disponibilité des données et de leur analyse dans différentes langues.

**Sur le rôle des technologies nouvelles et émergentes en matière de collecte et d'analyse des données relatives à la SAN.**

L’objectif de ces technologies doit être d’offrir un soutien dans le processus de prise de décision pour l’ensemble les acteurs de la chaîne d’approvisionnement. Le rapport n’aborde pas suffisamment la question de la prise en compte des 3 dimensions de la durabilité (environnemental, social et économique) : il est essentiel que les données et les outils d’aide à la décision visent à améliorer la durabilité des systèmes alimentaires pour relever les défis du changement climatique et de la biodiversité (réduction de l’utilisation des pesticides et des engrais, gestion de la biodiversité, des sols…) : il serait utile d’avoir une partie dédiée à cet enjeu.

Par ailleurs, le projet n’aborde pas suffisamment les risques liés à un accès inégal aux nouvelles technologies, qui entrainent une augmentation de l’asymétrie d’information dans les chaines de valeur.

**Sur les défis en matière de gouvernance.**

La France apprécie le fait qu’une sous-section soit dédiée à l’importance des cadres législatifs, réglementaires et politiques pour prévenir les risques mentionnés précédemment et promouvoir la dimension éthique des données, ainsi qu’au besoin d’informer les utilisateurs sur leurs droits et de renforcer leurs capacités. Nous apprécions également la référence au Règlement général sur la protection des données (RGPD), dont les dispositions les plus pertinentes eu égard au périmètre du rapport pourraient être détaillées. Signalons également dans ce cadre la stratégie du SGNU en matière de données.

La gouvernance des données est clé lorsqu’il est question de la protection des données, des questions de confidentialité, des données à caractère personnel, des droits de propriété intellectuelle. Ces thématiques doivent être portées par une stratégie globale. Un certain nombre d’acteurs ont adopté des chartes sur la gestion des données qui devraient nourrir le rapport (par exemple la charte du G7 au niveau mondial, et la charte de la Fédération nationale des syndicats d’exploitants agricoles (FNSEA) au niveau national).

Les principes et règles de protection des données doivent être précisés à toutes les différentes étapes du traitement des données, y compris lors de la collecte, de l'utilisation et du partage des données, ainsi que de la mise à disposition de celles-ci. Cela souligne l'importance de disposer d'un cadre de protection juridique des données clair et actualisé.

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Fin de commentaires

## Nanna Lien, Department of Nutrition, University of Oslo, Norway

Congratulations on a timely and thorough analysis of the challenges, and suggestions of possible solutions, to “Data collection and analysis tools for food security and nutrition “. Below, please find three overarching comments.

The framework and systems thinking

Considering the conceptual framework is built on ecological models, it might work well as a communication tool, but in order to move on to decision-making, building systems models that could be dynamic hypothesis of how the determinants at the different levels are interconnected and driving food security and nutrition would be important. Furthermore, such models could be used to simulate different scenarios using the national data which could be particularly useful in step 3 and 4 of the data driven decision making cycle,

Building the infrastructure and governance of the data

Based on the overview of existing initiatives on multi-country sources of data (table 1) there seem to be a potential for FAO/WHO/the UN system to take a leading role in building an infrastructure that is accessible to all, ensures the relevance of the data collected with reference to the conceptual framework/systems models and avoids duplication of data collection.

Setting up infrastructures that enables researchers to use “big data” to address the relationship between the food systems, the consumer choices, nutrition and health across countries, and socio-demographic groups of the population is important but challenging to get support for. A recent attempt to get the proposal of the Food, Nutrition and Health Research Infrastructure on the ESFRI Roadmap in Europe was unsuccessful (https://fnhri.eu/), but might be relevant to draw on.

Best-practice cases with cost estimates

The complexity of, and the resources and capacities, required to deliver the data as outlined in the framework might make it look unrealistic to achieve this. Although there is probably no country currently doing this, there might be best practice cases that can be shared as examples and also be used to indicate the cost of collecting, analysing and using the data to provide the output that the report is envisioning.

Kind regards Professor Nanna Lien,

Public Health Nutrition, Department of Nutrition, University of Oslo, Norway

## Thor Olav Iversen, University of Bergen, Norway

Having read through the other comments and realized that there is significant contestation surrounding the extension of the food security concept to agency and sustainability, I would like to add one more comment. The report fortunately applies this extended concept of food security, originally suggested by the HLPE-CFS itself.

While conceptualizing food security through global models, based on comprehensive data-sets, the anchoring of these models in bottom-up participatory approaches is crucial, not only in regard the reliability of the data, but also in regard the framing of the problems and the inherent assumptions in the models (cf: Kaiser et al 2021; Saltelli et al 2020).

Ref.:

Kaiser, M., Goldson, S., Buklijas, T., Gluckman, P., Allen, K., Bardsley, A., Lam, M.E. (2021). «Towards Post-Pandemic Sustainable and Ethical Food Systems”. Food Ethics, 6:4; <https://doi.org/10.1007/s41055-020-00084-3>

Saltelli, A., Benini, L., Funtowicz, S., Giampietro, M., Kaiser, M., Reinert, E., & van der Sluijs, J. P. (2020). The technique is never neutral. How methodological choices condition the generation of narratives for sustainability. Environmental Science & Policy, 106, 87-98.

## Lynda Hayden, Australian Embassy to Italy

We are pleased to provide the following comments and feedback on V0 Draft report on *Data Collection and Analysis Tools for food security and nutrition*. We thank the CFS HLPE and the report authors for providing this opportunity for review and we trust that our comments will help support the development of this important report.

**General Australian comments**

As an overarching comment, we consider that the report has only partially met its stated objectives. A primary issue in our view, relates to the generic nature of the included examples, however we hope that this consultation process will support the authors to provide more specificity when identifying and highlighting barriers, gaps and initiatives. We consider that the report may benefit from adopting a geographical lens, providing a summary of the main food and nutrition security data strengths and weaknesses from each region and scale. There is opportunity also for the authors to include thematic areas relevant to this topic – e.g., availability vs. consumption data.

The report would benefit from a review of the structure and may find more cohesion by taking a systematic approach as currently we consider there are challenges with the way the information is presented. One option may be to follow the conceptual framework and data cycle of food security and nutrition. We found that Section 3 was particularly challenging with the same topics addressed under different subsections. This could be remedied by breaking the section into smaller groupings to help focus and target the narrative more clearly. While both Sections 3 and 4 cover innovative methods, there is some overlap that should be addressed. The generic nature of Section 4 should also be addressed, along with additional specificity that will help the reader understand food security and nutrition data throughout the data cycle. This could be alleviated by additional development of sub-section 4.3 which is helpfully presented in the framework of food and nutrition dimensions – though the nutrition information is missing.

Section 3 would also benefit from a greater refocusing as the authors risk a report that covers all aspects of food system monitoring rather than drilling into food and nutrition security outcomes. For example, the discussion around SIS does not seem relevant to FSN data collection and analysis but on how AI can be used for food systems intervention. It is suggested the report provide greater clarity around whether the report is focusing also on food system data collection and analysis or, as the report title suggests, food and nutrition security data more specifically.

Additionally, in relation to the introductory statement that “food systems have failed us,” we believe that while recognising that our food systems must continue to adapt and do better, the report should also recognise the strengths of current food systems and what has been working well to date and can be built upon. We note that the report could benefit from further exploration of the considerable role that international trade (and related datasets) has for food security and nutrition outcomes.

As an editorial statement, we suggest that descriptors, tables, boxes, figures and table numbers be consistent throughout the report.

**Section Specific Feedback**

*Section 1*

The conceptual framework put forward by the authors is sound. However, the matrix (figure 3) appears somewhat impractical and would benefit from harmonisation with the technology used in the conceptual framework. The example matrix (p.16) is troublingly generic with the potential for the content to be used to apply to almost any nutrition ‘problem’.

Detailed commentary:

The socio-ecosystem framework of food security is a good initiative as it captures the interrelated scales well.

The data driven decision making cycle (figure 2) for FS though arguably best practice for any data collation exercise is quite generic. We would like to this better adapted to the FSN context.

We consider there to be some challenges with figure 3 that should be addressed:

* The first column should correspond to the conceptual framework however, and unless this is referring to Meso or Proximal determinants (how the conceptual framework refers) ‘systems level’ is missing from the framework, otherwise we suggest that terminology should be harmonized. Additionally, the conceptual framework is unclear on whether individual level is the same as the micro level, or is the Personal, HH, Community decision making? Either way, these should be reviewed and consolidated.

Referencing all definition of evidence priorities in relation to ‘the identified problem’ is problematic and unclear. The primary aim of the template is defined as ‘to identify problems that require data’ (p.15) yet the approach of the matrix is unclear – whether it identify the problem or will the problem be identified upon completing the matrix? As a further complicating factor, in real-life situations there are often multiple problems which makes a single identifier challenging. Suggest re-working the language in the column defining evidence priorities.

We suggest allowing more space on p.15 to highlight the steps required prior to data collection. It is probable many people will not have this knowledge – particularly how to identify indicators that are known to be measurable and meaningful. This section may be strengthened with the inclusion of a figure/image to demonstrate.

The first example (p.16) contains relatively generic information that could be used for most diet and/or nutrition problems. It appears to lack some specificity with the identified problem or the context. This is one example of the limited practical use of the matrix as proposed.

*Section 2*

The authors may wish to revisit the readability of this section which, in terms of flow, was difficult to follow. To counter this, suggest the table be split up, and also summarized in the text as the text currently focuses on general challenges related to FSN data relevant to the data cycle concept. The section would benefit from comment on the methodology or inputs used to make this type of assessment which alleviate some of the issues with the generalised nature of the section.

While there is absolute value in detailing current initiatives, titling this section ‘Review’ ensures an expectation from the reader that these initiatives will have some critical commentary also. However, these initiatives seem to focus mainly on global data sets – suggest the section could be strengthened with the inclusion of initiatives that collect national or subnational data. If the report is interested only in global FSN data initiatives this should be defined somewhere for the reader. Otherwise, recommend including the opportunity for other initiatives to be suggested for inclusion and review – for example, the FAO GIFT initiative and the global burden of disease study.

*Section 3*

As with feedback for Section 2, the authors may wish to revisit the readability of this section and the structure to avoid the lack of current cohesion and, for this section, the duplicative nature of the information provided. Additionally, we recommend the report ensure consistency of terminology – in this section data cycle and data value chain are used interchangeably.

We recommend broadening the section on policy decisions references seem to focus on agriculture and trade along with the current emphasis on diets/health.

Given the current environment, suggest authors acknowledge the impact Covid-19 has had on data collection – i.e., the reduction in face-to-face modalities, the increased pressure on already limited capacity, the need to shift to more mobile surveys and what that means for data reliability especially when trying to target the most food and nutrition security vulnerable.

We recommend the text in box 3 be either reincorporated back into the main text or the focus of the narrative sharpened. At the moment, it is unclear whether the intent is to highlight the high cost of FSN data or the impact of these high costs. We suggest the same for box 4 – there is too much text and the box does not adequately highlight how critical this information is to the report.

The section could be improved by identifying the constraint per section of the data cycle – i.e., collection, analysis, interpretation, dissemination and use. While the challenges are similar (i.e., financial, human resource) they have different implications at the different stages. It would be good to see this incorporated into the section. Additionally, the section appears to focus on constraints of household/individual data collection at the expense of exploring data collection at the other scales presented in the conceptual framework. Perhaps restructuring this particular section to identify the financial and human resources costs as the main constraints of the data cycle before exploring the how this impacts the quality and usability of the data produced would be of benefit.

We recommend that insufficient data and data quality issues have its own sub-heading in the section. Currently, this flows with the previous subsection which is focused on the resource constraints to data collection.

Suggest expanding the section on advanced technologies to include those specific to measuring food and nutrition security rather than limiting the section to the production aspect of food systems.

*Section 4*

While subsection 4.3 addresses new technologies for data, it lacks specificity with regards to FSN data and would benefit from further development. As with above, nutrition is also missing from the food and nutrition dimensions of the framework.

It is unclear how tables 1 and 2 differ as they both aim to present initiatives that address some aspect of FSN data through the data cycle. The way table 1 is titled, it could easily include the information in table 2. There is potential to consider consolidation – for instance with tables 2 and 3 being combined.

*Section 5*

We recommend further development of this section.

## Matheus Alves Zanella, Global Alliance for the Future of Food, Brazil

Dear HLPE Steering Committee and the Project Team,

Thank you for the opportunity to comment on the V0 Draft of the report “Data collection and analysis tools for food security and nutrition”.

The Global Alliance for the Future of Food would like to suggest resources and references that could enhance the content of the report, particularly by contributing to consultation questions #3, #7, and #8. This contribution builds on recent work developed by the Global Alliance with several partners: i) the compendium “The Politics of Knowledge - Understanding the Evidence for Agroecology, Regenerative Approaches, and Indigenous Foodways”; ii) the report “True Value: Revealing the Positive Impacts of Food Systems Transformation”.

Among other issues, the compendium “Politics of Knowledge” revisits fundamental debates on how we understand and document evidence for FSN, and how dominant narratives shape concepts such as data validity, objectivity, and equity in data collection and analysis. It also debates how political power behind dominant narratives can marginalize diverse, non-western, and non-academic types of knowledge - for example those strongly associated with agroecology, regenerative approaches, and Indigenous foodways - forcing narrow views on how to measure success, performance, and resilience in FSN. The report “True Value” digs into a growing area of study in comprehensive metrics for food security, nutrition, and sustainability. Adopting a food systems approach as advocated by numerous HLPE studies, the report demonstrates how using qualitative data and assessment approaches alongside quantitative data and assessment approaches enables us to more clearly describe the interlinkages between actions and impacts, which is important to systems thinking and understanding the connections between systems elements.

Both studies call on us to encourage and embrace diverse forms of evidence to be generated, gathered, meaningfully considered, and communicated, thereby broadening the debate on data in a way that would, in our view, increase the richness of this forthcoming HLPE Report.

Please find our detailed contribution attached to this message.

Thank you for your consideration,

Global Alliance for the Future of Food

**Contribution of the Global Alliance for the Future of Food**

Dear HLPE Steering Committee and the Project Team,

Thank you for the opportunity to comment on the V0 Draft of the report “Data collection and analysis tools for food security and nutrition”.

The Global Alliance for the Future of Food would like to suggest resources and references that could enhance the content of the report, particularly by contributing to:

#3: reviews of existing FSN data collection and analysis tools;

#8: gaps in the V0-draft, topics under- or over-represented, and;

#7, f. additional references with respect to qualitative data and/or g. data representing traditional knowledge.

We make specific reference to two recent research pieces published by our Alliance that discusses the role of data, knowledge, and evidence for food security and nutrition:

1) The compendium “[The Politics of Knowledge: Understanding the evidence for agroecology, regenerative approaches, and indigenous foodways](https://futureoffood.org/insights/the-politics-of-knowledge-compendium/)” (GA 2021a);

2) The report [True Value: Revealing the Positive Impacts of Food Systems Transformation](https://futureoffood.org/wp-content/uploads/2021/11/GA-True-Value-Revealing-Positive-Impacts.pdf) (GA 2021b).

The compendium The Politics of Knowledge (GA 2021a) engaged 17 contributing teams representing geographic, institutional, sectoral, gender, and racial diversity. The authors seek to better understand, synthesize, and mobilize the evidence base to create enabling environments for agroecology, regenerative approaches, and Indigenous foodways.

Though focusing more intensively on the role of evidence for agroecology, we believe this compendium offers interesting insights to enrich the HLPE forthcoming report on “data collection”, particularly by raising important issues around the meaning of evidence, the power and politics that shape and infuse our understanding of evidence, what counts as evidence, the broad range of ways evidence is documented, and the historical, epistemological roots that shape our understanding of objectivity, validity, equity, among other issues.

As an example, on addressing the questions of “whose evidence counts? Why does some evidence take precedence over others? What are the assumptions and choices behind this? And what can evidence reveal or conceal?”, it points to a number of factors that inhibit more diverse evidence to be prominently considered in data collection and analysis, such as different hierarchies of evidence, distrust of science, language bias, power and legitimacy, among others (GA 2021a: p.25-28).

Responding to #7 g. (data representing traditional knowledge), the compendium presents a number of knowledge-based initiatives that seeks to establish a dialogue between scientific knowledge, Indigenous knowledge, farmer and traditional knowledge, the knowledge held by civil society and community-based organizations, and lived experience (GA 2021a: p.18-25). These include but are not limited to the McKnight Foundation’s Collaborative Crop Research Program (CCRP) and its Farmer Research Network’s (FRN); the Soils, Food and Health Communities (SFHC) in Malawi; the works of Centro Latinoamericano de Investigaciones Agroecológicas (CELIA) and Agroecology Research-Action Collective (ARC); and the emerging Grassroots Evidence for Agroecology (GEA) initiative of the Statistics for Sustainable Development (Stats4SD).

Additionally, the compendium contains a number of case studies (GA 2021a: p.38-39, p.43-45, p.47, p.49, p.52, p.56, p.59-61, p.63-64, p.72, p.74) that demonstrate how these issues are dealt with by a number of initiatives and organizations that acknowledge diversity of knowledge and evidence as rich assets to be taken into account.

Also related to the Compendium, we strongly suggest that the Project Team visit our list of [Supplementary List of References](https://docs.google.com/spreadsheets/d/1mwiG6keiwkUBYvKTX6_eGiaZS6T8NxMKWQ0XtsAUgwM/edit#gid=0) (GA 2021c), with more 400 hundred scientific sources consulted in producing this study, demonstrating that the scientific literature addressing these issues is vast and in continued expansion.

Furthermore, the report True Value (GA 2021b) demonstrates that truly comprehensive and complete assessments require the integration of holistic and inclusive measurements and metrics available through the inclusion of qualitative variables. We believe this is in line with request “#7, f. additional references with respect to qualitative data” of this e-consultation.

*True Value* digs into a growing area of study in comprehensive metrics for food security, nutrition, and sustainability. It starts by pointing out that quantitative measures might be limited in their ability to assess and provide insights on the full diversity of impacts and conditions important to sustainable food systems. This is particularly true for social impacts and human well-being. Adopting a food systems approach, as advocated by numerous HLPE studies, requires using qualitative data and assessment approaches alongside quantitative, enabling us to more clearly describe the interlinkages between actions and impacts, which is important to systems thinking and understanding the connections between systems elements.

As examples, the report describes how qualitative surveys of farmers who had joined the Andhra Pradesh Community-managed Natural Farming network and adopted their natural farming methods revealed improvements to mental health and occupational pride, as well as dramatic reductions in feelings of hardship and suffering. This trend – revealed through qualitative assessment – allowed for new and early insights towards addressing the epidemic crisis of farmer suicide in India (GA 2021b, p. 63-70; Eigenraam et al., 2020). The joy and the satisfaction that a farmer has from a successful harvest or the stress relief that comes from a full fridge are qualitative experiences. Focusing on quantitative data alone excludes these very real impacts.

Besides the above mentioned case from India, the report True Value contains case studies from other five substantially different contexts in Zambia, Philippines, United States of America, Nigeria, and Malawi, demonstrating that systemic metrics of food systems outcomes can be applied to a variety of situations, proving a meaningful sources of data and evidence for policy guidance. Similarly to the Politics of Knowledge compendium, the True Value report contains a significant list of scientific references that might be worth exploring, including the UN Environment Programme’s Scientific and Economic Foundations Report (2018), which provides useful guidance on assessing food systems activities and impacts using a diversity of metrics.

We understand that the widening of approaches and sources of knowledge and evidence further increase the complexity of issues already identified in the Draft 0, such as data principles, data protection rules, transparency, governance, capacity, emerging technological trends, among many others already indicated in the Draft. It would also entail widening the scope of the Report, and potentially opening a different chapter to deal with these issues comprehensively.

Nevertheless, as the growing and extensive literature on the subject suggests, the issues mentioned above referring to data in FSN are deeply embedded and connected to this broader debate on knowledge, power, evidence, and systemic metrics of food systems outcomes. Therefore, to not take these discussions into account would signify a missing opportunity for this key HLPE Report.

We deeply believe that the co-creation, exchange, and mobilization of knowledge and evidence creates new entry points to systemic transformation and needs to be harnessed to facilitate action across food systems.

We are confident that the HLPE Steering Committee and the Project Team will be able to review and include these discussions in such an important study. We remain at your disposal to provide further detailed information on the references mentioned above, in case needed.

Thank you for your consideration,

Global Alliance for the Future of Food

**REFERENCES**

Global Alliance for the Future of Food - GA (2021a). The Politics of Knowledge: Understanding the Evidence for Agroecology, Regenerative Approaches, and Indigenous Foodways. n.p.: Global Alliance for the Future of Food, accessible at: <https://futureoffood.org/wp-content/uploads/2021/12/GA-Politics-of-Knowledge.pdf>

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## Schola Campesina, Italy

Schola Campesina APS's contribution to the V0 Draft of the report “Data collection and analysis tools for food security and nutrition”.

Our contribution highlights the importance of adopting a Right-based approach when considering data collection and analysis for FSN.

HLPE report on Data collection and analysis tools for food security and nutrition should consider the following:

**Data collection and analysis feeds a model of society.** Neutral data does not exist. Collection of data for food security and nutrition (FSN) has therefore to be determined by the model of FSN that we seek to advance. **Human Rights** are acknowledged to be fundamental to reach FSN for all, data collection and generated knowledge have therefore to be designed to benefit them.

In the past, governments were central actors in data collection. The **recent increase of the role of powerful private actors** contributed to shift the purpose of data collection and analysis to serve private interests. For instance, the traditional production per hectare is clearly benefiting an agroindustrial model of production. While destroying soil fertility, it is still considered an important data to fight food insecurity in the world. At the same time, big companies specialized in data processing make a dangerous step in the area of food and agriculture. Many examples can show that data collection and reconstruction into self-serving knowledge are currently missing the point of guiding policies for effective FSN.

**Data collection and analysis is also closely linked to the capitalist and patriarchal model** of society. In demography, we traditionally consider the number of men and women as bricks of knowledge, excluding non-binary model of gender. If we don't consider all the different bricks, we describe a specific reality and impose a knowledge that exclude a part of society, mostly minorities, that does not recognize itself in this binary system. Many other data collection processes are submitted to the current model of society.

**The process of reassembling data into knowledge is** not transparent, not participatory and very often **strengthening power imbalance and inequalities**. The digitization of data is accelerating these trends that are intrinsically in opposition with the SDG’s 2030. An immediate moratorium on data collection guided by private interests is needed to stop undemocratic data extraction that strengthens social inequalities and power imbalance; until regulations of digitalization in the food system are determined.

**Data collection and analysis** (include in their digital forms) **are powerful tools to guide policies and development plans, under a right-based approach** (building on the implementation of UNDROP and UNDRIP). A right-based approach in data collection and analysis -where participation and knowledge sharing are fundamental elements- is essential to keep these processes under their primary objective: effectively advance food security and nutrition for all. It’s the only framework that will allow to determine the needed data based on the knowledge gaps identified at local level. Local communities have to be involved in the design of data to be collected and the control on the data should be kept in public entities.

## Matthew Canfield, Leiden University, Netherlands

**Data collection and analysis tools for food security and nutrition - Online consultation on the V0 Draft of the Report proposed by the HLPE Steering Committee and the Project Team**

*Dr. Matthew Canfield, Assistant Professor of Law & Society and Law & Development at Leiden Law School, Leiden University*

**1. The V0-draft introduces a conceptual framework that orders the components of the food security and nutrition ecosystem based on their proximity to people’s immediate decision-making sphere, from the macro to the individual levels, and describes a four-stage data-driven decision-making cycle for food security and nutrition (FSN), from priority setting to data utilization. Use of the two is illustrated through a matrix template that facilitates the concurrent operationalization of the conceptual framework and data driven decision-making cycle to address issues relevant for FSN.**

The conceptual framework offers an over-simplified model of “data-driven decision-making” that does not address the contested nature of data, the empirical reality of decision-making, and critical issues of power and voice in decision-making.

First, “data” is never defined within the conceptual framework, nor is it distinguished from information and evidence. Kitchin explains that “Data are never simply just data; how data are conceived and used varies between those who capture, analyze, and draw conclusions from them” (Kitchin 2014, 4). Without defining data from the very outset, the report ends up collapsing very different kinds of data (i.e. qualitative/ethnographic data, statistical demographic data, and geo-spatial data) that can each serve different purposes and come with different challenges, opportunities, and risks. Moreover, scientists from different disciplines, food producers of different sizes and types, and policymakers all draw on different notions of “data.” actors draw on different notions of data. Therefore, it is critical that the report define what it means by data and distinguish it from other forms of evidence and information.

Second, the matrix emphasizes that decisions should be made on what is “known to be both measurable and meaningful.” However, not all variables and issues concerning FSN are equally measurable. For example, the matrix that is presented lists “barriers to consumer change” and “socio-cultural preferences” both of which require ethnographic and qualitative data. There is often a bias towards quantitative data and measures in policymaking. However, quantitative brings with it significant challenges (Merry 2016). Quantitative data requires abstraction, decontextualization, and categorization, which may not always produce the kinds of evidence and information necessary for sustainable food systems. In the context of food and agriculture, for example, quantitative indicators such as “yield” often become a dominant measurement against which food systems are measured in part because it is more difficult to quantify other critical aspects of food systems, such as biodiversity. Moreover, the demand for quantitative measures can often be mobilized by powerful actors to exclude other forms of more relational knowledge in agroecology. As a recent report from the Global Alliance for the Future of Food explains, “In Western science, certain kinds of expertise and scientific disciplines are elevated over others. Many benefits of diverse, agroecological, and regenerative approaches are complex and difficult to quantify, in part because they are slow, long-term processes. Easily quantifiable data is often given preference over more complex systems dynamics that are harder to assess. This bias also operates to exclude other knowledge sources, such as traditional and Indigenous knowledge” (2021, 26). The current report leaves unaddressed the complex questions of measurement and the epistemologies of knowledge inherent in data production that are critical for sustainable food systems.

Third, it is unlikely that policymakers can decide on evidence priorities and then gather data that perfectly reflects their needs. They face constraints based on what kind of data they have on hand and the fact that all data is embedded with particular theories and assumptions. There is no such thing as ‘raw’ or ‘neutral’ data (Gitelman 2013). For example, big data often includes information only on large-scale, commercial producers given that most of the sources of big data come from the private sector and commodity agriculture, smallholders are inherently excluded from these data sets. The conceptual model needs to take into account that data needs to be produced and that policymakers rarely start with a set of neutral data (boyd and Crawford 2012). The assumptions inherent in data itself can produce unintended consequences (see Merry 2016).

Fourth, the report provides a technical, rather than political model that distorts how power inequalities shape the entire policy-making process. Every step of the conceptual model developed by the project team is shaped by politics, including the process of deciding so-called ‘evidence priorities.’ Indeed, the process of *problematization* plays a constitutive role in shaping what data will be analyzed and what solutions will be proposed. Problem framings reflect particular perceptions as well as, importantly, interests and relations of power. These problem framings can be reified and obscured through “data-based decision” making (Tichenor 2017). To address this, the report should emphasize the importance of participatory, rights-based processes at all stages of policymaking, including agenda-setting, deciding on “evidence-priorities,” and decisions on measurement/data-collection

Overall, the conceptual model put forward by the report is problematic because it suggests that policymakers make decisions based strictly on data, rather than acknowledging that interpreting data is a subjective and political process that incorporates multiple actors with unequal power relations and competing interests. The report provides an idealized modernist ideal of governing and overlooks important and challenging questions stemming from different forms of disciplinary knowledge, power and voice. This is surprising because recent discussions about the importance of “science-policy interfaces” for food security and nutrition have explicitly recognized that science to subject to different disciplinary forms of knowledge and epistemologies and therefore must be mediated through pluralistic and democratic processes (Turnhout et al 2021). If such is true for science, certainly it must be true for what we call and interpret as “data.”

**2. The report adopts the broader definition of food security, proposed by HLPE in 2020, which includes the two dimensions of agency and sustainability, alongside the traditional four of availability, access, utilization and stability.**

To address agency, the report should emphasize the importance of disaggregated data that highlights the intersectional inequalities that marginalized communities face as well as data about power asymmetries (i.e., data about market control). It is important to acknowledge that marginalized populations can face further invisiblization through data (Davis 2017, Geist 2020). To address this, marginalized communities should be able to participate in developing data collections processes, as well as benchmarks and indicators, through rights-based processes.

To address sustainability, it is important to acknowledge that there are competing definitions and understandings of sustainability in the context of FSN. Data generated from “climate-smart” technologies and agriculture are rooted in a different paradigm than agroecology. The latter can be more difficult to measure within dominant epistemologies and benchmarks. As the Global Alliance for the Future of Food explains, “Many ways of knowing don’t count as evidence, seldom get measured or heard by those outside local communities where evidence is generated, and rarely appear in reports or publications. How and what farmers and food providers know of their ecosystems, their variability and dynamism, often fails to count as evidence — and therefore gets neglected in agricultural research, policies, and development programs. This means that agroecology, regenerative approaches, and Indigenous foodways are overlooked in discussions about food systems transformation” (2021, 28). As noted above these epistemological issues must be addressed in the report.

**3. The V0-draft reviews existing FSN data collection and analysis tools, initiatives and trends.**

While the report provides a survey of initiatives already underway to collect data, it does not elaborate between different *types* of data. In fact, the report seems to be solely concerned with quantitative data.  Qualitative and ethnographic data is overlooked in the report, even though it is critical for understanding food security (Global Alliance for the Future of Food 2021; Owens et al 2021).

Another problem with the report is that in highlighting the promise of data, it completely overlooks the risks that new digital technologies pose, especially to small-scale farmers and food chain workers. Assessment about whether technology is appropriate needs to be considered alongside the potential value of the data that digital agriculture generates. As anthropologist Glen Stone (2022) points out in his recent paper, these technologies do not only offer the opportunity for private actors to collect immense amounts of data, but also to shape the behaviors of their users. The current report does not consider the introduction of these technologies with regard to how they will impact farmer control and autonomy. As Stone (cited above) notes, such technologies may continue the trend of “appropriation and substitution,” which erodes farmers' control and existing knowledge systems (See also Miles 2019).

Finally, another concern that is not discussed with regard to agricultural digitalization is that competition for agricultural data is producing market consolidation, as firms struggle to control data (Langemeir and Boehlje 2017; Mooney 2018)

**4. The report discusses capacity constraints at local, national and global levels, with a special focus on statistical and analytical capacity.**

The report suggests that data may be insufficient because of lack of granualarity. It posits that data collected through sensors and the internet of things may provide greater granularity, in effect supporting the expansion of private data infrastructures. The report must also consider other forms of data (knowledge drawn from communities, ethnographic and qualitative data, etc.) that do not depend on private infrastructures, but may also offer granular and contextualized data.

In addition, the report must contend with the risks of big data that are not easily overcome—namely, unequal capacity to access, process, and analyze big data.  Big data has the potential to give well-resourced actors asymmetrical information over markets.

**5. The V0-draft discusses the role of new and emerging technologies in data collection and analysis tools for FSN.**

Currently the report focuses on emerging technologies of data collection without adequately considering their potential consequences for food security and nutrition more broadly. Most research on digital agriculture is speculative; very little social scientific research has assessed the claims that promoters of new technology make. One of the primary promoters of digitalization are multinational corporations (Prause et al 2020). While these companies have made the case that digital technologies may expand food yield, there are many concerns that need to be empirically studied before these technologies are widely promoted. Risks include:

* Further concentrating the power of large corporations through their control over information and data (Klerx and Rose 2020);
* Exacerbating inequalities between smallholders and large commercial farmers (Lioutas et al 2021);
* Promoting  farmer deskilling through, the loss of traditional knowledge, and the replacement of existing social networks (Klerx and Rose 2020; Lioutas et al 2021);
* Job losses among rural and food-chain workers (Carolan 2020); and
* Reduction of biodiversity and the planting of traditional crop varieties (Lioutas et al 2021).

As Klerkx and Rose (2020) emphasize, more focus is needed on the processes of inclusion and exclusion that result in the extension of digital networks and digital technologies in food systems.  As Lioutas et al (2021) note, the political, ecological and cultural impacts of these technologies must first be addressed before assessing the opportunities they pose for data collection.

**6. The report reviews issues concerning institutions and governance for data collection, analysis and use, with a focus on data governance principles, data protection, transparency and governance of official statistics, the implications for governance of an increasingly digitalized world, and examples of initiatives addressing governance challenges.**

The section on data governance is underdeveloped. The section on “open science, open data” does not explore the risks of open data and suggests “openness” as a virtue. Yet there are many communities for whom “open” data is an invitation for appropriation and exploitation. Rather than promoting open data, they seek *control* over data. Indigenous peoples, for example, have raised concerns about open data and demanded *data sovereignty.* Indigenous data sovereignty “refers to the right of Indigenous peoples to control data from and about their communities and lands, articulating both individual and collective rights to access and to privacy” (Rainie et al 2019). The section on open data also does not address issues of  unequal capacity. The capacity to use and process big data sets are limited to those not only with the technological capacity, but also those with access to electricity, broadband, and other digital infrastructures.

Greater nuance is also needed in the discussion of data ownership, including the challenge of access and benefit sharing as well as the difficulty in translating ownership models based around material goods to immaterial forms of data. Legal scholars have suggested that we may be facing an “end of ownership” in the context of data and digital infrastructures (Perzanowski and Schultz 2016). This has been a major challenge in debates over how to govern the digitalization of biological resources (Smyth et al 2020). Questions of access, exclusion, usufruct rights, etc.—all aspects of ownership—are increasingly unbundled, making the unified ownership right less relevant in the context of data.

Similarly, the report must address existing legal instruments (intellectual property rights, plant breeder rights, database rights, copyright), treaties (The Convention on Biodiversity, FAO Seed Treaty, etc.) and emerging transnational regulatory initiatives that affect data. Emerging regulatory initiatives include private codes of conduct as well initiatives by the FAO and World Bank. It would be helpful if the report mapped this regulatory space. Analyses of different state laws that apply to agricultural data would also be helpful (i.e., the EU General Data Protection Regulation).

Finally, the report should also discuss the potential for and risks of anticipatory governance through data through predictive analytics and algorithms. Predictive analytics and algorithms have been developed in other policy domains, such as public safety and have generated significant criticisms from communities (Guthrie 2017; Eubanks 2018).

**7. Drawing on HLPE reports and analysis in the wider literature, in the next draft the report will outline examples of potential policy pathways to address challenges to data collection and analysis tools for FSN.**

The expansion of data infrastructures and the collection of data carries significant risks that information embedded within social relationships will be extracted and commodified in ways that further economic inequalities. We have seen this in other spheres and sectors (Zuboff 2015). Recent research suggests that digitalization and the development of private data infrastructures will facilitate further financialization and corporate control of the food system (Fairbairn 2020). Support for the data collection through new technologies needs to be qualified with appreciation for the significant risks it poses.

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## Maria Giulia De Castro, World Farmers' Organisation, Italy

Dear colleagues,

many thanks for providing us with the opportunity to participate in this e-consultation.

Please kindly find attached the written contribution from the World Farmers' Organisation (WFO), together with the comments prepared by the WFO Working Group on Food Security.

With kind regards,

Giulia

**Data collection and analysis tools for food security and nutrition - Online consultation on the V0 Draft of the Report proposed by the HLPE Steering Committee and the Project Team**

*Comments by the World Farmers’ Organisation*

**General Comments:**

* The zero draft touches upon the topic of food systems sustainability and the recognition by the UN system of the need to take actions on food systems. However, the draft doesn’t consider the process of the UN Food Systems Summit (UNFSS), called by UN Secretary General Antonio Guterres and implemented during 18 months between end of 2020 and September 2021, during which stakeholders have gathered in several sub-processes of UNFSS to pool resources and efforts towards food systems sustainability. The process is now in its implementation phase and should be taken into account.
* It is of the utmost importance to involve farmers and their organised structures, namely farmers’ organisations and agricultural cooperatives, in the debates on food security and nutrition. Indeed, the role of agriculture in tackling both nutrition and food security issues need to be emphasized. We need to highlight the potential of agriculture, as well as its contribution to the well-being of the entire society, cross cuttingly addressing the production of food, and nutrition and health challenges. Farmers are too often among those suffering food and nutrition insecurity around the globe, especially in developing Countries and remote rural areas. We need first to solve this paradox of food producers getting hungry and poor if we want to end food and nutrition insecurity. Investments are needed to support organized agriculture, to strengthen existing farmers’ organisations and create new ones so to reach farmers on the ground and contribute to the development of rural areas. In fact, giving the multi-dimensional nature of agriculture, farmers’ organisations and cooperatives contribute to the economic and social development of farming communities, providing services and infrastructure, facilitating farmers’ access to markets, services, resources, training.
* We need to invest in innovative business models to make sure that farmers receive a fair share of value added from food value chains, also by tackling the big elephant in the room that is the concentration of power along the value chain. Excessive concentration is a threat in value chains as well as for the farmers. It is necessary to ensure that farmers participate in the creation of value and that there is a fair share of value across the chain, and that farmers get rewarded for the risks they take and for the value they produce.
* We need to work on the balance between long and short value chains in a way that they become complementary in a country wide food system, and healthy products become accessible and affordable. To create balance, we need to create standards and schemes that recognize the positive and negative impacts of both value chains on the diets of people. It is crucial to make sure that both long and short chains can create the condition for healthy food to be accessible, affordable but at the same time fair for the ones who produce it and buy it. On the one hand, we need to invest in local food production, shortening the chain so that food can have a shorter trip from farm to fork and therefore being also more accessible. On the other hand, we need to work on the longer value chains to make them more transparent and fairer and make sure that those value chains are integrating the real costs of productions. Most of the times, farmers bear the cost of adapting to standards without seeing a fair return on the price of their products. Also, we should bridge the gap between farmers and consumers to enhance the awareness about what it means to produce food and what a healthy and nutritious food look like which might be slightly different from what the consumers are sometimes expecting. We must promote innovative business models that improve the accessibility and affordability of healthy foods for healthy diets. Also, farmers need to be able to access markets: tackling the lack of infrastructures and information that hamper the access to markets, creating standards that allow food to be sold and creating innovative farmer – driven innovative business models that improve access to healthy food (structured farmers’ markets; distribution of fresh agricultural products to schools).
* In data collection, the barriers and bottlenecks faced by farmers have much to say, indicating where attention needs to be drawn. Therefore, an overview of complex food system challenges and a look from multiple perspectives and scales (local to regional) provide a more robust understanding of the leverage points and actions needed to overcome bottlenecks and barriers. In this sense, disarticulation at the intra- and inter-institutional level in both the private sector and government, poor communication, and lack of opportunities for farmers and other agricultural stakeholders to actively participate in the design, implementation, monitoring, and evaluation of policies, plans, programs, and projects usually limit the scope and progress of transformation initiatives. Data collection (and use) should be farmer drive, taking into consideration the needs and expertise and concerns of farmers, including women and young farmers. This should lead also to development of farmer driven national development plans, policies, programs, and implementation strategies.
* There is a lack of awareness and expertise that accompanies issues such as food security and nutrition, implying that a technical capacity gap can undermine the ability of local and national governments and farmer organizations, not only to successfully execute their plans or projects, but also to secure funding from the national and international community to support such initiatives. Increasing information sharing, harmonizing budget items and legal regulations, and most importantly, generating physical and virtual spaces to listen to and dialogue with farmer organizations are just a few entry points that can ultimately avoid overlapping and duplication of efforts by making efficient use of time, personnel, infrastructures, and scarce financial resources. This could also provide co-benefits: stimulate the process of mobilizing and channeling bilateral, multilateral and global funds effectively; safeguard the transparency of processes by reducing the risk of bias when there are agents with economic or political power to prevent the formulation or implementation of regulations and public policies related to agriculture; and make it easier to reach the most marginalised, including for example small-scale farmers in remote areas, who are underrepresented according to the zero draft.
* In addition, data aggregators should also ensure that the data, tools, methodologies, and metrics used are accessible and meaningful to farmers, adequately informing decision-making. The generation, analysis, and dissemination of information on food security and nutrition, also require open dialogue among actors, including farmers, in order to coordinate activities and ensure that end users, e.g., farmers and decision makers, can interpret those information and recommendations and translate them into clear practices in the field, such as climate-adapted crop calendars for timely planting and harvesting and efficient pest and disease management.
* Ownership of the data must be claimed. The use of data must involve not only those who are able to aggregate and manage it, but also those who produce it in the fields with their own machinery. It is fundamental to address the possible obstacles in adopting new technologies linked to the use of data. Often data management is done at the expense of farmers, who release information without consent and without full disclosure of the purpose of data collection. This stems from an imbalance along the food value chain that needs to be addressed. To enhance farmers’ trust, it is vital to equip them with the necessary tools to interpret and use the data they provide and prior informed consent from farmers for accessing their data and information should be a requirement. In addition, many of the digital tools provided to collect data do not take into account farmers' needs or are not available in their native language.
* Also, new business models for data management are needed to make sure they take into account all the stages of agricultural data collection, processing and modelling in a way that benefits farmers. Farmers must be the owners of their data in all stages and the utilization of data collected on farms and farmers’ activities must be useful firstly for farmers and not only serving technological and input providers to improve their products.

**Topic related comments**

* Lack of data: one of the data gaps identified in the document is related to farmers’ activities, mainly highlighting an over-representation of large farmers compared to the smaller ones in results of surveys. It is of the utmost importance that Farmers’ Organisations, being them the organised voice of farmers across the globe, are involved in the retrieval of data to reach the farmers where they are based, even in the outermost rural areas.
* Research efforts: the prioritisation of food and nutrition security has been underlined as a key resource for data collection. In this regard we want to underline that it is necessary to invest in R&D from the farmers’ perspectives, so that their very specific needs and expectations can be met, and the best available knowledge can reach each and every farmer on the ground.
* Digital technologies: In the framework of the opportunities provided by innovation processes, being them not only technological, it is recognised that digital technologies have tremendous potential to achieve the disruptive change required in agriculture and rural development. As highlighted in the document, Internet of Things, Artificial Intelligence, Machine Learning and many others have entered the debate around innovation in agriculture with the potential to shape its sustainability in an effective way, helping farmers to adapt to or mitigate the effects of climate change or supporting them in adopting a “smarter” use of natural resources, for example. However, their use puts several questions on the table, regarding the affordability and utilisation of those technologies by all farmers and the support needed to ensure that this happens. Within the promise of digitalisation, lies the challenge of building a system that puts farmers, from the smallest to the large-scale farmers, at the centre of the conception and scaling-up of appropriate technologies, to bridge the gap between technologies development and the effective use by farmers. The first and fundamental principle should be that a one-size-fits-all approach cannot work with farmers and agriculture. It is equally fundamental to consider how farmers are already innovating themselves and how they are experimenting with their existing resources. Farmers are economic actors, resilient and innovators by nature, and when it comes to digital technologies, solution developers should demonstrate a return of investment of time and resources for farmers. Farming is a business, a job for the farmers, and one should never forget that for farming to be sustainable, it needs to be profitable for the farmers whose livelihoods and incomes depend on it.
* Data management: The document recognizes as one element of difficult access to data, the data protection of farmers. In this domain, we want to reiterate that new business models for data management are needed to make sure that they take into account all the stages of agricultural data collection, processing and modelling in a way that benefits farmers. Farmers must be the owners of their data in all stages and the utilization of data collected on farms and farmers’ activities must be useful firstly for farmers and not only serving technological and input providers to improve their products.
* Collaboration among policy-making institutions or organizations, especially governmental organizations at country level, as well as the collaboration amongst the actors in the value chains, needs to always foresee farmers’ engagement in designing and implementing policies for rural development, education programs for rural youth and women. Also, investments would be needed on the development of existing and creation of new rural infrastructure systems to engage local producers and connect them to markets, improve agricultural production at country level, in particular for small-scale farmers who are usually those left behind.
* Lack of investment in national foundational data and statistics systems by countries: Many low- and lower-middle-income countries lack the financial resources to produce agri-food data and statistics, and donor organizations rarely prioritize this area as a political priority.
* Effectiveness and sustainability challenges in food systems data and statistics investments: limited cooperation on agricultural data and statistics both internally and across development partners has resulted in a proliferation of programs and data collection operations that risk duplication or impair country-led attempts to use data to influence agrifood system policy decisions.

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Data Collection and analysis tools for food security and nutrition HLPE report

V0 draft for e-consultation

**The WFO Working Group on Food Security** intends to offer some considerations from the farmers’ point of view, as follows:

First of all, we appreciate the Report's intent to identify weaknesses and take effective action to solve a problem that significantly impacts the management and control of food safety and nutrition. The availability of certain, reliable and updated data is the tool to understand reality and intervene with public and private policies and actions in an effective and timely manner.

The achievement of the SDGs is strongly linked to the continuous measurement of the variables connected to them. Therefore, we hope that solutions can be identified to bridge the knowledge gap, also in consideration of the mandate of this analysis which, in point 4, sets out :“Provide insights into how to ensure data collection and its utilization give voice to the people most affected by policies stemming from that data, including farmers and other food producers.”

**Key role of farmers**

Farmers are an essential part of the food system locally, nationally and globally[[1]](#footnote-1). Therefore, their role is fundamental, both for the prediction and measurement of the variables related to the production period (quantity and quality of crops, extension of the agricultural area used, production yields / ha, etc), to the relations with the market (agricultural prices, lack of information, transport, roads, conservation, demand …, etc), and to the impact of climate change (impact of natural disasters and adverse events on production levels).

Farmers are at the same time, *users* and *producers* of data: on the one hand, as users, they need to access up-to-date data (forecast and monitoring) for example on the analysis of demand and on atmospheric conditions, on the costs of production inputs, so to orient production choices to market conditions and to climate change. On the other hand, as data producers, they report data on production trends, costs and prices, product losses, among others. This condition places farmers not just as “stakeholders” but as “holders” of essential information for public decision-makers, also and above all in the field of food safety and nutrition.

The role of farmers' organisations and cooperatives must be considered, in ordinary market conditions as well as in crisis conditions, as collectors of aggregate information at local and national level, therefore promptly transmitted.

To successfully achieve food security and nutrition, agricultural organizations and cooperatives need to collaborate (e.g. share best practices, cooperate to promote sustainable food production and agricultural development in the developing countries, exchange opinions and collaborate in order to get engaged in more effective discussions and exchange of views on common concerns and activities). Also, gender equality needs to be strengthened. The role of women in agriculture as primary producers, as well as holders of environmental and traditional acknowledgments, is key to ensure food and nutrition security. In this regard, WFO calls on governments, UN and all other relevant stakeholders, to give rural women farmers the political consideration they deserve. In the context of data governance, we therefore suggest that this analysis highlights more the role of farmers, including small-scale, family farmers and women, and their organisations.

Here below are some more specific comments on issues emerged from the analysis of the text:

* Data Ownership: data are sensitive elements that must remain property of the farmers, above all when we refer to the use of technology and AI;
* Informal economy and completeness of data: the sale of products and access to food are often connected to the informality of the transactions between supply and demand, therefore it is necessary to consider adequate methodologies of interpretation, to avoid the dispersion of information, especially in developing countries.
* In setting up trend analysis models and in the field of evaluating nutritional aspects and using indicators, the text should take more into account the UN Food Systems Summit process which, generally speaking, adopted an approach which does not promote the existence of a universally recognised diet but rather to consider local and traditional diet models, linked to the characteristics of the territories and social ties. Therefore, models on the nutritional aspects should be connected to the different characteristics of the geographical areas and people of reference; in setting up the framework, greater consistency should be given in accordance with the indications of the FSS, in reference to traditional local diets and traditional local knowledge in rural areas.

Finally, here below are some considerations comments in response to the questions:

**1. The V0-draft introduces a conceptual framework that orders the components of the food security and nutrition ecosystem based on their proximity to people’s immediate decisionmaking sphere, from the macro to the individual levels, and describes a four-stage datadriven decision-making cycle for food security and nutrition (FSN), from priority setting to data utilization. Use of the two is illustrated through a matrix template that facilitates the concurrent operationalization of the conceptual framework and data driven decisionmaking cycle to address issues relevant for FSN.**

a. Do you find the proposed framework an effective conceptual device to highlight and discuss the key issues affecting data collection and analysis for FSN?

The proposed draft framework is a good basis according to WFO commitment of strengthening data and thereby espousing data driven action approach in our march towards better food security and ending malnutrition. It has a great potential to help the global community to re-examine data collection tools which further will improve data quality. The framework will help strengthen the quality and availability of data on food security and nutrition and translate them into concrete actions.

b. Do you think that this conceptual framework can indeed contribute to providing practical guidance for data collection for FSN?

Yes, indeed. Various studies explored the relationship among farmers, their operation’s production data and conservation, occasionally revealing a potential disconnection between farmers and downstream supply chain organisations. Farm-level production data is said to play a critical role in conservation and sustainability efforts for food supply chains. Responses to open-ended questions reveal downstream organisations enjoying greater financial benefits from farm-level data sharing than the farmers who provide that data, and this is a major issue that farmers consider when deciding to share their data. The framework albeit outlying the procedures should aim at adopting a farmer-driven and inclusive approach. As mentioned above, it should consider the role of farmers' associations and producers’ cooperatives in ordinary market conditions and in crisis conditions, as collectors of aggregate information at local and national level.

c. Do you think that this four-stage data driven decision making cycle for FSN addresses the key steps in the data collection and analysis process for FSN? Where do you see the more relevant bottlenecks in the data driven decision making cycle for FSN?

Yes- Figure 2 (page 12) 4 stage data driven decision making cycle can help improving the production, analysis and use of food and agricultural data, to support collective action in this area. The four-stage data driven decision making cycle for FSN can help gauge farm characteristics and economic variables, the role of knowledge, perceptions, and attitudes as intrinsic factors toward adoption and should play a key role in farmers' decision-making process for adoption and use.

d. Can you offer suggestions for examples that would be useful to illustrate in a matrix template that facilitates the operationalization of the conceptual framework and data driving decision-making cycle to address issues relevant for FSN?

* Consider mechanisms to help filtering out low quality and misleading data
* Consider data transformation and aggregation methods
* Make provisions for the need of large amount of field data -spatial and temporal
* Work on the need to apply a guiding theory on them; difficult to include all factors of importance (variable selection)
* Prepare for training that can be computationally and timely demanding
* Availability of expert knowledge
* Cope well with data coming from a diversity of data sources (e.g. historical data from repositories with data sensed or monitored)
* The conceptual framework should emphasize the need of education on food security and nutrition and also the matrix template should highlight the issue of education taking into account local, traditional and healthier food as well the concept of diversification.
* Research should focus more on the different crops produced in the different Countries so to have a clear picture of the nutritional richness in each area and that would allow to provide a clearer and more detailed information to people on what to eat, how to make food available and affordable. Education on food security and nutrition is a key element.

**2. The report adopts the broader definition of food security, proposed by HLPE in 2020, which includes the two dimensions of agency and sustainability, alongside the traditional four of availability, access, utilization and stability.**

a. Does the V0-draft cover sufficiently the implications of broadening the definition of food security for data collection, analysis and use?

Yes- We would only recommend a more farmer-driven and inclusive approach while execution of the framework is in progress.

b. What type of data will be most useful in measuring food security dimensions such as “agency” and “sustainability”?

Any possible data overlaying health, food and environment data sources to understand food systems interactions in a particular region or community. Ideally speaking there are very few data sets from which to generate the required information for groups like small-scale farmers, which tend to be isolated from global market forces. Strengthening organized agriculture, as well as engaging farmers’ organisations, is key to reach the greater number possible of farmers on the ground, including small-scale and family farmers.

**3. The V0-draft reviews existing FSN data collection and analysis tools, initiatives and trends.**

a. Do you think that the review adequately covers the existing ones? If not, what would you add?

Yes, but we suggest it should be implemented using a more inclusive and farmer-driven approach.

b. Do you think that the trends identified are indeed the key ones in affecting data generation, analysis and use for FSN? If not, which other trends should be taken into account?

Yes, trends identified are fine. However, we need to consider that trends will also vary when it comes to complex geographies, although the ones in the framework appear sufficient. Also, the role of education should be strengthened, because it is also usually linked to the access to information and technology, which is often a huge barrier in rural areas. Furthermore, we should work less in silos and education, nutrition and health sectors should interact more, for example, by integrating curricula at school and introducing nutrition among the subjects.

c. In particular, can you offer feedback on how digital technology, internet of things, artificial intelligence, big data, and agriculture 4.0 affect FSN? What is their likely impact in the coming decades?

One of the most prominent challenges from the farmers’ perspective is providing food security for the entire society. While many farmers still rely on traditional techniques to coax a living from the land, there are opportunities to use cutting-edge technology (AI/ML/Big Data) to drive mankind towards a food-secure future. AI can be used as an enabler for farming. AI and cloud technology can be used to monitor soil, climate changes and more to make better decisions on when, where, and how much to plant on farms. Precision farming, brought about by the adoption of advanced technologies into the agricultural sector, will revolutionise food production. Using IoT technology it is observed that customers are generating 10x more annual income, experiencing a 300% increase in crop yields, and saving on an average 17 hours of manually moving water per week. The massive rise of Big Data generated from smartphones, social media, Internet of Things (IoT), and multimedia, has produced an overwhelming flow of data in either structured or unstructured format. Big Data technologies are being developed and implemented in the food supply chain that gather and analyse these data. Such technologies demand new approaches in data collection, storage, processing and knowledge extraction. Big Data analysis is used to provide predictive insights in several steps in the food supply chain, support supply chain actors in taking real time decisions, and design the monitoring and sampling strategies. However, technologies and data imply considerations regarding the affordability and utilisation of those technologies by all farmers and what kind of support farmers need to use them in the most effective way, according to their needs and skills.

**4. The report discusses capacity constraints at local, national and global levels, with a special focus on statistical and analytical capacity.**

a. Do you think that the V0-draft covers all the issues – and their consequences - of capacity constraints at the different levels? YES

**5. The V0-draft discusses the role of new and emerging technologies in data collection and analysis tools for FSN.**

a. Do you think that the presentation of new and emerging technologies captures the main trends? What other new and emerging technologies could be discussed in the report? YES

b. In what other ways can new and emerging technologies be relevant to each of the stages/aspects of the FSN data value chain/data lifecycle (i.e., Define evidence priorities and questions; Review, consolidate, collect, curate and analyze data; Translate and disseminate results and conclusions; Engage and use results and conclusions to make decisions)?

Digitalization and the use of new technologies and alternative data sources, such as satellite imagery and citizen-generated data, are accelerating collaboration on agri-food systems.

However, lack of investment in national data and statistics systems is hindering developing countries like India, among others, from harnessing this potential. Donors are facing challenges in financing agricultural data and statistics as historic investments have been ineffective and unsustainable. Effective collaboration is fundamental for the modernization of statistical production and for enhancing trust and legitimacy of data and statistics in the food and agriculture sector. When stakeholders along the data value chain collaborate, the result is more and better data produced, more relevant and timely insights for decisionmakers, and better use of the available resources, as well as enhanced digitalization. This requires inclusive and multi-stakeholder approaches that can enhance trust and support data governance and sharing. FAO can play a vital role in this area, also through its liaison officesand involving for example farmers’ organisations on the ground, although it is not always easy to face challenges linked to financing and effectiveness of this kind of data and statistical work and country level support.

c. In what other ways can new and emerging technologies be relevant to each of the FSN dimensions (i.e., Availability; Access; Utilization; Stability; Agency; Sustainability)?

In multiple ways. New emerging technologies would help improve the efficiency and help follow an integrate approach for each of the FSN dimension.

d. What are some of the issues with respect to ethical use of data, access, agency and ownership linked to these new and emerging technologies that should be further discussed in the report?

Agricultural Big Data is also vulnerable to privacy and security threats. Accuracy and availability of data proved to be an issue because not all farmers had available data and data retrieved from third parties may not be accurate.

**6. The report reviews issues concerning institutions and governance for data collection, analysis and use, with a focus on data governance principles, data protection, transparency and governance of official statistics, the implications for governance of an increasingly digitalized world, and examples of initiatives addressing governance challenges.**

a. Are there any issues concerning governance of data for FSN that have not been sufficiently covered in the draft report?

Not really. Almost much of the important and relevant ones are covered. We could make it more compatible to tackle the above-mentioned challenges.

b. What are some of the risks inherent in data-driven technologies for FSN? How can these risks be mitigated? What are some of the issues related to data privacy, access and control that should be carefully considered?

Agricultural Big Data is also vulnerable to privacy and security threats. A more cohesive, farmer driven policy-making mechanism to craft policies which makes geographies immune to the above risks. Taking governmental support or implementing policies through agricultural ministries will also be a viable option.

c. What are the minimum requirements of an efficient FSN data system and how should these be prioritized?

Data System has the potential to solve development problems cheaper, faster and more effectively which would be the minimum requirements of an efficient FSN Data system. From food insecurity and malnutrition to climate change and environmental degradation, an effective FSN data system should play a role in help accelerating the development of robust responses to some of the most pressing challenges of our time. It should ideally transform the world of genomics and crop breeding, and revolutionizing disciplines from climate modelling to agronomy. It should help refine policies and improve lives. Remote sensed and effective FSN data systems are transforming approaches to the development of more resilient food systems. All above will assume equal priority.

d. Which mechanism or organization should ensure good governance of data and information systems for FSN? How to regulate and mitigate potential conflicts between public and private ownership of data?

While data collection and processing now underpin many health, education and social services used for and by farmers, this digital ecosystem is so complex and data processing so seamless that neither the producers nor their affiliate organisations are fully aware of how their data are being captured and used – and thus, the potential benefits and risks. The good governance of farmers' data raises issues beyond data protection, including the validity of applying concepts such as use of farmer’s data for marketing purposes and surveillance by state actors, risks of group data profiling and the right to have data erased or forgotten.

e. What are the financing needs and the financial mechanisms and tools that should be established to allow all countries to collect, analyse and use FSN data?

Every Data Collection program to collect, analyse and use FSN data needs adequate funding to translate it into reality. Thus, the financing needs are grave and pressing for any program see daylights. Forming strategic groups to work towards catalysing investments and partnerships for high scale, sustainable FSN programmes would be an effective financial mechanism. FAO and other UN agencies, farmers’ organisations, together with other stakeholders at local level could strengthen collaboration towards mobilising partnerships for FSN and help rise joint investments to boost sustainable development. This brings the nutrition community alongside the private sector, governments and philanthropists who help deliver innovative solutions and national nutrition programmes at scale, which should always engage farmers and their organisations.

**7. Drawing on HLPE reports and analysis in the wider literature, in the next draft the report will outline examples of potential policy pathways to address challenges to data collection and analysis tools for FSN.**

a. What data do the global community and international organizations need in order to gain an appropriate insight into the current state of world food security and to agree on and design international action to improve it?

Please refer to the above answers. Due to the diversified nature in which geographies behave data cannot be restricted to “what data”. Data has to be made available from anything and everything to enable effective decision-making in complicated geographies and otherwise.

b. What data do countries need for more effective decision-making for food security and nutrition and to inform policies for the transformation of food systems?

Some examples:

* Adoption of emerging technologies and smart techniques.
* Adequate investments.
* New resources for researchers – expanding existing knowledge and filling critical gaps
* An evolving Ethical Framework for data collection
* Research – aligned with real-world nutritional & food security needs

## Anne Brunel

Dear HLPE Steering Committee,

Members of the [Global-Hub on Indigenous Peoples’ Food Systems](https://www.fao.org/indigenous-peoples/global-hub/en/) would like to thank the High-Level Panel of Experts to provide the opportunity to comment on the V0 Draft report on Data collection and analysis tools for food security and nutrition.

Kindly find attached our comments as well as an annex document.

Best regards,

FAO Indigenous Peoples Unit, Secretariat of the Global-Hub on Indigenous Peoples' Food Systems

**Data collection and analysis tools for food security and nutrition - Online consultation on the V0 Draft of the Report proposed by the HLPE Steering Committee and the Project Team**

Members of the [Global-Hub on Indigenous Peoples’ Food Systems](https://www.fao.org/indigenous-peoples/global-hub/en/) would like to thank the High-Level Panel of Experts to provide the opportunity to comment on the V0 Draft report on Data collection and analysis tools for food security and nutrition. Kindly find below a consolidated version of our comments, for your kind consideration.

**General comments**

**What is the problem?**

* Indigenous Peoples’ food systems are complex, and intrinsically tied to Indigenous Peoples’ values, culture, spirituality, cosmovision, and hence traditional knowledge and language. Indigenous Peoples’ food systems cannot be characterized according to dominant conceptualizations of food systems that are presented as linear value chains (FAO, 2021).
* Indigenous Peoples’ food systems comprise huge varieties of food items, often low- or un-documented (FAO, 2021). However, public policies have failed to protect Indigenous Peoples’ food systems. Important dietary changes have been observed in Indigenous Peoples’ populations as they experience rapid socio-economic, cultural and ecological changes associated with globalisation and modernisation. Commercial agriculture has, in many places, eroded indigenous food cultures, reduced food diversity, and have resulted in ecosystem degradation, poor diets and rise of non-communicable diseases (FAO, 2021).
* Researchers and policy-makers still not often understand Indigenous Peoples’ food systems and their unique characteristics. Despite policy-making or research can be led with good intentions, unawareness can lead to further erode the traditional food systems of Indigenous Peoples, rending them more vulnerable, further to historic discrimination.

**In this context, data collection and analysis must be conducted with intercultural sensitiveness whilst following the principle of “Nothing for or about Indigenous Peoples without Indigenous Peoples”. In order to reverse historic trends of marginalization and discrimination, some considerations are suggested below.**

**1. Data collection and analysis tools need to be carried out considering:**

* Respecting the individual and collective rights of Indigenous Peoples, recognized in the UN Declaration on Indigenous Peoples Rights (UNDRIP), including the right to self-determination of Indigenous Peoples, in particular the right to food. This means, amongst others, to:
  + Include Indigenous Peoples at all stages of any research activities, data collection and processing.
  + Include Indigenous Peoples in governance policy fora, and implementation of policies.
* Respecting the traditional and customary institutions of Indigenous Peoples;
* Respecting the Free, Prior and Informed Consent of Indigenous Peoples.

**2. Examples of opportunities for data collection that could be useful for Indigenous Peoples:**

* Create disaggregated data for Indigenous Peoples, indigenous women, indigenous youth and their traditional knowledge, as per the [recommendations of the UN Permanent Forum on Indigenous Issues](https://esa.un.org/unpfiidata/UNPFII_Recommendations_Database_list.asp?TargetPageNumber=1&action=Search&lang=&orderby=&dir=&PageSize=20&masterkey=&SearchField=AnyField&SearchOption=Contains&SearchFor=&PageSizeSelect=20) and other declarations from Indigenous Peoples (1;2).
* Agency of Indigenous Peoples could be measured through:
  + Participation of Indigenous Peoples in policy discussions
  + Compliance with legal framework and governance tools such as [the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security](https://www.fao.org/3/i2801e/i2801e.pdf) (VGGT), the [Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries](https://www.fao.org/documents/card/en/c/I4356EN) (SFF) guidelines, and the right to food guidelines
* Indigenous Peoples’ food security is intrinsically linked to access to ancestral and traditional land and natural resources. Data collected should reflect on the interrelations between indigenous territories, food security, diet diversity and biodiversity (including genetic diversity).
* Need to improve global and national databases on food scientific identifications at the species/variety level, on nutrient composition analysis, and on adequate dietary analysis with these data.
* Gathering the data requires a range of research methodologies including ethnography and qualitative data on food availability and use.

**1.**The V0-draft introduces a conceptual framework that orders the components of the food security and nutrition ecosystem based on their proximity to people’s immediate decision making sphere, from the macro to the individual levels, and describes a four-stage data-driven decision making cycle for food security and nutrition (FSN), from priority setting to data utilization. Use of the two is illustrated through a matrix template that facilitates the concurrent operationalization of the conceptual framework and data driven decision-making cycle to address issues relevant for FSN.

*a. Do you find the proposed framework an effective conceptual device to highlight and discuss the key issues affecting data collection and analysis for FSN?*

**Misunderstanding of Indigenous Peoples’ food systems and over-simplification.**

In regards of Indigenous Peoples, we still fail to understand the complexity of their systems.

Indigenous Peoples have a biocentric view of life, meaning that ecosystems and their human and non-human co-inhabitants are intrinsically connected. It induces that humans are one element in the ecosystem, deserving respect along with the rest of living entities. In this context, Indigenous Peoples recognize the sacredness and spirituality in all things and their connection with the spiritual world. Biocentrism underpins Indigenous Peoples’ food systems, informing practices of food generation, production and natural resource management strategies. Indigenous Peoples have developed their traditional knowledge, culture, language, values, spirituality and cosmogony embedded in biocentric conception of life. It radically differs from anthropocentric approach, where human separation with nature is high, and human intervention monitors inputs of energy, nutrients, water and/or temperatures in order to favour production.

Whilst data collection can inform decision-making processes and can be necessary to address Indigenous Peoples’ issues, one must be aware of any high risk of misinterpretation and dramatic oversimplification of the complex reality of their food systems.

Rather than surveys, it is important to recall the need ethnographic approaches so researchers can understand the complexity of Indigenous Peoples’ food systems, their holistic nature, their biocultural drivers, and also, how Indigenous Peoples define a healthy diet and time use in relation to food preparation. In relation to Indigenous Peoples, the proposed framework can be useful if it moves beyond the surveys and goes into more deep studies and ethnographic approaches that actually teach the researchers the complexity of their food systems.

*b. Do you think that this conceptual framework can indeed contribute to providing practical guidance for data collection for FSN?*

**The need for a human-right- and a bottom-up approaches in data collection**

The conceptual framework does not provide insights on how priorities for data collection are decided, bringing the risk to maintain top-down approaches that overlook local populations’ needs, including Indigenous Peoples’ communities. The report should precise the need to define priorities though a democratic process involving the decision-makers and beneficiaries. In order to guide the process, several considerations are to be taken into account when working with Indigenous Peoples.

* **The need to respect the right to self-determination of Indigenous Peoples, including the right to food as per the United Nations Declaration on the Rights of Indigenous Peoples,** by virtue of which Indigenous Peoples freely determine their political status and economic, social and cultural development. In this context, policy-making must be intercultural and must include Indigenous Peoples during research activities, and from the formulation to the implementation of policies.
* **The need to respect the traditional and customary institutions of Indigenous Peoples:** Indigenous Peoples maintain their own traditional governance systems. In the frame of the right to self-determination, stakeholders that set-up priorities on data selection must involve the traditional governance systems in the process of data collection and policy-making from it, and its implementation.
* **The need to respect the Free, Prior and Informed Consent:** FPIC refers to a right pertaining to Indigenous Peoples, that states that, any project or activity that affects directly or indirectly Indigenous Peoples must have the FPIC of Indigenous Peoples.

In addition to the legal framework mentioned above, understanding Indigenous Peoples’ food systems and work hand-in-hand with Indigenous Peoples to formulate public policies could diminish the following risks:

* A standardized global or national framework for data collection would risk to oversimplify the complex reality of Indigenous Peoples’ food systems. Local-adapted data and information reduce the risk of one-size-fits-all solutions, that can be detrimental to the well-being of Indigenous Peoples and the sustainability of their food systems (FAO, 2020).[[2]](#footnote-2)
* In addition, decision-making based on data collected can easily overlook the importance and relevance of traditional knowledge for Indigenous Peoples in relation to their food systems. Data collection should remain a tool for decision for amongst other sources of information, available for Indigenous Peoples to take their own decision in their territories.

Underestimating these risks would lead to marginalize Indigenous Peoples and weaken their food systems further.

*c. Do you think that this four-stage data driven decision making cycle for FSN addresses the key steps in the data collection and analysis process for FSN? Where do you see the more relevant bottlenecks in the data driven decision making cycle for FSN?*

As mentioned above, the risk of taking decisions based on data only is to dramatically reduce the complexity of the food systems. Not all is about nutrient intake but other values linked to food.

**2.** The report adopts the broader definition of food security, proposed by HLPE in 2020, which includes the two dimensions of agency and sustainability, alongside the traditional four of availability, access, utilization and stability.

*a. Does the V0-draft cover sufficiently the implications of broadening the definition of food security for data collection, analysis and use?*

“Utilization” needs to be broader defined to consider not only the nutritional value but the multipurpose of the food systems for Indigenous Peoples’ that goes beyond the tangible uses, i.e. spiritual and cosmology values. For Indigenous Peoples, food is about more than eating. It carries nutritional, medicinal, healing, spiritual, social, cultural, relational, emotional dimensions and values (FAO, 2021).

*b. What type of data will be most useful in measuring food security dimensions such as “agency” and “sustainability”?*

**Agency**

In relation to Indigenous Peoples, agency is one of the common interacting factors that affect the resilience of Indigenous Peoples to environmental change (Ford et al., 2020). Services provided by governments are often not adapted to Indigenous Peoples’ needs (Van Uffelen et al., 2021; FAO, 2021). As an example, the historic marginalization and social exclusion of Indigenous Peoples was reflected in the use of a “one-size-fits-all approach” to respond to COVID-19 (Power et al., 2020), while ignoring Indigenous Peoples’ traditional knowledge and the importance of biodiversity to directly assist Indigenous persons who were sick with COVID-19 (Montag et al., 2021).

Both data on means deployed to guarantee Indigenous Peoples’ agency, and results would be important to measure. Nevertheless, it often happens that consultations involving Indigenous Peoples take place, but that their decision-making capacity is overlooked, excluding them from any decision and implementations processes. Data on participation of Indigenous Peoples in policy discussions, at global, national and local levels are critical. However, information on the how the right to self-determination, right to food and FPIC are implemented would be of particular relevance. In this context, collecting data on the compliance with the [Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security](https://www.fao.org/3/i2801e/i2801e.pdf) (VGGT), [the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries](https://www.fao.org/documents/card/en/c/I4356EN) (SFF) guidelines, and the [right to food guidelines](https://www.fao.org/3/y7937e/y7937e.pdf) during policy-making or implementation at global and national level could be explored.

**Sustainability**

A useful question to explore with the use of data would be “How diets have been shaped by policies that failed to understand the complexity of Indigenous Peoples’ food systems”. It could highlight the historical reconstructions that show how diets have shifted over time and the drivers of such. This would also allow seeing the response of communities. In terms of sustainability, the historical reconstructions could also yield to results that tell us if the current diets or previous one lead to more sustainable and resilient communities or what should be we doing.

Traditionally, Indigenous Peoples manage their food systems using their traditional knowledge and based on the observation of the local ecosystem. As mentioned earlier, whilst data can support the decision-making process, a better understanding of Indigenous Peoples’ food systems and their complexity by various actors could be the priority. The use of a reduced corpus of data could limit the understanding of Indigenous Peoples’ food systems, that are systemic and that carry spiritual, cultural, emotional, and values dimensions.

In relation to sustainability, Indigenous Peoples’ food security is intrinsically linked to access to ancestral and traditional land and natural resources. The interrelations between indigenous territories, food security, diet diversity and biodiversity (including genetic diversity) would be of great relevance for Indigenous Peoples. In particular, highlighting the role of Indigenous women and indigenous youth would bring further insights on their critical roles in the food systems.

**4.** The report discusses capacity constraints at local, national and global levels, with a special focus on statistical and analytical capacity.

*a. Do you think that the V0-draft covers all the issues – and their consequences - of capacity constraints at the different levels?*

**Lack of political will and transparency**

Indeed, Indigenous Peoples are still facing marginalization and discrimination in countries where they live. Often requested by Indigenous Peoples in various arenas, in particular the United Nations Permanent Forum on Indigenous Issues (UNPFII), is the creation of disaggregated data on Indigenous Peoples[[3]](#footnote-3), including on Indigenous women and indigenous youth, which are essential for governments and international organizations to fully grasp their situation and needs.

However, many countries around the world still do not recognize Indigenous Peoples in their state. This lack of legal recognition perpetuates the historic discrimination of Indigenous Peoples and further weaken their food systems, its sustainability and resilience.

**Social divides in digital access and literacy**

Indeed, many Indigenous Peoples live in remote areas, in isolation, or they can have a nomadic lifestyle, which are barriers to data collection. In addition, Indigenous Peoples speak 4 000 out of the 6 700 languages remaining worldwide (UNDPI, 2018). Every community might have different access to technologies. In this context, technology could affect FSN but also could lead to leaving others behind. When thinking of technologies is important to acknowledge that realities differ, needs and responses too. Indigenous Peoples’ are using technologies to monitor the rising of their rivers, changes in landscapes and those changes also affect their nutrition. If we truly want to commit ourselves to support them, we should invest in infrastructure and capacity development.

**5.** The V0-draft discusses the role of new and emerging technologies in data collection and analysis tools for FSN.

*d. What are some of the issues with respect to ethical use of data, access, agency and ownership linked to these new and emerging technologies that should be further discussed in the report?*

**Extractive methods**

Methodologically, the need to gather more data to improve food security and nutrition is understood. However, many of the methodologies encountered are often invasive and extractive (FAO, 2021).

Research and evidence gathering for policy-making need to be done in a participatory way, and seek further engagement of communities. How data is gathered, who accesses it and for what, and who own it are crucial questions to be asked. For instance, the Native Nations Institute at the University of Arizona is working actively to develop protocols on data sovereignty and research sovereignty to increase accountability and transparency in accordance to the rules and protocols of Indigenous Peoples (FAO, 2021).

**6.** The report reviews issues concerning institutions and governance for data collection, analysis and use, with a focus on data governance principles, data protection, transparency and governance of official statistics, the implications for governance of an increasingly digitalized world, and examples of initiatives addressing governance challenges.

*a. Are there any issues concerning governance of data for FSN that have not been sufficiently covered in the draft report?*

Data on food scientific identifications at the species/variety level, on nutrient composition analysis, and on adequate dietary analysis are valuable to ensure their access and use in policy decisions. Data must be available for national/international policies to protect Indigenous Peoples’ territories where these foods are located and ensure the access and protection of the foods therein, particularly for the vulnerable communities that rely on them. There are countless examples of Indigenous food resources that are compromised without government action informed with quality data.

With respect to governance on use of data from Indigenous communities, it is essential that participation from the affected communities must be assured in governance policy fora. In most nations, this involves participation in decisions related to land/water use, within ministries of agriculture, forestry, and fisheries.

**7.** Drawing on HLPE reports and analysis in the wider literature, in the next draft the report will outline examples of potential policy pathways to address challenges to data collection and analysis tools for FSN.

*a. What data do the global community and international organizations need in order to gain an appropriate insight into the current state of world food security and to agree on and design international action to improve it?*

It is very clear that the global community does not have a complete, or even a “good”, picture of the vast diversity of foods available or the nutritional contents of them. Indigenous Peoples can make use of more than 200 foods (FAO, 2021; FAO and the Alliance of Bioversity International and CIAT, 2021) in their diet, which they source from their territory. Without this understanding of what it is that people actually eat there is compromise in obtaining quality data of food security and nutrition.

Extensive international effort needs to be placed on improving the databases on food scientific identifications at the species/variety level, on nutrient composition analysis, and on adequate dietary analysis with these data. National food composition data tables must continue to be fostered, with training on their preparation including funding of laboratories for food analysis. Further to this important step, attention to diverse ecosystems in countries that contain knowledge of unique foods must become a priority. The situation and knowledge of the vast undocumented food resources of Indigenous Peoples around the world is a concern.

Gathering these data requires ensuring equity with knowledge sharing at the grass-roots level. This means attention to the principles of “Free, Prior and Informed consent.” It requires enhancing the capacities of Indigenous community scientists to gather and share these data appropriately within their culture and more broadly. Gathering the data requires a range of research methodologies including ethnography and qualitative data on food availability and use.

*b. What data do countries need for more effective decision-making for food security and nutrition and to inform policies for the transformation of food systems?*

* Interrelations between indigenous territories, food security, diet diversity and biodiversity (including genetic diversity).
* Linkages between ecosystem services and collective management of the environment and nomadic livelihoods;[[4]](#footnote-4)
* Impact of resettlement policies on the environment and biodiversity for those areas previously subjected to nomadic or mobile livelihoods[[5]](#footnote-5);
* Data to support environmental impact analysis for nomadic livelihoods that have shortened their cycles or reduced their areas[[6]](#footnote-6);
* Undertake micro- and macro-nutrient analysis of the traditional food items consumed by Indigenous Peoples to understand nutrient composition of food items[[7]](#footnote-7).

*c. Please suggest references to cases that illustrate policies and initiatives aimed at:*

* improving equity in access to data for FSN policies and decisions, including at grassroot and local levels;
* enhancing capacities with respect to data generation, access, analysis and use by different actors;
* specifically harnessing of traditional and indigenous/first nations knowledge.

*Note: the word “harnessing” does not seem appropriate here, as it can refer to the notion of “knowledge extraction” as mentioned earlier. The Global-Hub on Indigenous Peoples’ Food Systems advocates for the principle of co-creation of knowledge, together with Indigenous and non-Indigenous scientists and knowledge holders to generate evidence for intercultural policy-making.*

*Kindly find in Annex 1 Examples of knowledge co-creation, blended approaches and innovation by Indigenous Peoples’ communities.*

**8.** Please provide your feedback on the following:

*b. Are topics under- or over-represented in relation to their importance?*

How information can be accessed by local communities and how they can be empowered by this information. Most of the data is used at the policy or research level with little involvement of local communities.

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**Annex 1. Examples of knowledge co-creation, blended approaches and innovation by Indigenous Peoples’ communities**

The Annex presents examples of good practices of research and policy-making that rely on a mutual respect and understanding of Indigenous Peoples’ traditional knowledge and science, leading to co-creation of knowledge and policy implementation for Indigenous Peoples.

Co-creating knowledge: Addressing blind spots and developing new metrics

* Weather forecasting by the Inuit people of Clyde River, Arctic Canada

An example retrieved from the research of Weatherhead et al. (2010) describes detailed observations of weather by the Inuit people of the community of Clyde River in Arctic Canada, and how observations and knowledge shared by Inuit around weather variability and predictability have contributed to modern scientific forecasting. Inuit observations of “persistence” – the likelihood that an unusually warm (or cold) day will be followed by another such day – provides important insight into increasingly-variable weather and climatic conditions, which is highly relevant to Indigenous Peoples during hunting season. Inuit reports of persistence were able to indicate that weather variability began in late 1980s and 1990s and accentuated in following decades - trends that climate scientists in the Arctic have struggled to identify in lack of relevant metrics (Nakashima, Krupnik and Rubis, 2018). Future projects that bring scientists and Inuit together at the project design stage and follow through with collaborative analysis and reporting are likely to reveal even more detailed findings.

Co-creating knowledge: Understanding ancestral traditional knowledge of Indigenous Peoples

* Weather forecasting by the Andean Indigenous Peoples, Andes

An example understood collectively by Orlove, Chiang and Cane (2000 , 2002), highlights how Andean Indigenous Peoples observe the Pleiades star cluster - when it appears close to the horizon in the pre- dawn sky of late June - in order to decide of the planting period of potatoes, their principal subsistence crop. The interpretation of the start allow them to forecast, several months ahead, the incidence of rain during the next growing season from October to March. Thanks to a multi-disciplinary research team, relying on anthropology, physical sciences and cutting edge of atmospheric data, it was understood that the ritualized star - gazing of the Andean Indigenous Peoples provided a mechanism for assessing levels of humidity in the upper atmosphere. This proved in turn to be an indicator for El Niño years, when domestic crops in the Andes suffer from diminished and less reliable rainfall. (example retrieved from: Nakashima, Krupnik and Rubis, 2018)

Co-creating knowledge: Mitigating climate change impacts

* Dibaginjigaadeg Anishinaabe Ezhitwaad: A Tribal Climate Adaptation Menu (Case study 12 of the [White/Wiphala paper on Indigenous Peoples’ food systems](http://www.fao.org/documents/card/en/c/cb4932en/), p.94; FAO, 2021)

Indigenous Peoples are particularly aware and able to detect changes induced by climate change (Green and Raygorodetsky, 2010). Perceptions of changes in the climate system and coping strategies of Indigenous Peoples are intimately linked to their knowledge and worldviews (Donatuto, Campbell and Trousdale, 2020). In turn, many climate adaptation planning tools fail to address the unique needs, values and cultures of indigenous communities. This Tribal Climate Adaptation Menu, which was developed by a diverse group of collaborators representing tribal, academic, inter-tribal and government entities in Minnesota, Wisconsin and Michigan, provides a framework to integrate indigenous and traditional knowledge, culture, language and history into the climate adaptation planning process. While this first version of the Menu was created based on Ojibwe and Menominee perspectives, languages, concepts and values, it was intentionally designed to be adaptable to other indigenous communities, allowing for the incorporation of their language, knowledge and culture.

Co-creating knowledge: Improving diet and well-being of Indigenous Peoples’ communities:

* How local food-based strategies can be used to ensure micronutrient strategies (from Kuhnlein, 2004)

There are numerous examples of significant improvements of health conditions when Indigenous Peoples temporarly return to their traditional foods and livestyles (FAO, 2021; Kuhnlein et al., 2013; Kuhnlein, 2004). For instance, it was observed that the carbohydrate and lipid metabolism of diabetic aboriginal peoples improved when returning to livestyles of nomadic hunter-gatherers (Kuhnlein, 2004; Brimblecome, 2018). In her article, Kuhnlein presents how the consumption of Karat banana, pulque prepared from *Agave* species, and gac fruits as traditional foods by Indigenous Peoples, respectively in the Federated States of Micronesia, Mexico, and Vietnam, are critical to guarantee the adequate nutrients intakes and improve health status of Indigenous Peoples. The article highlights the importance of traditonal food resources, and stresses on the importance to know more about their micronutrient composition, since they are a strong and coherent solution for nutrition promotion programs to improve health status of Indigenous Peoples locally.

* Advancing healthy and sustainable food environment: The flathead Reservation case study (Case study 3 of the [White/Wiphala paper on Indigenous Peoples’ food systems](http://www.fao.org/documents/card/en/c/cb4932en/), p. 88; FAO, 2021)

Researchers at Montana State University worked with the Flathead Indian Reservation to create different food intervention models to see what works the best to increase healthy foods and diet. These included Eat Fresh intervention (2016) with 20 households, which included education, culinary training, and provision of fruit and vegetables. They found that there were improvements in self-reported health characteristics amongst participants such as wellbeing, mental alertness and mood as well as increases in fruit consumption. From these multiple interventions, lessons that emerged acknowledged that interventions have to be community-based, incremental and multi-phased with linkages to existing institutions and a thoughtful dissemination approach that includes multiple stakeholders and outlets. These are examples of combining traditional food knowledge on agrobiodiversity and wild foods with scientific knowledge on dietary diversity and food composition data for achieving improved diets and nutrition (Nongrum et al. 2021).

Co-creating knowledge: Managing biodiversity

* Resilient Farming Systems in Times of Uncertainty: Biocultural Innovations in the Potato Park, Peru (<https://pubs.iied.org/14663iied>)

Indigenous Peoples’ communities are partnering with scientists to manage agrobiodiversity and biocultural hotspots such as the Potato Park in Peru. These are bio-cultural innovations and strategies leading to on-farm adaptation and evolution of global genetic resources. Despite significant climatic challenges, the Potato Park has succeeded in increasing crop yields, doubling incomes and crop diversity and strengthening social capital since 2003.

Indigenous innovation: digital technology and web platform for traditional knowledge

* SIKU: The Indigenous Knowledge Social Network <https://siku.org/about>

SIKU is a mobile app and web platform by and for Inuit which provides tools and services for ice safety, language preservation and weather. SIKU is a mobile app and web platform created by and for Inuit, providing tools for weather, ice safety and hunting stories as well as knowledge transfer and language preservation. SIKU puts Indigenous knowledge and observations front and center alongside weather and safety services including sea ice products, tides, marine forecasts, and satellite imagery. This lets hunters share dangerous and changing ice conditions with their communities using their own language and knowledge systems. The use modern digital technologies and videos for documenting and raising awareness on traditional knowledge and biodiversity (<https://www.international.gc.ca/world-monde/stories-histoires/2017/indigenous_youth_stories-jeunes_autochtones_recits.aspx?lang=eng>)

*Indigenous innovation: Innovation in relationships and ethics*

* The ontological pluralism across Indigenous Peoples’ societies and cultures are innovations that deeply guide the relationships with an environment and the rules that support those actions (Gudynas, 2011). Indigenous Peoples’ traditional knowledge and responsibility go hand in hand (Milgin et al., 2020). For example, the Nyikina, of the Mardoowarra-Fitzroy river catchment, hold a deep relationship with the hydro-ecological system that extends across ancestral, rhythmic, sentimental and spiritual dimensions. These relationships guide the Nyikina’s custodial responsibility and ethics towards governing natural resource systems. These resources themselves go beyond objects entailing the very reciprocal relationships that must be supported to ensure a continued collective health for the hydro-ecological system and beings you live and depend on it.

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## Hannah Tait Neufeld, The University of Waterloo, Canada

**Online consultation on the V0 Draft of the Report proposed by the**

**HLPE Steering Committee and the Project Team**

Overall, I was very interested to read more about the expanded concept and components of food security to include agency and sustainability. Sustainability is a key dimension that has long been recognized by Indigenous Peoples. Indigenous food sovereignty takes into consideration sustainability as well as agency in the form of self-determination over food systems, but perhaps more importantly food environments. The conceptual model incorporates these dimensions along with a range of nutrition and health determinants. Distal determinants, I would argue, however, must also be viewed from a more structural perspective, taking factors such as colonization, knowledge loss, and patterns of urban migration into account. Those who move or relocate frequently experience food insecurity, as resources are spent moving from reserve to urban spaces, or within cities. Indigenous women, children, and single parent families have also previously been identified as being most likely to be food insecure within Canada (1). An examination of place-based and socially situated influences on food choice and Indigenous food environments is severely lacking from the literature, as is a focus on community-based initiatives and measures of data collection. There is a need, I believe to address both external and internal dimensions of food environments to take into account the structural determinants of FSN. Food environment frameworks that tend to focus on individual health behaviours need to be adapted to recognize that Indigenous food use is a central link between Indigenous Peoples and the land. Food environment frameworks are useful for understanding the socio-ecological determinants of food choice (2),as this approach places individual factors such as knowledge and preference within diverse environmental settings (3). Much of the work on food environment frameworks has not yet, however, incorporated the unique structural determinants impacting Indigenous food environments.

Therefore in terms of data collection and analysis tools, it is imperative I think to look beyond addressing individual and household barriers to accessing high quality foods from both the market system along with Indigenous food systems. These food environments are complex and refer to the socio-cultural meanings, patterns of acquisition, processing techniques, use, composition, health and nutritional consequences for Indigenous Peoples (4). Recent studies highlight the need to continue to build upon multi-jurisdictional efforts at the community, regional, provincial and national levels to reduce rates of food insecurity and improve nutritional status in Indigenous communities (5). A determinants of health and approach takes into consideration the intersectoral dimensions and a more comprehensive understanding of the structural, including historical and both the physical and social environmental determinants on dietary practices (6). Community priorities and values also need to be recognized and included within relevant frameworks impacting food environments. Improving their stability thereby ensures that local ecosystems are healthy and can sustainably support Indigenous Peoples’ agency and control over their local food environments through data sovereignty.

Hannah Tait Neufeld

Assistant Professor, Canada Research Chair

The University of Waterloo

Canada

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## Rosemary Navarrete, Private Sector Mechanism, Italy

The Private Sector Mechanism (PSM) is pleased to participate in the e-consultation on the V0 draft of the HLPE report “Data collection and analysis tools for food security and nutrition.” The PSM believes to effectively address the current gaps and challenges in agriculture productivity and income that help perpetuate food insecurity, there needs to be a growing recognition of the need for sharing of available, accessible and usable data for agriculture and nutrition. This requires 1) an increase in investment in high quality agriculture; 2) the promotion of better, more actionable data; 3) through the use of new sources of data; 4) the creation of an enabling environment for increased data; and 5) the exchange of data for disaster risk reduction.

With this in mind, the PSM can share the following input on the VO report which comes from its wide membership across the entire value chain; from farmers, to input providers, to cooperatives, processors, SMEs, and food companies. To facilitate the HLPE work, please also accept the attached V0 draft converted into word which suggests additions and deletions, and where possible provides comments/rationale.

1. Firstly, we would like to note the overly negative tone in assessing the food system in the introduction. While there is a need to identify the failings of the food system in many areas, there have also been successes which were evident during the COVID-19 pandemic and could be cited. In a similar manner, a less than positive stance towards the private sector can be gleaned in some places, and its direct omission in many others.

2. The role of the private sector appears under-appreciated throughout the document, with very few positive mentions as an existing collaborator, source of technology or data. Where private sector is mentioned, often the perspective is risk management versus a more embracing sentiment. We encourage those aspects of the report to be improved, with the understanding that expanding data collection and analysis needs to be a collaborative effort between governments, international agencies, the private sector, civil society and academia. The openness of international agencies and governments to the inputs, ideas and advice from other sources is key. As such, an environment of inclusiveness to solving potential data issues and allowing for their questioning and eventual correction should also be welcomed (see § 3.3.1, 5.1, 5.3, 5.4, 4.4.1, among other areas).

3. The alignment of the document to the SDGs could be stronger, as harnessing the power of data is one of the most important tools for achieving the SDGs. The PSM notes the report clearly highlights the lack of resources; however, identifying the topics where high quality and actionable data does not currently exist could lead to more impactful investments. The PSM believes the primary focus of investment should be on the data necessary to track achievement towards the SDG indicators.

4. The role of the farmer in providing and not only consuming data, and the related needs/concerns could also be developed further. The PSM looks forward to providing this insight during the upcoming process from a wider perspective, encompassing farms of all sizes, and addressing their related challenges.

Thank you for the opportunity to become involved.

Attachment:

<https://assets.fsnforum.fao.org/public/discussions/contributions/V0_Draft_HLPE_17_data_collection_analysis_PSM.docx>

## Anne Kepple, FAO, Italy

Greetings colleagues and thank you for your hard work. I hope the attached comments will be helpful. In summary, I encourage the authors to: 1) adopt a more updated conceptual understanding of the link between information and policy; 2) clarify the relationships between food security (specifically, access to food at the individual or household level), food consumption, and nutritional outcomes (and the data and methodologies associated with each); 3) distinguish between global/regional data and decision-making and national/local data and decision-making; 4) incorporate discussions of the important contributions of qualitative/ethnographic/interpretivist research and data and of citizen science.

Best regards,

Anne Kepple

**Comments on the VO Draft of the HLPE report “Data collection and analysis tools for food security and nutrition - *December 2021”*** – Anne Kepple, FAO Statistics Division

**General comments:**

I encourage the authors to adopt a more updated conceptual framework of the link between information and policy. The “Data driven decision making cycle” adopted for the report is a heuristic tool that does not reflect decades of research on the utilization of data and research to inform policy making. Decision-making processes are much more diffuse and complex and are infused with power relations. If that reality is not reflected in the conceptual framework of decision making, an important opportunity will be missed to provide proper guidance regarding steps that can be taken to improve the utilization of data-based information to inform policy. The report would also benefit from a discussion of types of data producers and types of data users. I have provided a few references below.

Overall, the report seems much more focused on nutrition. Food security seems subsumed under nutrition. The relationships between food security (specifically, access to food at the individual or household level), food consumption, and nutritional outcomes (and the data and methodologies associated with each) should be clarified and developed better here and throughout the report.

Throughout the report, it seems to refer to quantitative/statistical data and analysis, to the exclusion of qualitative data and analyses conducted using qualitative/ethnographic/interpretivist research methods. Missing is content that addresses this objective stated in the previous e-consultation from Feb-March 2021 (https://www.fao.org/fsnforum/cfs-hlpe/e-consultations): “The report will explore how qualitative research methodologies (including case studies, lived experiences, traditional, indigenous and local knowledge) can provide evidence for a deeper understanding of FSN issues and on sustainable agriculture practices.” The important role of citizen science and alternative sources and types of data is also missing. This is related to the suggestion above to include a discussion about types of data producers.

The OV draft does not fulfill the promise to explore “data analysis and tools needed to ensure that FSN policies address all the dimensions of food security, including agency and sustainability”. On the other hand, I also feel this was a very tall order. **There is a good argument to be made that it is beyond the scope of the report to address ways of measuring and monitoring agency and sustainability**, which may in fact merit an entire reports unto themselves. Regarding agency, the only comment I see thus far, beyond citing it as a new dimension of food security, is “The newer domains of food security such as agency also have no broadly agreed upon indicators.” Indeed, identifying data and tools to assess agency is a challenge that may be beyond the scope of the report.

**CHAPTER 1**

I think a definition of data is needed in this chapter. Throughout the report, it seems to refer to quantitative/statistical data and analysis, to the exclusion of qualitative data and analyses conducted using qualitative/ethnographic/interprevist research methods. I also feel it overlooks the important role of citizen science and alternative sources and types of data.

The literature on bringing qualitative research and citizen science to bear on policy making is large. But a few relevant references and examples specific to FSN include:

H.Wittman, D. James, and Z. Mehrabi. 2020. Advancing food sovereignty through farmer-driven digital agroecology. Int. J. Agric. Nat. Resour. 235-248. Available at: <https://www.scielo.cl/pdf/ijanr/v47n3/2452-5731-ijanr-47-03-0235.pdf>

Special issue of *Anthropological Forum* (vol 26, issue 3, 2016) dedicated to ethnographic approaches to food policy and practice: <https://www.tandfonline.com/toc/canf20/26/3>

Kepple AW, Siliprandi EC, Meira PTH. 2014. Subsídios para a elaboração de um sistema municipal de gestão de informação integrada à luz das diretrizes da Política Nacional de Segurança Alimentar e Nutricional. Em *Avaliação de Políticas Públicas: Reflexões Acadêmicas sobre o Desenvolvimento Social e o Combate à Fome. Segurança Alimentar e Nutricional*. Ministério de Desenvolvimento Social e Combate à Fome, Brasil, 2014. Available only in Portuguese at: <https://fpabramo.org.br/acervosocial/wp-content/uploads/sites/7/2017/08/308.pdf>

**Figure 1** needs to reflect food security better. Overall, the report seems much more focused on nutrition. Food security seems subsumed under nutrition. The relationships between food security (specifically, access to food at the individual or household level), food consumption, and nutritional outcomes (and the data and methodologies associated with each) should be clarified and developed better here and throughout the report. For example, see the 2018 SOFI report (section entitled “Pathways from food insecurity to malnutrition”, p. 29-34).

**Figure 2** presents a “Data driven decision making cycle” that does not reflect reality. This conceptual framework, which also forms the basis for Figure 3 (the table), is based on the premises that problems are clearly identified/prioritized, and that specific decisions can be identified to which data-based evidence can be brought to bear. This is often not the case, particularly in FSN policies which tend to be strongly influenced by politics and ideology, and it fails to consider the potential role of information in agenda-setting and defining the problem to begin with. It is a model that may be more applicable to the context of program evaluation, when a program has a clearly defined theory of change, clear objectives and well-defined outcomes. The conceptualization overlooks the dynamics of agenda-setting and the diffuse nature of decision making. Consider, for example, the potential agenda-setting effects of media stories citing new data-based evidence of a rise in hunger.

A quick look at the 1-page executive summary of this 1995 document reveals how far the thinking about this had evolved even 25 years ago: <https://pdf.usaid.gov/pdf_docs/PNABX317.pdf>.

Some additional references include:

Weiss, C.H. 1983. Ideology, interest, and information: the basis of policy decisions In Ethics, the Social Sciences, and Policy Analysis, D. Callahan & B. Jennings (Eds.), pp. 213-245. New York: Plenum.

Bogenschneider, K.; Corbett, T. 2010. Evidence-Based Policymaking. Insights from Policy-Minded Researchers and Research-Minded Policymakers. Routledge (book)

Jones, H. 2009. Policy-making as discourse: a review of recent knowledge-to-policy literature. ODIIKM Working Paper No. 5, London, ODI.

<https://www.emergentworks.net/sites/default/files/ikmemergent_archive/090911-ikm-working-paper-5-policy-making-as-discourse.pdf>

Jones, N.; Datta, A.; Jones H. Knowledge, policy and power Six dimensions of the knowledge– development policy interface. ODI. <https://cdn.odi.org/media/documents/4919.pdf>

James, T.E; Jorgensen, P.E. 2009. Policy Knowledge, Policy Formulation, and Change: Revisiting a Foundational Question. *The Policy Studies Journal*, Vol. 37, No. 1.

The literature on information utilization to inform policy points clearly to a role of information in shaping thinking and conceptualizations over time. For example, experience-based food security scales like the FIES and its predecessors have had the very positive effect of shifting thinking about food security away from a focus on calorie and nutrient intake and shedding light on the political and social causes as well as the psychosocial consequences of food insecurity that go beyond nutritional status. The FIES promotes a conceptualization of hunger and food insecurity as experienced by people; it is our best measure of the realization of the right to food.

Example 4 should definitely be about hunger and food insecurity as the others are about diet and nutrition.

**CHAPTER 2**

The priority setting and utilization bullet points do not reflect current thinking and knowledge.

Box 1 – An example of a successful national FSN monitoring system (which has unfortunately been dismantled by subsequent administrations with different policy priorities) is from Brazil:

Kepple AW, Segall-Correa AM. 2017. Food security monitoring in Brazil and other Latin American countries: Support for governance with the participation of civil society. Global Food Security 14 (2017), p. 79-86.

Table 1 – Consider changing the title to clarify that these are all global or regional platforms (Possibly add the JME database? UN SDG indicators database?). I doubt that it is feasible to include national or local initiatives, but I think it would be good to make the distinction between global/regional data and policies and national/local data and policies. Global and regional databases are often not useful for national decision-making. Methodologies and indicators only have to be “globally agreed and harmonized” and cross-country comparable for global monitoring. That’s an important distinction. I presume the report aims to provide guidance for regional and global FSN monitoring and decision-making as well as country-level producers and users of information, e.g. to help them identify and use valid methodologies and promote the link with policy at the national or even sub-national levels.

The above article by Kepple and Segall-Correa is just one example of the importance of understanding local contexts and the power of an intersectoral national FSN system to promote the link between information and policy. For example, in Brazil, the Ministry of Social Development (now the Ministry of Citizenship) has an internal evaluation and information management unit. In past years, when the national FSN system was fully functioning, the government regularly published calls for research proposals specifically to support their evaluation and decision-making processes – to meet the specific priorities and needs identified by the government together with the CONSEA (National FSN Council). The system was set up to promote the link between information and policy. Many of the studies funded by the government were qualitative. For example, I conducted the following qualitative study as a consultant for the Brazilian government:

Kepple, AW; Siqueira, DS. Policy Impact of Food and Nutrition Security Program Evaluation Studies Contracted by the Secretariat of Evaluation and Information Management of the Brazilian Ministry of Social Development and Fight Against Hunger. In: International Scientific Symposium on Food & Nutrition Security Information: From valid measurement to effective decision-making, January 18, 2012, FAO, Rome. Session abstracts. p. 32. Available at: <http://www.fao.org/fileadmin/user_upload/eufao-fsi4dm/docs/iss-abstract-book.pdf>

Longer version in Portuguese in a publication that also includes many other such studies contracted by the Ministry of Social Development:

Kepple AW. Contribuições de estudos de avaliação para a gestão de programas de segurança alimentar e nutrição. 2010. Em: Síntese das Pesquisas de Avaliação de Programas Sociais do MDS, 2006-2010. Luziele Tabajós, Júnia Quiroga, org. *Caderno de Estudos Desenvolvimento Social em Debate*, Número 13, 2010, pp. 213-220. Ministério de Desenvolvimento Social e Combate à Fome, Brasília. <https://aplicacoes.mds.gov.br/sagirmps/ferramentas/docs/caderno%20-%2013.pdf>

**CHAPTER 3**

The chapter starts from this arguable premise: “Data gaps prevent decision-making to formulate policies to improve human and planetary health. Policy making is difficult because of lack of situational data and also due to the paucity of data on interests and values of actors (Deconinck *et al.*, 2021).”

Data gaps are just one of many things that prevent effective decision making. Again, it is important that the report be based on a better understanding of the decision making process and all the competing interests involved, as well as how to make better use of existing data. It is definitely true that a better understanding and awareness of the “interests and values of actors” is needed, but it goes beyond a “paucity of data” about it. I would say instead a “lack of information and understanding about, and consideration of, the interests and values of the actors and the power dynamics”. Institutional mechanisms are needed to address imbalances in power among stakeholders.

I feel this chapter needs to be organized better according to types of data - e.g. food security (access to food), food expenditures, individual dietary intake (24-hour recalls, diet quality measures), nutritional status, etc - to help the reader navigate. The lengthy paragraphs make general statements about very different types of data that are difficult for the reader to follow.

Also, the chapter could benefit from more clarity and reflections on what types of food security and nutrition data are needed going forward. This article, for example, is a call to carefully rethink the outdated focus on single nutrients in foods and instead focus on overall dietary patterns, processing methods, etc.:

Mozaffarian, D., Rosenberg, I. and Uauy, R., 2018. History of modern nutrition science—implications for current research, dietary guidelines, and food policy. *BMJ*, 361: k2392. <https://www.bmj.com/content/bmj/361/bmj.k2392.full.pdf>

This actually calls into question the heavy emphasis in the chapter on the need for accurate food composition tables (Box 4 and elsewhere). There is an argument to be made that nutrition science has evolved beyond that.

I encourage the authors to improve the discussion of the newer methodologies aimed at assessing dietary patterns and diet quality that reflect the more updated data needs based on the evolution in nutrition science. Another data gap is more and better data about highly processed foods and the concentration of the agrofood industry.

Missing is a discussion of the importance of National Food-based Dietary Guidelines (see Section 1.3 in the 2020 SOFI report: <https://www.fao.org/3/ca9692en/ca9692en.pdf>).

Re: section 3.1 “Local and country-level capacity restraints”, I suggest the authors take care to avoid generalizations and recognize the excellent capacities existing in many NSOs.

I cannot make sense of section 3.1.3 “Lack of coordination between agencies”. Why the focus on the SDGs specifically? And what is meant by “multiple agencies within a country”? Does this refer to international agencies, or to national governmental ministries? Again: Is the objective of the report to provide guidelines to international agencies and for global FSN monitoring, or to countries for national FSN monitoring? I find the report to be a bit schizophrenic in this regard.

**Box 3** – The title should not be “The high cost of FSN surveys” as it is all about nutrition data. It is essential to differentiate between the high costs of surveys that collect data on nutritional status and individual dietary intake data, from the considerably lower cost of collecting FIES data, for example. Even MDD-W data are considerably easier and less expensive to collect and analyze than 24-hour recall data.

Also, sections 3.1.4 and 3.1.5 highlight lack of political will and transparency, and of stakeholder engagement, as constraints to effective data collection and analysis at the county level. With a more realistic and deeper understanding of policy decision making processes, the crucial potential for information to shape priorities (agenda-setting) and build political becomes clear – as well as the types of institutional arrangements and coalitions that promote it.

**CHAPTER 4**

This reference seems relevant to this chapter as well:

H.Wittman, D. James, and Z. Mehrabi. 2020. Advancing food sovereignty through farmer-driven digital agroecology. Int. J. Agric. Nat. Resour. 235-248. Available at: <https://www.scielo.cl/pdf/ijanr/v47n3/2452-5731-ijanr-47-03-0235.pdf>

**CHAPTER 5**

I find it difficult to comment on this chapter until it is developed further. But to begin with, I encourage the authors to define what is meant by “data governance”. It also seems to lack a consideration of the important potential of citizen science. I understand that it may not be possible to include a good discussion of this in the report, but I encourage the authors to at least mention its importance and the fact that it is beyond the scope of the report.

## Philip Seufert, FIAN International, Germany

FIAN International is pleased to submit comments to the V0 Draft HLPE Report on "Data collection and analysis tools for food security and nutrition".

FIAN's comments focus on the need for incorporation of the right to food and nutrition as well as the broader human rights framework into the conceptual framework and throughout the document. Our comments are attached.

**Submission to the online consultation on the V0 Draft of the Report “Data collection and analysis tools for food security and nutrition” proposed by the HLPE Steering Committee and the Project Team**

FIAN International is pleased to submit its comments on the V0 Draft of the HLPE Report on “Data collection and analysis tools for food security and nutrition.”

FIAN is an international organization with more than thirty years of experience in the defense and promotion of the human right to food and nutrition. FIAN operates through its international secretariat, which is based in Heidelberg (Germany) and Geneva (Switzerland), as well as its national sections in 20 countries in Africa, Asia, Europe and Latin America. For more information, please see [www.fian.org](http://www.fian.org).

FIAN International is a member of the Civil Society and Indigenous Peoples’ Mechanism (CSM) to the CFS.

**Re question 1, regarding the conceptual framework:**

FIAN International considers that the conceptual framework proposed by the V0 Draft has the following major shortcomings:

1. The proposed conceptual framework does not take into account human rights in general and the right to food and nutrition in particular. These are, however, central to FSN, in particular FSN’s agency dimension. The right to food recognizes agency, as human rights are intrinsically about individual and community capabilities and freedoms. In this context, we would like to recall the HLPE of the last point of the terms of reference, which were agreed by the CFS for this report: “Provide insights into how to ensure data collection and its utilization give voice to the people most affected by policies stemming from that data, including farmers and other food producers”. Moreover, in the rationale for this work stream, CFS 2019/46/7 - CFS Multi-Year Programme of Work 2020-2023 clearly states in its para 42 that “[…] data sources are wide and varied and should be collected and utilized with an eye towards transparency, openness, and consistent with legal standards and relevant human rights principles.”

In order to incorporate the right to food and nutrition and the broader human rights framework into the report’s conceptual framework, FIAN recommends the following:

* Build on the standards developed in the Voluntary Guidelines on the Progressive Realization of the Right to Adequate Food (RtF Guidelines), which were adopted unanimously by all FAO member states in 2004, to improve decision-making for FSN. Among others, the RtF Guidelines emphasize the importance of agency to realizing the right to food by calling upon states to “promote and safeguard a free, democratic and just society in order to provide a peaceful, stable and enabling economic, social, political and cultural environment in which individuals can feed themselves and their families in freedom and dignity” (FAO, 2005, Guideline 1). The RtF Guidelines further explicitly call on states to ensure that right to food strategies and policies are developed, implemented and monitored through inclusive processes that ensure the participation of women and other vulnerable groups, and that they facilitate consumer choices (FAO, 2005, e.g. Guidelines 3, 8, 9 and 11). At the same time, exercising agency requires recognizing and upholding rights. This point is emphasized in HLPE 14, which stresses that, “Achieving agency implies the need for access to accurate information, the right to such information and to other aspects of food security, as well as the ability to secure such rights, including access and control over the resources required for production, harvesting and preparation of foods” (HLPE 14, 2019, p.66).
* Recognize the distinct forms of knowledge that have been developed and are held by small-scale food producers and indigenous peoples, and which are protected by international law, including the right to free, prior and informed consent to the utilization of such knowledge by others (Convention on Biological Diversity, art. 8 j, UND Declaration on the Rights of Indigenous Peoples, UN Declaration on the Rights of Peasants and Other People Working in Rural Areas). The importance of such knowledge is also emphasized by the UN Committee on Economic, Social and Cultural Rights’ (CESCR) General Comment No. 25 on science and economic, social and cultural rights, which states the following regarding the right to food and nutrition ([UN Doc E/C.12/GC/25](https://undocs.org/E/C.12/GC/25)):

64. Scientific and technological advancements have increased agricultural productivity, contributing to higher availability of food per person and reduction of famine. Nevertheless, the environmental impacts of certain technologies associated with the Green Revolution and the risks associated with increased dependency on technology providers has led, inter alia, the General Assembly to acknowledge that peasants and other people working in rural areas have the right to determine their own food and agriculture systems, recognized by many States and regions as the right to food sovereignty. Thus, the right to participate in and to enjoy the benefits of scientific progress and its applications in agriculture should preserve, not violate, the right of peasants and other people working in rural areas to choose which technologies suit them best. Low-input eco-friendly agronomic techniques that increase organic matter content in soil, carbon sequestration and protect biodiversity should also be supported.

65. In addition, States parties should take appropriate measures to ensure that agricultural research and development integrates the needs of peasants and other people working in rural areas and to ensure their active participation in the determination of priorities and the undertaking of research and development, taking into account their experience and respecting their cultures. Every policy or action taken on biofuels and pesticides should consider all their interconnected complexities and the best available scientific knowledge.

* Take into account and build on the human rights principles developed by the former UN Special Rapporteur on Extreme Poverty and Human Rights, Philip Alston, which emphasize the need to take into account the implications of data collection and use on social, economic and cultural rights, in addition to aspects such as privacy, nondiscrimination, data security etc. The Special Rapporteur emphasizes, among others the importance of the following aspects in the context of collection and use of data ([UN Doc A/74/493](https://undocs.org/A/74/493)):
  + regulation of data collection and use, based on human rights
  + Ensure the respect, protection and fulfilment of human rights
  + Ensure legality and transparency
  + Promote digital equality
  + Regulation and accountability of corporate actors
* Take into account the broader context of the digital economy, in particular existing inequalities, which raise important challenges regarding the access to, use of and control over data and digital technologies by marginalized groups. For instance, UNCTAD’s Digital Economy Report 2021 emphasizes the need to:
  + Take into account “current divides that characterize the global digital economy” (p. 11)
  + Take into account the concentration of power (including processing power) in big tech companies (“global digital corporations”) and in some few countries, resulting in a highly unequal capture of economic benefits arising from data and its use.
  + Consider that “As the data-driven digital economy has evolved, a data-related divide has compounded the digital divide.” (p. 3)
  + Regulate the collection and use of data, which has become an important economic resource

2. The proposed conceptual framework omits discussing and problematizing the term/concept “data”. Moreover, the term/concept is not clearly distinguished from other terms/concepts that are used in the draft and which are relevant in the context of the report, such as “information”, “evidence” and “knowledge”. FIAN International considers it as critical that the HLPE report defines its understanding of the term “data” and situates it within the current political, economic and social context, taking into account the following aspects:

* Data is not neutral: the ways in which data is created, collected, processed and used has a bearing on the very nature and quality of the data and the results of its analysis. As such, the use of data is prone to biases, which need to be taken into account in decisionmaking processes.
* In the digital economy, data is an important economic resource and asset. Any discussion and use of data as well as data analysis tools, including in the context of food and nutrition, need to take into account this reality, since it has major implications for access to data as well as control over data and the digital infrastructure that is needed to store, process and analyze it. The current context of great power imbalances and a high degree of concentration in the information and communications technology (ICT) sector as well as the agri-food sector are therefore important aspects in the context of data in the context of FSN.
* Biases linked to data collection (e.g. exclusion of certain kind of data or information) and processing (e.g. biased algorithms and/or AI) can result in the exclusion of certain groups, including already marginalized groups and those most affected by food and nutrition insecurity.
* There are different and diverse forms of data, information and knowledge. This includes, in particular, information and knowledge that are held by small-scale food producers. Such information is critical for FSN but is usually not considered by data collection systems.

3. FIAN International is concerned about the V0 Draft’s uncritical use of concepts such as “datadriven decision-making,” and without discussing them adequately. We recommend to the HLPE to refrain from using the concept of “data-driven decision-making” for the following reasons:

* According to CFS MYPOW, the main aim of this work stream is to improve critical decision-making around FSN policies strengthening the capacity of countries to collect, analyse and use data. The aim is therefore not to advance or promote data-driven decision-making.
* “Data-driven decision-making” – particularly regarding policy decision-making – may undermine the exercise of fundamental rights and democratic principles. The underlying assumption is that data and the datification of reality is a superior form of knowledge. Thus, it excludes or subordinates other forms of knowledge, which are equally relevant for decision-making, such as information and knowledge held by small-scale food producers and indigenous peoples. An uncritical trust in big data (which has been described as “a big data state of mind”[[8]](#footnote-8)) may lead to the idea that more and more data and automated data analysis is all that is needed to understand and shape the world. Such a view deprives particularly marginalized groups of their agency and right to participate in decision-making, and lead to inequitable and unjust outcomes. Data should not drive decisions, but may contribute to support decision-making to achieve policy objectives, which have been developed through democratic and participatory processes. In the words of the former UN Special Rapporteur on Extreme Poverty and Human Rights, Philip Alston: “Assuming that technology reflects preordained or objectively rational and efficient outcomes risks abandoning human rights principles along with democratic decision-making.” ([UN Doc A/74/493](https://undocs.org/A/74/493), para. 79)

Instead of using the framework of “data-driven decision-making,” the HLPE report should provide insights into how data collection and analysis can strengthen democratic, participatory, inclusive of decision-making for FSN, based on the right to food and nutrition and the broader human rights framework. The first step therefore needs to be identifying what needs to be improved in decision-making for FSN. Based on this, the report can discuss ways in which data collection and analysis can contribute (or not) to achieve the needed improvement.

4. The previous comments are also relevant for the proposed conceptualization of the “data value chain/cycle” inasmuch as the decisions taken at every step (priority setting, data, translation, utilization) will necessarily influence the outcomes. In this sense, it would be wrong and dangerous to assume that the “data value chain/cycle” is neutral and leads to “objective” recommendations and/or decisions. Once again, such an understanding entails serious risks of excluding already marginalized groups and those most affected by food and nutrition insecurity.

**Re question 2 regarding the report’s use of the broader definition of food security and nutrition:**

FIAN International welcomes the V0 Draft’s adoption of the broader definition of FSN and the inclusion of the dimensions of agency and sustainability. Is regrettable, however, that the report omits relating all six dimensions to the topic of the report, namely data collection and analysis, stating merely that they are “cross-cutting” issues to the conceptual framework. We consider that discussing the relationship of FSN to data collection and use should be at the center of the conceptual framework, based on the right to food and nutrition and human rights (see our response to question 1).

As said in our response to question 1, the dimension of agency is of particular importance in this regard, as it relates to critical questions regarding access to data, decisions on types of data considered, control over data and its use, control over the digital infrastructure (including data storage and processing capacities), among others. Moreover, biases arising from limiting the scope of data used as well as its processing and analysis (including through artificial intelligence) entail the risk of undermining agency and human rights.

As far as we can see, the six dimensions of FSN are only applied to data collection and analysis tools in chapter 4.3. However, this happens in a superficial way, which does not do justice to what should be a central part of the report. One example is the reference to the generic term “users” in the context of agency, which omits a discussion on the great variety of actors, their ability to access and use data as well as power asymmetries among them. Based on a human rights-based framework, the report should give particular attention to marginalized groups, including those most affected by food and nutrition insecurity.

**Re question 3 regarding FSN data collection and analysis tools, initiatives and trends:**

It would be important for the report to provide information regarding the criteria for the selected examples. Based on our previous comments, this is a concrete example of how selecting certain data bases/data collection initiatives leads to an (explicit or implicit) prioritization of certain types and sources of data over others.

**Re question 4 regarding capacity constraints at local, national and global levels**

Whereas capacity constraints are relevant issues in the context of data collection and analysis for FSN, it should be avoided to give the impression that technical and resource constraints are the only (or main) factors to take into account in this regard. As explained before, it would not be appropriate for the HLPE report to suggest that the main challenge is to ensure the collection of as much data as possible. Furthermore, a focus on statistics and surveys does not do justice to the many different forms of data and information that are relevant for FSN. Therefore, issues related to different types/forms of data and information, power imbalances, control over data and digital infrastructure should be given more attention.

**Re question 5 regarding the role of new and emerging technologies**:

FIAN International welcomes the discussion of risks associated with the use of digital technologies in chapter 4.4. We recommend, however, to include a specific section on human rights risks, including for the right to food and nutrition. Such a section should address issues that we have mentioned before, such as:

* Risks arising from inequitable access to data.
* Risks arising from inequitable control over data and its use.
* Risks arising from the exclusion (willfully or not) of certain types of data and information as well as from biases in data analysis tools (e.g. biased algorithms and/or AI). This includes biases based on gender.
* Risks arising from the concentration of data, digital infrastructure (including data collection, storage and processing capacities) as well as benefits arising from data use. This aspect is of particular relevance given the high levels of concentration in the ICT as well as the agrifood sector, both in terms of geographical concentration as well as in terms of market domination by few companies. (cf. UNCTAD’s [Digital Economy Report 2021](https://unctad.org/system/files/official-document/der2021_en.pdf)).
* Risks arising from exclusive property regimes over data.

Such risks could be illustrated by concrete examples, focusing on risks and adverse impacts on the rights of marginalized groups as well as small-scale food producers and indigenous peoples. Possible examples include the undermining of peasants’ and indigenous peoples’ rights over seeds (farmers’ rights) through digital sequence information (DSI) (cf. [Submission](https://www.fao.org/3/ca4663en/ca4663en.pdf) of the International Planning Committee for Food Sovereignty to the International Treaty on Plant Genetic Resources for Food and Agriculture) ) as well as the replication, fostering, and even exacerbation of discrimination against rural people (cf. FIAN International (2021), [Disruption or Déjà-vu? Digitalization, Land and Human Rights](https://www.fian.org/files/files/FIAN_Research_Paper_Digitalization_and_Land_Governance_final.pdf)).

In this context, FIAN International is concerned that the description of new and emerging technologies and their (potential) benefits for the six dimensions of FSN (Table 3) could be read as an endorsement of these technologies and their concrete application by the HLPE. Based on our own research work, we must emphasize, for instance, that the use of blockchain and other digital technologies in the context of land governance and administration (mentioned on p. 33 of the V0 Draft) has led to exclusion and human rights impairments (cf. FIAN International (2021), [Disruption or Déjà-vu? Digitalization, Land and Human Rights](https://www.fian.org/files/files/FIAN_Research_Paper_Digitalization_and_Land_Governance_final.pdf)).

FIAN International recommends the HLPE to give more visibility to data collection initiatives that are led by small-scale food producers’ organizations and civil society organizations (CSOs).

Relevant examples within the scope of this report include:

* A website collecting information on land and resource grabbing: [www.farmlandgrab.org](http://www.farmlandgrab.org);
* Mapping of land and environmental conflicts: <https://ejatlas.org/>;
* Tracking of land grabs, deforestation and forest fires in Brazil: <https://en.agroefogo.org.br>;
* Monitoring of deforestation: [www.globalforestwatch.org](http://www.globalforestwatch.org).

Regarding the mitigation of risks, FIAN International recommends to put more emphasis on regulation through legislation (chapter 4.5.1). As stated several times, the right to food and nutrition and the broader human rights framework should be the basis for such a discussion. Self-regulation by tech and agri-food corporations through voluntary commitments or multi-stakeholder initiatives is certainly not adequate or sufficient, especially in the context of great power imbalances and high levels of concentration of power in the hands of a few corporations.

**Re question 6 regarding institutions and governance for data collection, analysis and use**

FIAN International considers that the HLPE report’s discussion of governance in the context of data and FSN should be based on the right to food and nutrition and the broader human rights framework. Governance of data collection and use for FSN is not primarily a question of optimization, but a question of equity, democracy and justice. As such, FIAN recommends to focus on the following issues:

* Ensure effective regulation and accountability regarding data collection and use, including corporate accountability;
* Ensure respect, protection and fulfilment of human rights. In addition to important issues such as privacy and data security, this needs to include economic, social and cultural rights, in particular the right to food and nutrition;
* Give special attention to the rights and needs of small-scale food producers, indigenous peoples, women, marginalized groups and those most affected by food and nutrition insecurity;
* Address power imbalances and inequities of the digital economy, such as the concentration of digital infrastructure, including data storage and processing power;
* Take into account the importance of cross-border data flows and the transboundary nature of the global digital economy, including the concentration of power within global digital corporations;
* Develop governance models that treat data as a public good (as recommended by UNCTAD’s Digital Economy Report 2021), as alternatives to models based on exclusive property regimes, which favor concentration of data, processing power and economic benefits arising from data.

**Re question 8:**

As explained in detail above, the lack of consideration of the right to food and nutrition and the broader human rights framework is a major omission. It is of utmost importance that the report adequately incorporates the right to food and nutrition and the broader human rights framework in its conceptual framework, and uses it as a basis for analysis throughout the report.

## Fabrizio Moscatelli, Bill and Melinda Gates Foundation, Italy

BILL AND MELINDA GATES FOUNDATION COMMENTS ON V0 DRAFT OF HLPE REPORT ON DATA COLLECTION AND ANALYSIS TOOLS FOR FOOD SECURITY AND NUTRITION

With these comments, we would like to acknowledge the effort borne by the contributors to and the importance of the analysis in this zero-draft report.

We fully believe in the work of the HLPE of the CFS and in the importance of bringing greater attention to the need to understand what is happening in the agriculture sector. We’re pleased to have supported the Data Workstream in the Multi-Year Program of Work, alongside the governments of Uganda and the United States.

Major problems in the data space, such as (i) inadequate capacity of countries to produce, analyse, and use statistics; (ii) inadequate funding of statistics at the global, national, regional and local levels; (iii) the need for improved forecasting and other techniques to complement survey-based techniques; and (iv) transparency of, ownership of, and open accessibility to agricultural statistics, are yet to be solved if we are to achieve the ambitious goals we set in 2015 with the Agenda2030, and in particular the SDG 2 and its related indicators.

The opportunity offered by this HLPE report, therefore, is timely and significant. The CFS process is a means of engaging a diverse set of stakeholders on very significant questions: what do we know about the world’s agriculture, food and nutrition and how might we strengthen our understanding? The V0 draft surveys the field and delves into a construct for the answers, which we hope will be a point of emphasis in this process. The report itself and the process as a whole could be made more impactful if they delve into a rationale on how and why decision makers should tackle this issue as a means of addressing the increase in the number of hungry, the lack of adequate access to food security and nutrition and the burgeoning climate crisis. All of these issues require improved statistics to make evidence-based decisions. This report is a generational opportunity to address the why, how and what of agricultural statistics at a higher level.

The urgency, that we therefore have, is to make sure that agricultural statistics become a priority for leaders the world over. We suggest the report directly address:

* Why we need improved agriculture, food and nutrition security statistics.
* Quantify the scale of the challenges that we collectively face at the national and global levels.
* Propose possible solutions and partnerships to address this – both current and unexplored.

Answers to these key questions will empower the CFS to assess and consider how its Member States and diverse stakeholders might collectively contribute. This would strengthen its impact, that of the HLPE and the workstream under which this work is being conducted.

We thank the CFS and the HLPE for this opportunity to contribute and would welcome an opportunity for our technical experts to provide further input, as appropriate.

## Fabrizio Moscatelli, Bill and Melinda Gates Foundation, Italy

Please find here below additional specific technical comments from the Bill and Melinda Gates Foundation. Thanks.

* Types of data included: The report offers a conceptual framework for food security and nutrition determinants and outcomes and a data cycle from conceptualization of data needs to data generation and use. From my perspective what is missing in these introductory frameworks is a holistic description of the types of data of interest. There is no discussion of the key types of data that are being considered in this report. These would include: dietary intake, anthropometry, micronutrient status, food security, food safety, cost of healthy diet, food loss and waste. A table of the types of data this report is considering, along with the level of data collection (individual, household, sub-national, national, etc.), and perhaps a few other variables, would be quite helpful in the introductory section. In addition, the report is inconsistent in its incorporation of agricultural data. Agricultural data is mentioned in some sections of the report (but not in the title), but it is not comprehensively treated, so it is not clear whether the intention is to include all types of agricultural data or just select elements.
* Lack of prior data: Relevant to the point above, the discussion of constraints in research infrastructure on pp. 12-14 includes a very lengthy list of types of “prior data” that are missing or inadequate. This discussion reads a bit like a laundry list and includes types of data that extend from the Women’s Empowerment in Agricultural Index to agricultural land rights. This list of insufficient data from sectors adjacent to food security and nutrition is too sprawling, a bit disorganized, and is not actionable. Which are the key types of “adjacent” data that are necessary for food security and nutrition analysis and how can food security and nutrition data efforts improve the availability and use of such data?
* Existing data initiatives: In Table 1 under “Efforts to address data-related challenges and barriers,” some key relevant initiatives that are missing include: 1) Intake, Center for Dietary Assessment at FHI 360 (<https://www.intake.org/>), 2) Food Prices for Nutrition at Tufts (<https://sites.tufts.edu/foodpricesfornutrition/>,) and 3) Global Dietary Database at Tufts (<https://www.globaldietarydatabase.org/>)
* Out-of-date assessments: In a few places the report seems to include information that does not reflect current conditions. Two examples: 1) Box 4 on the lack of data for nutrition assessments quotes the Malabo Montpellier Panel Report from 2017: “…there is no functioning global dietary database.” In fact, in the last few years FAO has created and is the host of a functioning global dietary database that is growing with additional data sets every month. 2) INFOODS is held up in a few places as a positive collaborative initiative success story, and while INFOODS has a wonderful vision and achieved important work in the past, it has had practically no funding for many years and has been stalled in many of its ambitions, despite its skilled and enthusiastic network of members.
* Examples of use of food security and nutrition data for policy-making: The questions guiding the online consultation ask for specific examples of the use of food security and nutrition data to inform policies, and FAO has a relevant report, co-authored with Intake, that is pending approval with FAO and should be published soon: “Global Report on the State of Dietary Data.” The report includes numerous examples of specific countries using dietary data to inform health, nutrition, and food policies and programs (see section 2.3).

## Tim Kränzlein, Permanent Mission of Switzerland to the UN organisations in Rome

Dear Colleagues from the HLPE,

Switzerland would like to thank for the consultation on the V0 of the HLPE Report on “Data Collection and Analysis Tools for Food Security and Nutrition”.

Please find enclosed our feedback, structured based on the guiding questions.

We remain available for any follow-up on our feedback.

Kind regards,

Tim Kränzlein

**Swiss Inputs on the HLPE Report on “Data Collection and Analysis Tools for Food Security and Nutrition”**

**HLPE e-consultation on the V0 of the report (Link:** [**V0 draft of the report**](https://assets.fsnforum.fao.org/public/V0_Draft_HLPE_17_data_collection_analysis.pdf)**)**

**General comments (relate to guiding question 8)**

a) **Food security and nutrition with its six dimensions:** Switzerland very much welcomes that the V0 of the report build on the expanded understanding of food security and nutrition though the dimensions of agency and sustainability. Hence, food security is only given when food is available, accessible and utilizable, when individuals and groups are their own food agents and when the food is sustainably sourced. We have highlighted during CFS47, adoption of HLPE 2020 report “Building a Global narrative towards 2030”, that it will be of utmost importance that the ongoing and future work of the CFS fully integrates this evolved understanding of food security and nutrition as this was already endorsed by CFS45. We therefore very much support that this report is in line with this CFS45 recommendation.

b) **Food-Systems-Approach:** In general, we welcome that the text as a whole places major emphasis on the topic of nutrition. However, the report has to take into account a holistic and systemic food systems approach. With the 2030 Agenda for Sustainable Development and especially with SDGs 2 and 12, the global community has acknowledged that working in silos is no longer an option. We need to think out of silos and with a holistic food systems approach. This call has for instance been taken up by the Second Committee of the UN General Assembly in several paras in its latest resolution on “Agriculture Development, Food Security and Nutrition” [A/RES/76/222 - E - A/RES/76/222 –Desktop (undocs.org)](https://undocs.org/en/A/RES/76/222):

*PP2 c): Promoting integrated, balanced and holistic food system approaches, through cross-sectoral, multi-stakeholder and intergenerational dialogue, to achieve sustainable and resilient food systems, taking into account different national and regional contexts and respecting national policies and priorities;*

*OP 23. Recognizes that sustainable food systems have a fundamental role to play in promoting healthy diets and improving nutrition and preventing and controlling noncommunicable diseases, and welcomes the formulation and implementation of national policies aimed at eradicating malnutrition in all its forms and transforming food systems so as to make nutritious diets, including traditional healthy diets, available to all, while reaffirming that health, water and sanitation systems must be strengthened simultaneously to end malnutrition;*

Also the Second Committees’ resolution on “Agricultural technology for sustainable development” emphasizes the important link between ween food systems and nutrition [A/RES/76/200 - E - A/RES/76/200 -Desktop (undocs.org)](https://undocs.org/en/A/RES/76/200):

*Recognizing that the COVID-19 pandemic and mitigation measures taken in response have exposed both strengths and vulnerabilities in agriculture and food systems, the latter of which have caused disruptions to both livelihoods and food supply chains, increased food prices and constrained access to food, and that sustainable agricultural technologies, alongside other forms of innovation, can contribute to resilient, equitable, sustainable agriculture and food systems, which promote healthy diets and improved nutrition,*

Further, also the UN Secretary General in his Statement of Action in the context of the UN Food Systems Summit calls for a holistic “transformation of our food systems” and for “transformative pathways”: [Secretary-General’s Chair Summary and Statement of Action on the UN Food Systems Summit | United Nations](https://www.un.org/en/food-systems-summit/news/making-food-systems-work-people-planet-and-prosperity)

We would therefore welcome a report placing a major emphasis on a holistic food systems approach and therewith addressing food systems and nutrition in a more balanced way (…while food systems are mentioned a total of 18 times in the report and agriculture is mentioned a total of 53 times, nutrition numbers for 150 mentions). The Report does not sufficiently refer the conditions under which the food was produced and how to make food systems more sustainable in order to ensure a healthy diet. Nutrition should not only be healthy for the individual, but also produced sustainably (in all three dimensions) and consumed sustainably. Therefore, we recommend that it builds on the concept of “Healthy diets through sustainable food systems”, a key concept in the latest CFS major product, the Voluntary Guidelines on Food Systems and Nutrition. The HLPE should avoid showing a picture where the two topics compete with each other where in reality they are inseparably linked. Switzerland contributes financially to the <https://foodsystemsdashboard.org/>, which is certainly one of the concrete solutions to improve the analyses from a systemic point of view. We would like also to recommend to look at more « Holistic tools » such as Life Cycle Assessment (i.e. international life cycle inventory database <https://quantis-intl.com/metrics/databases/wfldb-food/>). The report at this stage does not consider the whole of the system approach, and we would ecommend to include social and ecological data in the analysis and modelling of the food systems, negative externalities, such as ecosystem services, biodiversity loss, soil and water pollution,health problems, etc.(true costs of food). In that sense the introduction and the problem setting should be reviewed to better reflect the complexity of the system.

c) **Reference to SDG2 – omission of SDG-Indicator 2.4.1:** The introduction mentions SDG 2 and then 2.1 and 2.2. However, this is too narrow, targets 2.3-2.5 are equally important. Target 2.4 refers to sustainable food production systems and establishes in Indicator 2.4.1 an indicator system of how to measure this. The draft report needs to make reference to this, especially as is considers the six dimensions of food security, in particular sustainability.

d) **Shift from productivity indicators by kg/ha to the nutritional value per hectare:** Given the threatened state of our resource base, it is time to shift from productivity indicators that are primarily determined by kg / ha to the nutritional value per hectare. This report should lay the basis to answer the question whether we measure the right thing / use the right indicators. We believe, that there is a need to develop new methodologies and indicators to measure sustainability performance of agricultural and food systems, including agroecological systems, beyond the yield. This publication should be considered: THE POLITICS OF KNOWLEDGE -

**Understanding the Evidence for Agroecology, Regenerative Approaches, and Indigenous Foodways**

e) **Definition for “Analysis tools for food security and nutrition:** “Analysis tools for food security and nutrition” play a crucial role in the V0 of the report. While the term is abundantly used and filled with content, it is never defined in detail. Regarding its crucial role and the scientific nature of the HLPE-products, we would consider it useful and important to have a clear definition of what is to be understood as “Analysis tools for food security and nutrition”. Furthermore, it would be appreciated to have a clearer idea of the scope of the term.

f) **Data harmonization:** The potential of already collected data is as of today not adequately used. Much of this data is collected in the private or scientific sector with a lack of well-functioning interfaces and common framework and taxonomies. Approaches to address this lack of data harmonization and resulting loss of information should in our view be more thoroughly addressed in the HLPE-Report than it is the case in the V0.

g) **Synergies between HLPE and OECD:** Issues around data and knowledge gaps are also strongly discussed and analyzed at the OECD (speaking around evidence gaps [Overcoming evidence gaps on food systems | OECD Food, Agriculture and Fisheries Papers | OECD iLibrary (oecd-ilibrary.org)](https://www.oecd-ilibrary.org/agriculture-and-food/overcoming-evidence-gaps-on-food-systems_44ba7574-en). Collaboration between different experts would be desirable to avoid duplication and to enhance knowledge sharing.

h) **Exemplary practices :** We would strongly recommend inserting in the **box 5, page 17**, the “Global Diet Quality Project” (DQQ) which enables the collection of consistent, comparable dietary data across countries for the first time. As a project it is “tackling existing constraints” mentioned in the document, for example :

* Page 12: "However, many of these software that allow for modular usage of local food composition databases are not open access." --> **the DQQ is a public good**
* Page 13: "The lack of comprehensive food composition databases with adequate representation of both plant, aquatic, and land-based animal foods consumed in the country, makes many countries rely on the databases of the neighbouring countries or global databases for the estimation of nutrient intakes." --> **the DQQ covers different foods, including ultra-processed food not often captured.**
* It is a **low-burden tool** for collecting valid, comparable food group consumption data; **adapted for each country**; takes 5 minutes to implement; is a global public good. Please also insert website: <https://www.globaldietquality.org> (also page 4)

**Inputs on guiding questions:**

**1. The V0-draft introduces a conceptual framework that orders the components of the food security and nutrition ecosystem based on their proximity to people’s immediate decision making sphere, from the macro to the individual levels, and describes a four-stage data-driven decision making cycle for food security and nutrition (FSN), from priority setting to data utilization. Use of the two is illustrated through a matrix template that facilitates the concurrent operationalization of the conceptual framework and data driven decision-making cycle to address issues relevant for FSN.**

a. **Do you find the proposed framework an effective conceptual device to highlight and discuss the key issues affecting data collection and analysis for FSN?**

Switzerland very much welcomes that the V0 of the report build on the expanded understanding of food security and nutrition though the dimensions of agency and sustainability. Hence, food security is only given when food is available, accessible and utilizable, when individuals and groups are their own food agents and when the food is sustainably sourced. We have highlighted during CFS47, adoption of HLPE 2020 report “Building a Global narrative towards 2030”, that it will be of utmost importance that the ongoing and future work of the CFS fully integrates this evolved understanding of food security and nutrition as this was already endorsed by CFS45. We therefore very much support that this report is in line with this CFS45 recommendation.

However, it is very complex and at first sight not easy to use. For instance, why are the environment, socio-cultural and economic determinants included in the macro level and at the same time in the term “sustainability” in the cross-cutting dimensions?

b. **Do you think that this conceptual framework can indeed contribute to providing practical guidance for data collection for FSN?**

Yes, the proposed conceptual framework and its distinction between the different layers and determinants can contribute to providing practical guidance for data collection for FSN by being specific, not only on the different determinants and levels, but also the “chain of cause” (from macro-to-individual). However, to ensure an effective and relevant data collection, it might be worthwhile putting more emphasis on the objective. The data collection efforts should aim at achieving a certain policy objective, and not purely satisfy data or evidence gaps.

c. **Do you think that this four-stage data driven decision-making cycle for FSN addresses the key steps in the data collection and analysis process for FSN? Where do you see the more relevant bottlenecks in the data driven decisionmaking cycle for FSN?**

Not entirely. Data collection and monitoring is important to ensure that the policies and measures taken are “fit for purpose” and enable to achieve the FSN objective. It seem neither efficient nor relevant, to start directly with the determination of evidence priorities without considering the usefulness for the underlying policy objectives. A key first should be the clear determination of the objective, and then the needed evidence or data. In Figure 3, the definition of evidence priorities should not be framed on the identification of drivers/aspects most salient for the identified **problem**, but should rather focus on the **objective**.

In addition, the interlinkages, synergies and trade-offs (well-described in the conceptual framework) are not reflected anymore in the Matrix/Figure 3 using the conceptual approach and the 4-step data-driven decision-making cycle to address issues relevant for FSN. We would like to see a link between sustainable production and nutritional outcomes on macro and micro levels.

How does the cycle take into account that between the steps there is a change in actors working on the respective steps? For instance, someone on a strategic level could define the questions, someone on a technical level will analyse, collect etc. the data and again someone else will then have to translate and in the end, governments have to use the data for decision-making. Especially the step between translating the data and effectively using the data for decision-making is key and often a very difficult one as results can be wrongly interpreted due to for instance the lack of technical knowledge.

**2. The report adopts the broader definition of food security, proposed by HLPE in 2020, which includes the two dimensions of agency and sustainability, alongside the traditional four of availability, access, utilization and stability.**

Switzerland very much welcomes the expanded understanding of food security and nutrition though the dimensions of agency and sustainability. Hence, food security is only given when food is available, accessible and utilizable, when individuals and groups are their own food agents and when the food is sustainably sourced. We have highlighted during CFS47, adoption of HLPE 2020 report “Building a Global narrative towards 2030” that it will be of utmost importance that the ongoing and future work of the CFS fully integrates this evolved understanding of food security and nutrition as this was already endorsed by CFS45

a. **Does the V0-draft cover sufficiently the implications of broadening the definition of food security for data collection, analysis and use?**

In our view, the V0-draft does not cover sufficiently the implications of broadening the definition of food security for data collection, analysis and use. The link between sustainability, nutrition and agency needs to be explained. Do we have the right data and data analyse to come up with information and knowledge in order to take the right decisions that improve both sustainability and nutrition? Do we have the data and analysis that ensures that agency is used in a way that it reinforces sustainability and adequate nutritional outcomes on a macro and micro level?

Introducing “agency” implies also more participation of relevant population groups in data collection exercises, including planning, data collection, dissemination and analysis of data. There should be more mention on civil society organizations as data users and data collectors. Also the word “participation” does not appear in the document.

In this context, the “ethics” of data collection, dissemination, etc. is strongly related in the document to the chapter on “data-driven technologies” (p. 36), a general chapter on the ethics of data collection, dissemination, etc., would be appropriate to frame “agency”.

b. **What type of data will be most useful in measuring food security dimensions such as “agency” and “sustainability”?**

Reference to SDG-Indicator 2.4.1: The report mentions SDG 2 and then 2.1 and 2.2. However, this is too narrow, targets 2.3-2.5 are equally important. Target 2.4 refers to sustainable food production systems and establishes in Indicator 2.4.1 an indicator system of how to measure this. This data will be useful in measuring sustainability performance of agriculture and food systems.

Page 13: “Data on the evaluation of impact of food policies or estimation of economic losses due to malnutrition and the cost effectiveness of nutrition-specific and nutrition sensitive intervention are also largely lacking.” --> We also lack data on implementation of food-releated policies (health, environment, etc.). Digital technologies could support this dimension (agency-related), by tracking for ex. progress on policy development and fulfilment of international obligations (see: <https://www.pk.undp.org/content/pakistan/en/home/stories/how-a-digital-dashboard-is-tracking-pakistans-progress-in-human-.html>)

**5. The V0-draft discusses the role of new and emerging technologies in data collection and analysis tools for FSN.**

a. **Do you think that the presentation of new and emerging technologies captures the main trends? What other new and emerging technologies could be discussed in the report?**

It is questionable what is considered as “the main trend” and what level of detail is considered. Here the report remains very vague. Presumably, most new technologies are covered by this “tour d'horizon”. Some of the technologies mentioned may not be technologies in the strict sense (e.g. crowd-sourcing) but developments based on a technology. It remains unclear why some of them are listed and what concrete connection they have to the topic of food and nutrition security.

All technologies could be relevant, the crucial question is how they relate to the topic and why a technology is mentioned. It is therefore impossible to describe the list as incomplete or complete. There needs to be a better argumentation as to why which technologies are included and others are omitted.

c. **In what other ways can new and emerging technologies be relevant to each of the FSN dimensions (i.e., Availability; Access; Utilization; Stability; Agency; Sustainability)?**

Question concerning table 3: Technologies under “Sustainability” only cover the environmental dimension of the concept. What about socio-cultural aspects? Or economic aspects? Need to be complemented otherwise the analysis are to onesided

d. **What are some of the issues with respect to ethical use of data, access, agency and ownership linked to these new and emerging technologies that should be further discussed in the report?**

The following issues should be further discussed in the report:

* The aspect that some technologies collide with, for example, local data protection laws or local social-ethical-moral ideas. A global, uniform use of the same "technologies" would therefore be critical. The factor of acceptance of such technologies also plays a role here.
* The "right to forget" or perishability is not mentioned in this report. With many of these technologies, vast amounts of data are collected and analysed that will seemingly exist forever.
* The issue of dependence on technologies and especially on the companies that develop and offer the technologies is omitted from the report. As a rule, it is private companies that develop the technologies until they are ready for the market and states or the public sector or "society" uses them and thus becomes highly dependent on the manufacturers. For example, the use of cloud computing is often based on the fact that the manufacturers will no longer offer other systems in the future. The manufacturing companies determine what the future solutions will be, not the stakeholders or their needs. Despite technology impact assessments, society still does not determine the development.
* With respect to ethical use of data, access, agency and ownership linked to new and emerging technologies, we suggest to also look at the following codes of conduct and principles that were developed in different parts of the world as (voluntary) stakeholder-driven guidelines to improve agricultural data management practices and provide a basis for trust:
  + Australia (2020): Australian Farm Data Code ([nff.org.au/programs/australian-farm-data-code](https://nff.org.au/programs/australian-farm-data-code/))
  + EU (2018): Code of conduct on agricultural data sharing by contractual agreement ([copa-cogeca.eu/Archive/Download?id=3770357](https://copa-cogeca.eu/Archive/Download?id=3770357))
  + France (2018): Charte sur l’utilisation des données agricole (<http://www.data-agri.fr/>)
  + New Zealand (2014): Farm Data Code of Practice (<http://www.farmdatacode.org.nz/>)
  + Switzerland (2018): Charter on the Digitalisation of Swiss Agriculture and Food Production ([agridigital.ch](https://agridigital.ch/))
  + USA (2014): Privacy and Security Principles for Farm Data (<http://www.agdatatransparent.com/principles>)

7. **Drawing on HLPE reports and analysis in the wider literature, in the next draft the report will outline examples of potential policy pathways to address challenges to data collection and analysis tools for FSN.**

a. **What data do the global community and international organizations need in order to gain an appropriate insight into the current state of world food security and to agree on and design international action to improve it?**

Reliable and transparent data and a mix of different data sources (remote sensing, surveys, governmental and private data etc.) would be good.

b. **What data do countries need for more effective decision-making for food security and nutrition and to inform policies for the transformation of food systems?**

Depending on the country (e.g. in Switzerland), we do not necessarily need more data but a better translation into what this exactly means for informed decisionmaking. Solving FSN problems are often of political, governance and/or systemic nature despite all the involved are aware of the facts and figures. Governments often manage what they measure through their legal framework. However, it should be the other way round: Governments should measure what they manage. In terms of food security and nutrition, governments are not sure whether they have the right indicators at hand and whether they analyse the available data the way they would need to.

d. **Please provide references and examples of success: good data leading to good policies (context-specific), or any lessons to be learned from a failed data collection/utilization attempt**

SDG 2.4.1 monitoring 🡪 on the one hand, it is great to have a system to measure sustainable agriculture on a global level. On the other hand, the system is too complex and needs too many resources to collect the data. Therefore, hardly any country until now has provided data to FAO. The methodology needs a face lift to make it easier to report for countries and to be able to use the data, which is already available

Are we not missing many initiatives such as geoFootprint, a tool accelerating sustainable agriculture by harnessing the power of satellite imagery (<https://geofootprint.com/> - geoFootprint was built collaboratively with more than 25 public, private and academic partners aiming to accelerate sustainable agriculture through innovation. With its global overview of crop footprints, geoFootprint closes the gap between the action needed to make agriculture more sustainable, and the knowledge required to pursue it)

e. **Please also suggest any initiative and good practice aimed at addressing:**

* capacity gaps at country level to generate and use data in policy-making processes, monitoring and reporting related to SDG2; including with respect to financial resources, human resources, data management, legislation and the enabling environment and FSN governance.

The CGIAR has not only the big data platform ‘’Embracing big data to provide information for food security and other development issues’’ to offer, but also new research initiatives which could help. These are: (not exhaustive list)

* **Mitigation and Transformation Initiative for GHG reductions of Agrifood systems RelaTed Emissions (MITIGATE+)** will co-develop and test a “FS Climate Intervention Planning Framework” (FOODCLIP) and pilot its application in each target country. FOODCLIP will be a user-friendly integrated modeling and planning framework designed to assist stakeholders in **analyzing the tradeoffs and synergies between mitigation and other dimensions of FS (i.e., healthy diets; social, economic and environmental sustainability)**, building scenarios of potential futures, and designing policies and programs… Increased rigor and certainty in data, knowledge, tools, and capacity improves food system GHG emission monitoring improving transparency, accuracy, comparability, and consistency of data for planning, monitoring, and reporting.
* **NATURE+: Nature-positive Solutions for Shifting Agrifood Systems to More Resilient and sustainable Pathways.** National and subnational policymakers in five LMICs acknowledge that **true cost accounting** should and will be applied to AFS-related policy formation (2022– 2025), followed by realignment of economic incentive schemes and policy by policy actors to account for the true cost of food (2025–2030).
* **Harnessing Digital Technologies for Timely Decision-Making across Food, Water, and Land Systems.**
* **Foresight and Metrics to Accelerate Food, Land, and Water Systems Transformation**

Governments in developing countries lack the foresight tools and metrics that more developed countries routinely use to anticipate trends, trade-offs, outcomes, and risks. This makes decision-making more challenging, especially in a globalized world facing uncertainties. The Initiative is designed to narrow this divide and respond to the demands of our government and development partners, and CGIAR itself, for multiscale, forward-looking, cross-cutting analysis of FLW systems.

SDG Indicator 241 (see comment under d.)

c. Please also provide any additional references with respect to:

* minimum data requirements (baseline) for FSN at country level;
* qualitative data
* data representing traditional knowledge.

We would like to encourage the authors to look more at qualitative data (the word appears only once in the document). Social sciences work with different sets of data that are useful (i.e consumer behaviors, sociology of consumption, etc).

**8. Please provide your feedback on the following:**

a. **Are there any major omissions or gaps in the V0-draft?**

b. **Are topics under- or over-represented in relation to their importance?**

c. **Are there any redundant facts or statements that could be eliminated from the V0-draft?**

d. **Are any facts or conclusions refuted, questionable or assertions with no evidence-base?**

🡪 See general comments on page 1 and 2

## Martin Wolpold-Bosien, CSM Secretariat

Dear colleagues at the FSN Forum and HLPE,

Kind greetings from the Civil Society and Indigenous Peoples’ Mechanism for relations with the CFS.

Please find enclosed the Contribution of the CSM Working Group on Data to the e-consultation on the Zero Draft of the HLPE Report on Data collection and analysis tools for food security and nutrition.

Best regards, Martin Wolpold-Bosien, CSM Secretariat

**CSM Comments on V0 Data collection and analysis tools for food security and nutrition**

**Introduction**

The following reflects the comments developed by the Civil Society and Indigenous Peoples’ Mechanism (CSM) of the CFS on the v0 draft of the *Data collection and analysis tools for food security and nutrition*. The topic is an emerging area of development and concern for all peoples, especially as the digitalization of agriculture expands in the private sector and in some public/private partnerships with little to no analysis of its contributions to food security. However, the report was only published in English, and the original deadline for comments provided only nine working days to analyze forty pages of text. This is unacceptable given the time it takes to consult with and develop comments from across the CSM’s diverse constituencies and regions.

Despite these concerns, the CSM raises significant concerns with the draft report. The scope of the topic was never defined, which is reflected in this report. What types, sources and uses of data that the report is concerned with is never explicitly addressed. Indeed, “data” itself is not defined and as a result there is a worrying conflation between “data”, “evidence” and “knowledge” for policymaking in a way that erases the latter two categories. Instead, diverse forms of data (digital sequence information, statistical census data, big data from the internet of things, etc.) are blurred together without elaborating the risks and governance issues raised by distinct forms of data.

A notion of “data-driven decision making” is presented without being examined or unpacked. The CSM supports knowledge-based and values-based decision making and sees evidencegathering (Including data-gathering) as essential to good decision making–but no case is made or explained for what “data-driven” decision making means or why data should be placed in the “driving” seat of decision making on food security and nutrition. In effect, the report promotes data as a vague and unalloyed good without acknowledging the role of bias in data or adequately addressing the risks to the privacy, autonomy, and sovereignty of small-scale producers, food chain workers, and indigenous peoples that data collection, extraction and commercial mobilization pose.

Moreover, by focusing only on *data*, without regard to the infrastructures of data collection, distribution, processing and ownership the report evades key issues about the political economy and physical impacts of data. Given that data is a commodity of growing importance in the food and agricultural sectors (indeed in the global economy overall) and is subject to ever growing controversies about monopoly power and distortion of governance and oversight, this is unacceptable. The voracious competition for processing and mobilisation of data by the private sector both within and beyond the agrifood sector has engendered increasing corporate mergers and consolidation, financialization of food systems, and inequality and asymmetrical control over information, land, trade and production.

The widening extraction of data through digital technologies is generating increasing surveillance as a core of new business strategies that we see across many different sectors and social spheres including at every step of the food value chain. Those benefiting most from this datafication of food chains also control major philanthropic and policy initiatives around agricultural and food related data. As private actors accumulate and process troves of data from the genomics of seed and soil to the mapped behaviours of food producers and consumers, they hold the possibility of exercising greater and unequal control over food and agriculture systems. Data when aggregated and processed, especially by modern AI and machine learning platforms, is neither neutral, nor technical, but rather is about access to and control over information, knowledge and automated means of production and distribution.

The emphasis on data along with new “data-driven’ technologies, including robotics, machine learning, genomics and the internet of things are already replacing the work and the knowledge of farmers and food chain workers, creating conditions for the displacement of Indigenous peoples, peasants, and the landless, and radically changing the need for labor in the food system. Moreover, digitized technologies are putting ever more pressure on workers through new surveillance technologies, forcing them to perform at break-neck speeds and endangering their health. Deep ramifications for our food system are evident; a shift in this trajectory is necessary to end hunger and food insecurity and to ensure human rights (including the right to food and water and the rights of Indigenous peoples and small-holder/peasant food producers). We have framed our comments through five sections below that respond to the questions posed by the High Level Panel of Experts in Food Security and Nutrition (HLPE) in the e-consultation on Data collection and analysis tools for food security and nutrition.

<https://www.fao.org/fsnforum/consultations/HLPE_data_collection_analysis_tools_V0>

**Report framing and conceptual framework**

The report starts from several problematic assumptions that should be addressed in the report’s framing and conceptual framework.

1) The paper suggests from its opening remarks that food systems have failed because of a lack of existing data (without clarifying which food systems have failed or what missing data has created this situation). There are many possible reasons why food systems are failing at this time but this particular framing hides those many factors. It erases from view historical and acute issues of colonialism, trade, and corporate control all of which have been driven by unequal power and control, not simply ineffective data-gathering. It suggests that simply having more data in the aggregate will reverse the “failures” of food systems, rather than dealing with entrenched interests and inequalities. This is naive at best - a dangerous attempt to side-step or sweep away difficult political debates at worst. This technocratic framing is carried through in the conceptual framework, which also provides a model of “data-driven decision making” that suggests that more data alone will facilitate more effective, equitable, and sustainable governance - but assumes (and promotes) this without presenting evidence.

2) The report conceptualizes data as neutral and representative, rather than as decontexualized information that results from the choices made about what information to collect and how to classify, measure, and commensurate information. In other words, there are already biases and assumptions embedded within data that will be heightened as new data-processing and automated decision making tools rise in importance. The assumptions can make data appear as neutral and uncontested, further entrenching the assumptions embedded in seemingly neutral data. These assumptions can marginalize particular constituencies and groups. For example, data may be collected from primarily commercial farmers thereby erasing small-holders, subsistence growers, pastoralists, hunters and other peasants. We have seen a concerning example of this recently in FAO’s 2021 statistical paper by Lowder S.K., et al.,(2021) “Which farms feed the world and has farmland become more concentrated?”, (World Development, 142) which using FAO stat data systematically erased from view many small food production systems from an FAO accounting of who feeds the world.

This example has been highlighted by civil society groups. See: <https://www.etcgroup.org/content/peasants-still-feed-world-even-if-fao-claims-otherwise>) Alternatively, data may not be collected on marginalized populations, which can drive policy choices that further marginalize them.

3) The report provides a linear conceptualization of data-driven decision making, overlooking that all policy making is based on particular values, interests, and power imbalances and that while evidence is important for policy making, ‘data’ is only one limited kind of evidence. Decision-making must be inclusive and rights-based, ensuring the participation of those most affected. It is more accurate and proportional to describe the need for “data informed” decision making, rather than data-driven. In fact, “data driven” decision making has been highly contested - especially as automatic decision- making through machine-learning creeps into governance. For example predictive algorithms in policing have shown deepened policing of already highly-policed communities, reproducing racial, class and cultural prejudices.

4) The report fails to define the terms and concepts it is using. Data meaning sometimes information, and sometimes evidence are used interchangeably throughout the report and must be defined and carefully distinguished. Data is generally defined to specifically mean a type of information that is machine readable or can be processed by a computer but the word also has an occasional informal meaning that is synonymous with “evidence”. This report is seemingly primarily about data of the machine-readable type but sometimes it conflates or slips into the informal meaning of the word - especially in advocating around ‘data-driven decision making’ (does it mean 'evidence-driven’?). Different forms of data are not distinguished–not only between qualitative and quantitative data–but also different forms of quantitative data that take different forms based on level of abstraction and construction. For example, composites and indicators are very different from statistical counts. They require different kinds of classifications and assumptions. All data is not representative, nor is it free from bias - indeed as current scholarship on algorithmic bias shows data and “data-driven decision making” can not only reflect but significantly deepen harmful biases around race, gender, culture etc, hard coding them into policy and practice. This is especially important in food and agriculture systems where land and other resources as well as political power may be concentrated in one economic, cultural or racial group. The report needs greater precision about the terms it is using if it isto be useful to establishing effective governance over data.

Relatedly, the terms “data value chain” and “data flows” are used in the report without defining them. The use of the term “data value chain” particularly should be reconsidered. It is an economic concept borrowed from commercial business models that use data-processing tools to upgrade the economic value of data to leverage bigger profits in the marketplace. Those new business models are based on surveillance and extractive data relationships. Just as the notion of ‘value chains’ in food systems poorly captures and distorts the multifunctional and complex nature and impacts of food systems, so describing data-handlingand data-relations by this narrow commercial metaphor may be wholly inappropriate and have distorting implications. The term “user” is also used throughout the report, without distinguishing the different stakes of “users” nor reflecting on the power and social implications of data enterprises defining farmers, eaters, indigenous peoples and other human beings by this transactional term. As has been noted elsewhere, besides data-processing the other industry that terms its clients as “users” are in drugs and pharmaceuticals - where there is a rich literature on the stigmatizing and social assumptions built into such nomenclature.

5) While the report focuses on data it should also be made clear that there are clear biases in terms of what is recognized as “data” and thereby admitted to consideration in policy making processes. Here data is primarily discussed as quantified information, but that excludes other forms of knowledge and information that may be more relevant to social contexts. More hard computable data is not always better, especially for agriculture which requires softer relational knowledge of land, seeds, and climate. The focus on quantified data risks alienating the real-world knowledge of peasants, Indigenous peoples, farmers, and food producers, shared through generations and between communities.

6) Not all forms of data should equally inform policy making, given the assumptions inherent within data. For example, the sources of much big data are private infrastructures generated from sensors, platforms, and the internet of things that uniquely measure commercial processes. When choices are made by private actors (whose interests are in profits rather than the public good) about what information to collect, their assumptions and biases are integrated into the decision-making process without adequately scrutinizing them and putting them to democratic debate. The conceptual framework thus requires greater clarity and specificity about the risks of drawing on data indiscriminately in policymaking. It should also elaborate the limits of data, and the necessity of other knowledge types for which ‘data’ is not available.

7) This report and workstream is funded by the Bill and Melinda Gates Foundation (BMGF), whose foundation has worked directly with its Co-Chairman’s former corporation, Microsoft, on the digitalization of agriculture. (See <https://cacm.acm.org/magazines/2021/12/256930-digital-agriculture-for-small-scale-producers/fulltext>). In line with the foundation’s source of wealth and worldview BMGF boast an explicit aim to move over 50% of smallholder farmers in its key focus areas onto data platforms within the decade - a move from which Microsoft’s Azure cloud services and “farm beats” platform is poised to profit most richly. The promotion of digitalization of agriculture and data governance by actors that also seek to directly profit from these new technologies are not only concerning, it represents a key problem of using private data infrastructure for public purposes, namely, conflicts of interest. The promotion of data collection through private infrastructure not only legitimates private surveillance of individuals and communities, it offers private actors the opportunity to shape information and knowledge of the food systems in ways that can further entrench their power by both shaping individual and formal decision-making and skewing policy outcomes. Given this fundamental conflict of interest baked into the funding of this workstream it is essential that the HLPE properly examine and grapple with the more challenging complexities of this topic - especially regarding power, control and private interest.

**Data for food security: agency and sustainability**

Data collection and analysis feeds a model of society. Neutral data does not exist - it is always curated and shaped by the questions and aims of data gatherers. Collection of data for food security and nutrition (FSN) has therefore to be determined by the model of FSN that we seek to advance. Human Rights are acknowledged to be fundamental to reach FSN for all, data collection and generated knowledge have therefore to be designed to benefit them.

To broaden the definition for food security for data collection, analysis and use, and in particular around the dimensions of agency and sustainability, the report needs to further elaborate both the process-elements of data collections, analysis, and use as well as describe some substantive areas in which data for agency and sustainability should be developed.

In terms of the process-areas of data sustainability and use, the report should provide a discussion on what kind of knowledge and data analysis is necessary for food security policymaking. The HLPE and the CFS already provide a model for evidenced-based, inclusive multilateral decision making that could serve as a model for data informed decision-making. The HLPE offers a model of scientific, transparent and inclusive processes that incorporates different forms of knowledge across various disciplines and professional backgrounds. Moreover, it is rooted in an institution based on the right to food, where those most affected by food insecurity are given a voice in decision-making. Rights-based, data-informed decision making must include those on whom data is collected. Indeed, there are some populations that may refuse data collection and extraction including from their territories. Indigenous peoples have articulated the concept of indigenous data sovereignty to demand collective control over the kinds of data that is collected on them and to have a voice in what data is collected and how it is used. These rights must be respected.

There are also several substantive areas of data collection that could be highlighted in the report to support agency and sustainability. First, disaggregated data that address inequalities based on gender, race, nationality, language, and sexual orientation is necessary to promote equity and agency. An example to highlight the importance of asking the right questions in data collection is this study by Canadian data group PROOF in collaboration with civil Society Food Share that found that race in Canada is highly correlated with food insecurity - especially for black Canadians: <https://proof.utoronto.ca/anti-black-racism/> - offering evidence for the need for racial justice policies at the heart of food security interventions. Second, data on market structures including market consolidation and monopoly control is also necessary to enable agency and sustainability. Finally, data that is collected by humans rather than by sensors or satellites and reported to the population within communities, builds agency into the process.

**Treatment of existing data sources, agricultural digitalization, and other new technologies**

Chapter 4 of the report identifies “new and emerging data driven technologies” and elaborates the kind of data which they might be used to collect. This chapter presents an anemic analysis of these technologies by focusing solely on their implications in terms of data, rather than the larger risks and benefits these technologies pose to food systems. The CSM raises several concerns with this chapter in its current form.

1) The report approaches data recollection for FSN as a purely technical problem, avoiding the distributive issues that are at the heart of the technology debate. This includes questions related to the ownership of technologies and infrastructures, the distributive effects of technologies, the effects of technology on employment, the effects on existing knowledge infrastructures and networks, and the socio-ecological effects of technologies.

2) Technologies cannot address structural and historical inequalities that pervade food systems that include access to land, inequality, climate change, and unequal distribution of resources. As noted earlier, the report is premised on the naive assumption that food insecurity can simply be addressed through more and better data.

3) The current draft of the report has an entire section that lists multiple new technologies that may be used to collect data. However, it has no explanation of the criteria used to identify these technologies. Are these technologies listed because they allow for the collection of data or do they contribute to food security and nutrition? It is not enough to present a list of "technologies" (see 4.3.). The report must develop a stronger set of criteria about their contribution to food systems based on the risks and benefits they pose.

4) Several key technologies are omitted from this report, even though they are components of the “datafication” of food systems. These include:

a) Digital Sequence Information (DSI) on genetic resources are one of the economically fundamental parts of the future development of the seed market and thus of the control of agricultural and food production. The digitization or datification of DNA is undergoing contentious negotiations over access and benefit sharing (ABS) in the Biodiversity Convention and the FAO Seed Treaty. In a completely unregulated manner, vast quantities of agricultural production and consumption are being collected and stored – from fisheries, farms and forests to retail shops and homes. Terabytes of genomic information are also being extracted, sequenced and stored via several initiatives including the WEF’s Earth Bank of Codes, its related Amazon Bank of Codes, the International Barcode of Life, gene bankers “DivSeek,” and an unknowable number of private corporations.

b) Digital land registries, which have been described as the new “birth certificates” for rural properties. Locating and measuring land using georeferencing technology (i.e. GPS) is increasingly becoming a mandatory requirement for gaining access to public policies and credit, and for complying with environmental regulations. Digital land registries are becoming a condition for defining property rights in land regularization processes in regions from Colombia, Brasil, Paraguay, Bolivia and Argentina, among many other examples. However, these land registries invisibilize centuries-old collective land rights that are impossible to measure in terms of data. See: Grain (2020). “Digital Fences.” <https://grain.org/en/article/6529-digital-fences-the-financial-enclosure-of-farmlands-in-south-america>

c) Smart contracts - these are self-executing programs stored on a blockchain that run when predetermined conditions are met. They typically are used to automate the execution of an agreement such as the sale of commodities or collection of rent and fees on a service. Blockchains executing smart contracts (and exchanging cryptocurrencies and tokens) are becoming a common infrastructure for managing data-driven food value chains and also for data collection, management and automation. As such, smart contracts and their conditions will assume an ever greater opaque role in governance of digitized food systems with privately inserted ‘code’ acting as artificially responsible proxy for ‘law’.

See for example:

<https://www-cdn.law.stanford.edu/wp-content/uploads/2018/09/Kolber_LL_20180910.pdf>

Vulnerable to cyber-attack, coded in ways that are not easily readable or intelligible to lay people in the food chain or to policymakers, capable of locking food chain actors out of access, rights and assets - smart contracts need strong accountability to be enforced on their use or could hollow out governance of digitized food systems..

5) The issue of data misinterpretation needs to be further elaborated. The current draft acknowledges that *“…Analyses that make use of sophisticated quantitative models – such as based on regressions, computable general equilibrium models, artificial intelligence, machine learning, etc., – are particularly prone to misinterpretation, given that a full comprehension of the nature and implications of the assumptions made to build the models is likely to remain beyond grasping for most of the intended readers and users of such data and modeled results, including policy makers…”* We need to question why more data is equated with more accuracy, when it is clear that data can easily be misinterpreted especially when it is decontextualized from the complex human and ecological processes of food systems. It is a dangerous assumption and ignores the biases in huge data sets. Research on such biases show that the results of big data recollection processes give the researcher a vast sense of precision. “While big data have the connotation of being exhaustive in scope, aiming to capture entire populations or systems (n = all), in reality it is both a representation and a sample, shaped by the technology and platform used, the data ontology employed and the regulatory environment and (…) subject to sampling bias.”

See “Imprecision farming. Examining the (in)accuracy and risks of digital agriculture” Journal of Rural Studies 86 (2021) 623–632, in

<https://www.sciencedirect.com/science/article/abs/pii/S0743016721002217?via%3Dihub>

**Capacity and governance of data**

As with other tools or processes that are intended to be used for the public benefit, the questions about data recollection and analysis are the same as always: Who controls what? Who decides who controls? What is the process to determine the data that is needed? How will these tools or processes benefit food producers, workers, and consumers, rather than benefit other actors such as agri-food businesses? Given that this is the first time that the HLPE and the CFS are entering into the complex world of data, it is vital that we begin with these questions and that we do not just slip into frames and language that will limit and determine what and how can be discussed later.

Data collection and analysis (including in their digital forms) are powerful tools to guide policies and development plans, under a rights-based approach (building on the implementation of UNDROP and UNDRIP). A rights-based approach in data collection and analysis—where participation and knowledge sharing are fundamental elements–is essential to keep these processes under their primary objective: effectively advance food security and nutrition for all. Itis the only framework that will allow to determine the needed data based on the knowledge gaps Identified at local level. Local communities have to be involved in the design of data to be collected and the control on the data should be kept in public entities.

Although chapter five deals with institutions and governance of data, it is woefully underdeveloped. Several issues need to be addressed:

1) This section does not address the institutions and initiatives that are already developing from an array of different actors to govern data. There is no analysis of the current instruments of governance of date, of the impact of intellectual property rights on data and information, no analysis of the current control processes at the global level by the large digitalisation monopolies. These include intiational initiatives such as the International Platform for Digital Agriculture in the FAO as well as private codes of conduct. It also does not address the implications of existing treaties (Convention on Biological Diversity, FAO Seed Treaty, Agreement on Trade Related Aspects of Intellectual Property Rights), supranational regulations like the European Union’s General Data Protection Regulation, or legal frameworks (from database rights to plant breeders rights). The existing regulatory and legal landscape needs to be mapped in order to understand the gaps and issues within data governance.

2) Open data is not necessarily the best solution to address access and capacity issues. Indigenous peoples, for example, have demanded data sovereignty, control over their data - for example in the matter of digital genetic sequences . Since data as a good confers more economic power when privately aggregated, establishing means of collective and community control over data governance is essential to fair and just data relations. The report needs to address the critiques and concerns about open data.

3) As noted above in discussing data governance, the report uncritically adopts language of data drawn from the private sector such as “data value chain” and “data life cycle.” However such terms frame governance through a market or technocratic lens, rather than alternative terms including knowledge, information, and evidence. The report must address how these different frames are embedded with particular values and priorities.

4) Given that data from many new technologies come from private data infrastructures, data is primarily privately governed as a commodity. Indeed, Big Data handling is presently one of the most powerful industries. Something as complex and sensitive as food systems should not be taken as just another one of the new business niches of the big data industries. A huge blindspot of this report is any engagement or acknowledgement with the way that data is power in the world of 2022. It will be important to examine how powerful data operators are seeking to institutionalize their services in the collection and processing of data for FSN with an eye towards leveraging that same data for commercial or geopolitical ways. Privately-held for-profit data analytics firms such as Palantir and Premise Data are already muscling into the food data arena. Palantir, which for example has data collection and processing agreements with the World Food Programme and US Food and Drug Administration is a consistent subject of concerns raised by privacy and digital justice advocates for its military, surveillance and political activities.

**Other comments**

Overall, the report paints an overly rosy paints of data as the solution to food insecurity and the problems caused by industrial food systems. Because the report neither delineates its scope, nor defines “data '' it ends up promoting new tools of digital agriculture as opportunities for better data collection and policymaking. However, this framing not only legitimizes these technologies without adequately evaluating the broader risks they pose, it also profoundly reshapes the way evidence and policy-making are understood by the HLPE itself.

The process of reassembling data into knowledge is not transparent, not participatory and very often strengthens power imbalance and inequalities, as mentioned before. The digitization of data is accelerating these trends that are intrinsically in opposition with the SDGs 2030. Clear firewalls and blocks to prevent undemocratic data extraction and undue private influence and power over data governance should be explored and proposed to prevent private data actors from exploiting international, regional or national food, security and nutrition data infrastructure. This includes investigating the implications of deals such as the WFP-Palantir agreement and placing conflict of interest prohibitions ensuring that private actors involved in data activities for commercial food and agribusiness (eg major cloud firms such as Microsoft, Amazon, Alibaba) are excluded from managing, processing or influencing public data gathering for food security and nutrition.

More data itself will not address the structural and historical inequalities that are responsible for food insecurity. For example, Chapter 3 of v0 describes in detail the enormous difficulties involved in collecting data for food security and nutrition. These difficulties are concentrated in countries or within regions of countries that have mostly small-scale agriculture. Small scale farmers suffer from the digital gap, poor previous recollections, lack of coordination, framing and finances, and digital illiteracy. Data-based decision making is likely to reproduce existing inequalities and render them less visible.

Finally, the funding of this workstream by the Bill and Melinda Gates Foundation, a philanthropy linked with a corporation that seeks to profit through the development of private high tech infrastructures in the field of agriculture, reflects the profound conflicts of interest that are entangled in data collection through new tools of digital agriculture. Extreme caution is needed as we look to these actors and the technologies they develop to address food insecurity and other common goods.

## Wenche Barth Eide, Department of Nutrition, University of Oslo, Norway

Congratulations to HLPE for embarking on this massive exercise to combine approaches to updated data collection for FSN with developing tools for analysis and policy formulation at different levels. My comments are guided by questions for feedback under 1 and 2 without directly responding to each of these.

*I commend including the two additional dimensions in the in the renewed food security definition, but miss a better role for all dimensions as drivers in data collection. I regret the lack of an explicit normative approach to the whole exercise by not applying a human rights-based approach. I ask whether the conceptual frameworks for the matrix proposed are the best ones and refer to the option of a right to food matrix as developed in the context of FAO. Finally, I ask HLPE and the Steering Committee to address human rights/the right to food in HLPE 17 in line with HLPE 15.*

**The expanded FSN definition:** The definition of food security proposed in the V0 Draft was, in my opinion, one of two particularly notable contributions in the HLPE 15. The other was the effort to place the narrative on desirable developments towards 2030 in an explicit human rights/right to food framework, this has not been followed up in the V0 17, as I come back to.

The two “new” concepts *agency* and *sustainability* (as added to the earlier four: availability; access, stability, and utilization that have typically been used within the UN FSN circles) greatly enrich the food security concept. As expressed by the authors themselves these have already been around for a long time in parts of the discussion around FSN. It is therefore very timely to bring them in as components in a reformulated FS concept when discussing data collection and analysis tools for FS at different organizational levels and their interrelations as part of a maturing FS understanding.

*Agency* as originally launched by Amartya Sen has - at least in part, been embedded in talks and action around people’s participation in matters that concern themselves, especially when the discussions have included capacity and resources for action, and the needed authority for implementing certain tasks and practices. I am inclined to think it might be better to keep to the more easily understood “participation language” in the widest sense rather than the elegant term agency of Sen – after all it has a double meaning which can create confusion and it can to some appear very academic.

In this connection, the V0 does not reflect the needed balance between quantitative and qualitative methodologies to collect data based on real needs of those most experiencing food insecurity and malnutrition. The request by the CFS for the HLPE 17 included to “Provide insights into how to ensure data collection and its utilization give voice to the people most affected stemming from that data, including farmers and other food producers”. This is unclear as it does not explicitly mention the importance that all vulnerable population groups themselves be directly involved in collection of “that data” relating to their own situation. Participatory data collection engaging these groups themselves is indispensable. UNICEF among others has been in the forefront for many years to build participatory capacity for community engagement which is very relevant for local data collection and subsequent action from which indicators of agency or participatory principles can be generated and stimulated.

*Sustainability* is increasingly critical in the context of e.g., preservation of biodiversity, adaptation to climate change, different agricultural methods now with increasingly greater attention to acro-ecology, and generally in the economic, environmental, and social contexts of a household, representing a wider foundation for stability as well. So far, the concept is not really operationalized in V0 but must be done in the continuation; it is noted that various groups use the term differently. The concept also reminds that FSN links to the UN Sustainable Development Goals and Agenda 2030 which is an additional advantage.

The expanded framework was recently applied by the FAO Legal Office/Development Law Service in a publication on “Transforming agri-food systems. Legislative interventions for improved nutrition and sustainability” (see reference below).

**Taking seriously an explicit normative approach as anchored in CFS:** According to the 4-step decision-making cycle this starts with defining a set of one to three “evidence priorities”. But what should drive this selection? In the e-consultation in March 2021 on the scope of the forthcoming HLPR 17, the CSM called for a normative dimension: *“The report should be clear about collecting data for what, how and for whose benefit. We propose, based on the CFS normative anchoring, that this report should identify how data collection and use can contribute to upholding the rights of Indigenous Peoples, women, peasants and family farmers, workers throughout food systems, fisherfolk, pastoralists, consumers; and how data collection and use should be governed and regulated in order to respect and protect human and peoples’ rights.”*

Surprisingly, however, in spite of having drawn inspiration from HLPE 15 as regards the expanded CFS definition, the V0 Draft is void of any reference to its human rights orientation. The HLPE 15 placed the whole narrative in a human rights /right to food perspective (even if coming short on the more specific features and procedures of the system as developed within the UN). I believe that many more than me even may have visualized this as a step towards a profound and professional discussion within the frame of the CFS, leaning on the Committee’s articulated value base as originally established in the Global Strategic Framework for Food Security and Nutrition and reflected in several of the products from CFS over the years since its reform in 2009. These in turn were grounded in international human rights law and in the extensive elaboration by countries themselves in the “Voluntary Guidelines on the Progressive Realization of the Human Right to Adequate Food in the Context of National Food Security” adopted by the FAO Council in October 2004. FAO followed up with further extensive operationalization which was collected in the FAO Right to Food Methodological Toolbox in 2009 and several further practical Handbooks in 2014 based on these tools (references below). Some HLPE reports have related to human rights, most substantively HLPE 4.

It is not known why the drafters of V0 completely left out reference to this part of the narrative. They may have a priori bended to assumed political resistance to bring in human rights (as was exemplified in the negotiations for the Voluntary Guidelines on Food Systems and Nutrition (VGFSyN). The independent science-policy arm of CFS ought however to take this opportunity to consider data and analysis tools in a human rights context. Not to do so is regrettable in general, and specifically since the human rights institutional and procedural frameworks indeed call for data from all state parties to important human rights instruments, including the International Covenant on Economic Social and Cultural Rights (ICESCR), the International Covenant on Civil and Political Rights (ICCPR), the International Convention on the Elimination of all Forms of Discrimination Against Women (CEDAW) and the UN Convention on the Rights of the Child, and others.

Unfortunately, many in the food system/nutrition community remain unaware that these instruments have been ratified by a majority of UN Member States; also, that their own country may be among these and therefore being obliged to report periodically on the situation in their countries regarding the realisation of the provisions contained in these instruments – including the right to adequate food. In return they receive critical-constructive comments from the respective convention committees or treaty bodies of the UN on their performance, and suggestions for how to improve their situation.

Since the national reports have been very varied as regards the scope and quality of the data used by each country, data and analysis tools as now to be elaborated could also serve in building desirable indicators for use in such reporting. Furthermore, the full use of the agency concept and how it can be unlocked in practice becomes particularly critical and important for a human rights-based approach to data and indicators, whether structural, process or outcome indicators as typically relevant in human rights state reporting, and data needed for these.

**The building and use of matrices as analytical tools in the V0 Draft**. The V0 operates with three said conceptual frameworks (sometimes also calling the FS definition a framework) and merging them into one. One may ask whether the data driven decision making cycle for FSN is perhaps more a stepwise plan for any data collection process aimed to nourish policy formulation and action. Does it fit to use the term ‘conceptual framework’ for this? The six- component definition of food security is defined as cross-cutting the different levels in the FSN socio-ecosystem model as the other framework, assumed to give ideas for data within a matrix combining the two others. One might also think of a matrix where the components of food security become primary co-drivers of data identification in the first place, combined in a matrix with the different organizational levels.

A third option is the matrix developed over many years for the human right to adequate food, where the role or obligations of states that are parties to e.g., the International Covenant on Economic, Social and Cultural Rights (ICESCR) are nuanced with regard to the degree of gradual state involvement in realizing the right to food (article 11 of the ICESCR). The matrix template (or variations of it) juxtaposes the chosen definition of food security with the commonly accepted categories of state obligations and engagement in terms of respecting, protecting, and fulfilling the right to food, the latter further nuanced in facilitating and/or directly providing when necessary. This opens up for conceptualisations about contextual actions and data needs at different levels. After a long gestalt period for this framework from its first presentation in a study on food as a human right in 1987 by the then UN Sub-Commission on Human Rights on request from the UN Commission (now Council) on Human Rights - and onwards, for a while merely in academic circles and some NGOs. The 1996 World Food Summit was a game changer in requesting a clarification of the right to food concept. Recent examples of the right to food matrix are i.a. available in the rich material developed by FAO’S Right to Food Unit (now Team) following the Right to Food Guidelines from 2004 onwards, see references below.

The right to food matrix has throughout included the concept of “adequacy” of the food (diet (further defined), besides availability, access, sustainability, and stability. Adequacy is lacking as such both in the four- and new six component model for FSN (but there somehow to be accommodated under ‘utilization’). The food security definition underlying the definition of the right to food has inspired General Comments 12, 14, 15 and 16 from the UN Committee on Economic, Social and Cultural Rights. on interpreting the right to food, to health, to water, and to education, respectively. Also, similar matrix templates have been proposed for these other rights.

**The potential of a human rights-based approach – to be revisited and unlocked by HLPE?** Part of the problem of not getting a serious discussion of FSN in a human rights context is, beside political constraints, that the right to food and related rights are unfortunately institutionally and conceptually still quite distant from the mainstream FSN circles based in the agricultural, food policy and nutrition expert and - not least - diplomatic circles. (“Human rights are for Geneva, not for Rome…”) That means that resistance to a rights-based approach to FSN has been able to grow over recent years led by a few dominant Member states, well noted during the Voluntary Guidelines on Food Systems and Nutrition adopted by the CFS in January 2021 which didn’t even include a definition of the right to food as a human right. It must be hoped that the team behind the V0 supported by the Steering Committee will take a new round of reflection of how the HLPE can break the current stalemate honouring the right to food as a human right and the special voluntary guidelines developed for it by FAO Member states less than two decades ago. There is a large, unlocked potential implied for a systemic and holistic approach to some of the most pressing problems related to hunger and all forms of malnutrition, besides related challenges regarding better and sustained planetary and environmental health. This may at the same time increase “human rights literacy” the widespread lack of which easily leads to many misunderstandings regarding the right to food and related rights.

Good luck to HLPE with the further process!

*Wenche Barth Eide, emerita*

*Public Health Nutrition Research Group*

*Department of Nutrition*

*University or Oslo, Norway*

*Formerly a member of the Project team for HLPE 4.*

Selected UN references:

FAO (2004) Voluntary Guidelines to support the progressive realisation of the right to adequate food in the context of national food security**.** <https://www.fao.org/publications/card/en/c/cceef08f-0627-5ec9-a8e2-63d7c0b608c2/>

FAO (2009): Right to Food Methodological Toolbox. Tool 2 on Monitoring and evaluation, Vol 2. (in collaboration with some specialized NGOs and academic groups.) <https://www.fao.org/right-to-food/resources/rtf-methodological-toolbox>

FAO (2014) Handbook on Procedures for Human Rights Monitoring (FAO 2014) <http://www.fao.org/3/i3452e/i3452e.pdf>, <https://www.fao.org/right-to-food/resources/rtf-handbooks>

CFS-HLPE (2012) Report no 4 on Social Protection for Food Security, and the Annex to its electronic version, [http://www.fao.org/fileadmin/user\_upload/hlpe/hlpe\_documents/HLPE\_Reports/HLPE-Report-4-Social\_protection\_for\_food\_security-June\_2012.pdf](https://www.fao.org/fileadmin/user_upload/hlpe/hlpe_documents/HLPE_Reports/HLPE-Report-4-Social_protection_for_food_security-June_2012.pdf)*.*

Committee on Economic, Social and Cultural Rights (1999) General Comment no 12 on the Right to

adequate food, <https://undocs.org/E/C.12/1999/5>

Selected recent publications/briefs from FAO Legal Office/ Development Law Service:

FAO (2021) Transforming agri-food systems. Legislative interventions for improved nutrition and sustainability. Preliminary version for public consultation. <https://www.fao.org/3/cb6016en/cb6016en.pdf>

FAO (2019) FAO (2019) Right to adequate food in constitutions. Legal brief for parliamentarians in Africa No. 1 <https://www.fao.org/publications/card/en/c/CA3518EN>

FAO (2019) Framework laws on the right to adequate food. Legal brief for parliamentarians in Africa No. 2. <https://www.fao.org/publications/card/en/c/CA3519EN>

FAO (2020) Right to adequate food in constitutions. Legal brief for parliamentarians in Latin America and the Caribbean No. 1 <https://www.fao.org/publications/card/en/c/CB0448EN>

FAO (2020) Framework laws on the right to adequate food. Legal brief for parliamentarians in Latin America and the Caribbean No. 2<https://www.fao.org/publications/card/en/c/CB0447EN>

## Larissa Sales, Ministry of Health, Brazil

Dear High-Level Panel of Experts on Food Security and Nutrition,

I am providing comments on behalf of the Ministry of Health of Brazil. Thank you for sharing the draft of this valuable discussion.

We appreciate the online consultation for the Draft report on Data collection and analysis tools for food security and nutrition and recognize the importance of the subject.

It is important to emphasize that the promotion of food and nutritional security should encompass the concept of the human right to food, considering healthy food as an eating practice appropriate to local biological and sociocultural aspects, taking into account: i) the needs of each phase of the life course and special dietary needs; ii) the local food culture and the dimensions of gender, race and ethnicity; iii) accessibility from physical and financial point of view; iv) balanced quantity and quality, safety, diversification; and v) sustainable productive practices.

We would like to highlight the importance of intensifying and strengthening countries data collection and analysis capabilities to evaluate the food and nutritional situation of its population, as well as its determinants. This effort should aim at identifying the health, food and nutritional profile of a country’s population, as well as possible gaps and deficiencies, in order to inform public policies on food and nutritional security.

Healthy balanced diets and food security promote all dimensions of individual health and well-being and helps to protect against malnutrition in all its forms. Therefore, it is crucial that safe and healthy food is available to all.

Thank you again and best regards,

Larissa Eloia  
Assessoria de Assuntos Internacionais em Saúde – AISA  
Gabinete do Ministro | Ministério da Saúde

## Maarten de Groot, Permanent Mission of Canada to the Food and Agriculture Agencies of the U.N.

**Committee on World Food Security High Level Panel of Experts report on Data Collection and Analysis Tools for Food Security and Nutrition – Zero Draft**

Comments from Canada submitted in February 2022

**Conceptual Framework**

* The proposed framework is an effective conceptual device. We appreciate how it places the indicators into different spheres (still interconnected), while highlighting that there are different types of data needed to address these spheres.
* Building on this, the framework should better define and visualise cross-cutting dimensions. Although there is discussion about the cross-cutting dimensions within the report, information on incorporating the new dimensions would be useful.
* While the conceptual framework is a helpful data visualization tool, we caution that the graphic in its current form may lead readers to believe there is a hierarchy regarding data collection (i.e. higher priority allocated to individual measurement compared to distal measurements). It would be useful have examples of survey modules or standard methods that correspond to different data levels.
* For the matrix template, we suggest adding an example on obesity and lack of access to healthy foods in both developing and developed countries. Showing an example of a problem where data will not be consistent across sources would be beneficial for illustrating the common bottleneck of comparability across jurisdictions. Another suggested example would be inadequate vegetable (mainly leafy vegetables) and fruit consumption in a population resulting in malnutrition/ micronutrient deficiency.

**Definition of Food Security**

* The new dimensions of agency and sustainability within the broader definition of food security are not entirely clear and could be better-defined.
* Of note, the definition of sustainability should be clearer as the concept generally applies to social, economic, and environmental sustainability. Sustainability could include a measurement of data collection longevity and how environmental, social, and economic sustainability are measured. For example, social sustainability could be measured through surveys.

**Existing FSN Data Collection and Analysis Tools, Initiatives, and Trends**

* The overall trends identified as affecting data generation, analysis, and use for FSN are well covered.
* We would suggest adding a reference to the Integrated Food Security Phase Classification (IPC) in Table 1. Additional information on trends relating to analysis and information on those currently producing high-quality analysis would be useful to add to the existing review, as well as covering smaller trends like tracking diversity in food systems.
* One of the major benefits of digital technology in the FSN space is the ability to take satellite imagery or sensing data (collected easily and quickly) and predict yield levels or drought. In the coming decades, we hope to better anticipate/mitigate food security threats.

**Capacity Constraints**

* The draft covers all types of capacity constraints at different levels, but more information on the consequences of these constraints would be helpful.
* We recommend elaborating on the section on political will and transparency. While the report adequately highlighted constraints on dietary intake assessment, it would benefit from more information on the constraints of biochemical assessment, which often presents the most accurate nutritional status data, especially for micronutrient deficiency and potential toxicity.

**New and Emerging Technologies**

* While the role of new and emerging technologies in data collection and analysis tools for food security is discussed, their role for nutrition is not sufficiently covered. The use of microarray technology and nanotechnology to discover, develop, and deliver intervention strategies to improve nutritional status and reduce the risks and complications of nutrition-related non-communicable diseases could be added. There should be more emphasis on private monitoring that is marketed to smallholder farmers in developing countries.
* Looking at the relevance of new and emerging technologies, predictive modelling based on data that is more easily measured would be useful to help predict famines. There is already work on machine learning, but this would help during the priority-setting and data collection stages.
* With any funding allocated toward new and emerging technologies in this space, access should be ensured for all stakeholders, especially for vulnerable groups, and sustainability should be ensured (e.g. new and emerging technologies progressively relied on by smallholders should be maintained).

**Institutions and Governance**

* Data ownership concerns between private and public should be explored in more detail. Emphasis should be placed on comprehensive and proactive FSN data to account for emerging challenges of data-driven technologies.
* With regard to risks inherent in data-driven technologies, data privacy during the collection stage is a real concern. However, if stakeholders can opt out of data collection processes, the overall quality of these processes will be diminished. Various levels of privacy can be ensured depending on developers and users of technologies. As an example, apps will often choose between a fee-model or a model where data is sold but the app is free.
* Enhanced partnerships between public institutions (such as the FAO) and private actors (i.e. remote sensing apps) may help mitigate conflicts on ownership of data and help to ensure good governance of data and information systems, but the issue of ownership will remain a challenge.

**Potential Policy Pathways**

* Comparable, timely, and inclusive data on hunger and nutrition is needed for stakeholders to gain appropriate insight into the state of world food security and to agree on international action.
* In order to promote effective decision-making and inform policy, we suggest adding references to practical cases that illustrate policies and initiatives aimed at:
  + Improving equity in access to data for FSN policies and decisions, including at grassroots and local levels;
  + Enhancing capacities with respect to data generation, access, analysis and use by different actors; and
  + Harnessing traditional and Indigenous knowledge.
* For example, Canada has several surveys that incorporate Traditional Foods and Food Security:
  + The Indigenous People’s Survey takes into consideration the different harvesting practices of Metis, Inuit, and First Nations.
  + Independent surveys like the First Nations Food, Nutrition, and Environment Survey examine access to traditional food.
* The ability to disaggregate data and food security measurements by vulnerable population should be further explored, as it is difficult to obtain adequate sample size to measure intersectionality with sufficient granularity. Within Canada, we have several surveys that enable us to consistently measure food security data, but due to confidentiality restrictions we cannot break down our food insecurity statistics by vulnerable populations and further segment the populations.
* Looking at other initiatives of interest, a reference to the IPC’s work with Cadre Harmonisé on hunger mapping could be added.
* The "black box" issue should be further examined to enhance transparency. A relevant example to cite may be the IPC, where sample sizes and data sources are not always explained in their analysis.

**General Feedback**

* In terms of gaps to be addressed, the report should identify organizations/stakeholders who are already collaborating together in the FSN space. A case study on data needs that were explored and fulfilled through coordination would be helpful to demonstrate the benefits of collaboration.
* Looking at the level of representation of certain topics in relation to their importance, the agency aspect of data governance is well explained, but seems to be over-represented across the document. The sustainability aspect is under-represented relative to its importance and implications for long-term food security. There should be more focus in the report on inclusion within data measurement and monitoring in order to captures all the dimensions of food insecurity. Furthermore, the risk posed by poor/lacking interoperability is understated in the current version.
* In terms of language and formatting, some of the information explaining the different technologies, such as block chain, is quite lengthy. This information may be well-suited to be added to an annex.

**Linkages to the G7’s Work**

We invite CFS to examine working being done by the G7 on data. Their vision of improved global food security monitoring and analysis provides a strong foundation of what the ideal FSN data systems should include and could be informative for the drafting of the report. The new G7 principles could be used as examples of enhancing data quality and monitoring.

**Linkages to the OECD’s Work**

We invite CFS to examine working being done at the OECD on data gaps related to food systems. The OECD has identified filling data gaps as a major challenge and aims to provide tools to policy makers for identifying, prioritizing, and addressing data/information/evidence gaps. At this stage, it is unknown whether the OECD intends to explore data-driven tools, governance and technologies to the same extent alluded to in the HLPE report. The OECD has been working on a report titled, “Overcoming data gaps on food systems”, which includes in-depth analysis on:

1. Food Security and nutrition challenge - Food Assistance;
2. Livelihoods challenge – Gender Inclusivity; and
3. Environmental sustainability challenge - Environmental impacts along the food supply chain.

## Athur Mabiso, IFAD, Italy

**Comments on the HLPE Report version 0: Data collection and analysis tools for food security and nutrition**

Athur Mabiso  
Senior Technical Specialist (Economist)  
Research and Impact Assessment Division, IFAD  
January 2022

**Comments**

As discussed in Chapter 4 of the report, there is need to explore the application of big data approaches and artificial intelligence (AI) to complement existing data tools. While AI has promise to enhance information systems that are relevant for food policy action to address issues of food insecurity and malnutrition, it is not always clear where the priorities lie. In this regard, the report could help shape the global conversation on some of the priority areas where data collection and analysis tools might provide avenues for broadly improving food security and nutrition.

The combination of survey methodologies as well as alternate data gathering approaches, including crowd-sourced data, should definitely all be on the table as highlighted in the report. However, there are varied limitations depending on the approaches, that will need to be taken into account. For instance, while big data approaches are quite useful for predictive analytics, there are limitations to using these kinds of data to assess impacts of interventions/investments designed to improve food security and nutrition. General guidelines on how these different approaches can and should be used will be important to avoid misuse.

This will also imply investments in human capacities as well as technologies, especially in developing country contexts.  To be able to leverage big data analytics for food security and nutrition significant human capacity is required and it is not yet clear to what extent governments will need to invest in their current workforce versus the future generation (particularly youth and children in secondary schools). Undoubtedly, a link between the education investments, curricular changes and issues of food security and nutrition will need to be made. The report may want to include a discussion on this topic – how to leverage investments in education and technology to address food security and nutrition challenges in developing countries.

With regard to traditional data collection approaches, which largely include household and community surveys as well as censuses, the quality of data obtained from these approaches still needs to be improved and just because new data approaches are emerging, we should not lose sight of the critical data obtained from traditional means. This will mean continuing to invest in and work closely with national statistical agencies and ministries of agriculture, health, nutrition, and gender (across disciplines) to generate statistics that are relevant for all actors to make a difference in food security and nutrition.

Following the COVID-19 pandemic, the world witnessed challenges in collecting up-to-date data on food security and nutrition. However, one tool that evidently provided vital information was the use of telephone surveys. For example, the World Bank launched its high-frequency telephone surveys, which allowed collection of timely data useful for policymaking. Going forward, there will need to be a careful assessment on how best to leverage this approach of collecting data, including determining best practices to ensure quality of data collected through this approach. At the same time, the approach of using telephones to conduct surveys has significant limitations that ought to be recognized and taken into account. For instance, the individuals who are likely to have access to a telephones will often be better off compared to those who live in the remotest rural areas and where cell phone network coverage is weak or does not exist. Moreover, there is evidence that women and some of the elderly people in poor communities might not have access to a telephone. As such, statistics on food security and nutrition generated through telephone surveys, particularly in developing country context, may have significant biases that could lead to erroneous policy decisions and actions. This needs careful consideration and should be emphasized in the report.

Thus, as part of improving the capabilities of nations to collect data using digital tools such as cell phones and tablets, there will be a need to invest in the necessary network infrastructure, enabling access for all, in addition to working on digital literacy. More traditional approaches may continue to be relevant for quite some time, including last-mile connectors (e.g. extension agents, mobile money merchants, etc.) who interface with many individuals who are not digitally connected or literate. Many such “data agents” work within government ministries at community levels and may prove to be a crucial part of the system for data collection for food security and nutrition.

The report aptly highlights the risks associated with the new data/digital technologies used for data collection and in particular data analysis. One of the issues at hand is the lack of a global data governance framework. The report may benefit from citing the work that is being undertaken by the UN High-Level Committee on Programmes (HLCP) where a global data governance framework will be looked into as part of its workstream under pillar 2, **new global public goods**: <https://unsceb.org/session-report-369>.

While this work is broader than food security and nutrition, it is relevant an perhaps there is a need to highlight how a global data governance framework might be put in place specifically to address issues of food security and nutrition.

Regarding recent initiatives (section 5.5 of the report), it may be worth including for review, the work of TetraTech supported by the Bill and Melinda Gates Foundation where several development partners are providing technical input, including IFAD: [Enabling Crop Analytics At Scale](https://cropanalytics.net/).

A separate initiative also worth looking at is the [Development Data Partnership](https://datapartnership.org/), which includes UNDP, IMF, IDB, World Bank and OECD together with several private sector companies such as Google, Meta (Facebook) and Esri.

## World Food Programme Nutrition Division

The document seems to be quite theoretical, and it feels it misses a bit the linkage between the need the data is trying to address; and what is required to achieve that. There is a practical implementation component that could be reinforced throughout the document to make it as useful as possible.

Please find list of more detailed comments:

**1. Conceptual framework and analytical matrix**

* Data is not defined within the document. Agreeing on what data is important to define challenges in collecting, analysing, and using it for decision-making.
* It would be helpful to explain why better data is needed and frame the magnitude of the challenge.
* Differentiating between different types of data might also be useful. Different data present different challenges, opportunities and uses. Additionally, the report seems to be focusing on surveys and quantitative data collection. Recognising the important of qualitative and ethnographic data collection might be important, particularly when trying to measure very complex processes and outcomes. This might be particularly relevant when measuring the added dimension of “agency”.
* Systems should not be limited to agri-food and health systems. Other systems such as social protection or education systems might be key to achieve food and nutrition security.
* This matrix proposed broadly follows traditional MEL systems, though simplifies what is a very complex system. It might be helpful to better detail:
  + How and by who data is used for decision-making
  + The processes through which decision-making and realities on the ground feed back into defining priorities and the data collection and analysis process.
  + Data interpretation plays an important role in the decision-making cycle
  + How does one decides on priorities?
* The report does a good job at detailing constraints to generate data in food security and nutrition. However, in addition to addressing constraints, it might be more practical to help decision-makers generate evidence/make use of evidence within existing constraints.
* The evidence priorities should be guided by what a policy/programme/initiative is aiming to achieve and how it intends to do so. As a result, it might be helpful to frame the first step of the matrix in terms of research questions and hypothesis to be tested or validated rather than in terms of “evidence priorities”.
* In the matrix, the cross-cutting FSN dimensions should be integrated within each of the core dimensions rather than being a category on their own. They should be guiding what to look at in the different categories of the conceptual framework. For example, “access for those with low consumption” should have research questions declined under macro, system, personal and individual levels.

**2.    Additional dimensions of agency and sustainability.**

* Definitions of “agency” and “sustainability“ are needed. Without clear definitions, harmonizing measurement and data collection will be difficult. The report needs to be clear on what we are measuring, why and how.
* Concept of “agency” requires more granular data. For example, data at the household level can hide nuances at the individual level too. It is important to discuss the lack of data representative at sub-national levels but at the level of other relevant levels/groups to reflect different vulnerabilities such as livelihoods, urban vs. rural, refugee camps, people with disability etc.

**3. The V0-draft reviews existing FSN data collection and analysis tools, initiatives and trends.**

* Generally, it might be useful to also highlight or point to long standing sources of data that are collected on a regular basis and can be used to inform food and nutrition security policies and programming.
  + Sources of data malnutrition and health data (e.g. DHS stat, JME etc.)
  + Sources on food expenditure and consumption data (e.g. LSMS)
  + Price data coming from CPI
* Additional existing initiatives that can be added add (note some of them are still at early stages)
  + Prices and cost: Food prices for Nutrition at TUFTs, FNG Stat at WFP
  + Environmental data: GLEAM at FAO
  + FCT: Periodic Table of Foods Initiatives
  + Bringing data sources together and visualising different dimensions: Hunger Map Lives at WFP
  + Costing tools: SEEMS at the University of Washington
* Source of data or initiatives looking at other than quantitative data should be added.
* The following challenges to evidence use could be considered:
  + Generating data at the right level/ need for sub-national and individual data: data often does not have the right level of disaggregation (e.g. livelihood vs. administrative zones) and data at the sub-national level is often missing or incomplete which hides some of the nuances within specific countries and context. There is a need for more granular individual data to reflect different vulnerabilities (e.g. adolescent girls vs. 50 year old man).
  + Regularity of data: Recognising the cyclical or changing nature of FSN requires data that is collected more frequently. For example, seasonality matters in many contexts and cuts over different levels within the framework.
  + Data documentation and data collection tools need to be available. Otherwise, this can create risks in how the data is being used.
  + Timeliness is not limited to the data collection and analysis stage. Discussion, review, publication, graphics can delay access to this information.

**4.    Capacity constraints**

* More attention could be given to the issue of consolidating existing data or making different data talk to each other rather than generating new data. For example, the work on nutrition information systems and efforts to consolidate existing monitoring data for decision-making. This also links with the importance of developing coding systems to link different sources and types of data. Touching upon innovations around this would be useful.
* More emphasis should be given to strengthening national capacity to collect timely, quality, and relevant data. Fragmentation of the data collection landscape within government agencies should be also discussed. In many countries agricultural, food and nutrition data are not collected by national statistics offices but by different ministries.

**5.    Emerging technologies**

* Additional possible uses of new technologies:
  + Calculate environmental impact of policy/programmes/initiatives
  + Understand trade-offs between different policy options
* Risks of new technologies are very high-level and not disaggregated across users and actors/players. It would be helpful to provide a framework to understand risks for different groups. For example, are risks for small-holder farmers the same as for retailers? A framework to weigh trade-off in terms of risks that can materialize could be helpful.
* Important to highlight those new technologies might exacerbate some of the capacity constraints already existing and outlined in the report.
* The section on governance is somehow short compared to the rest of the report but is an essential aspect, particularly as we improve coordination, harmonization and sharing of information.

Some additional comments on specific sections of the document are provided below:

* On page 4, reference is made to Figure II in (UNICEF, 1990, Figure II). This has been updated and thus might consider updating the reference and associated thinking (if changes are considered large enough)
* In 1.1 Within the food and nutrition system; there is a continuous flow of data within existing information systems. It could be beneficial to reinforce data collection includes linking it with existing data points and/or collecting data for a specific purpose.
* In 1.1; it might be worthwhile to reinforce that data should only be collected if it is going to be used; and thus, contributes to answering the main hypothesis developed.
* Under 2. P18 I would add this the absence of a common agreement on a FSN framework within stakeholders also influences priority setting as not all stakeholders might be aligned within their policies/strategies but also understanding on how to measure FSN and its drivers. This can influence outcomes of initiatives, and uptake as there are different lenses used by different stakeholders.
* Under 2. P18, suggest adding under timelines that pending on context; gaps within the framework might be large and not always possible to fill (as data collection cannot address all and/or its unfeasible to do so). There might also be contexts where it is impossible to fill the gap due to external factors (as expressed in box on conflict)
* Under 2. P18, we would also add underutilization that it needs to address a concrete need, and utilization is linked to an identification of users before undertaken the exercise. This needs to be considered.

## Jelmer van de Mortel, Rabobank, Netherlands

CFS Online Consultation

1. The V0-draft introduces a conceptual framework that orders the components of the food security and nutrition ecosystem based on their proximity to people’s immediate decision making sphere, from the macro to the individual levels, and describes a four-stage data-driven decision making cycle for food security and nutrition (FSN), from priority setting to data utilization. Use of the two is illustrated through a matrix template that facilitates the concurrent operationalization of the conceptual framework and data driven decision-making cycle to address issues relevant for FSN.

*a. Do you find the proposed framework an effective conceptual device to highlight and discuss the key issues affecting data collection and analysis for FSN?*

Figure 3 uses the conceptual framework and data-driven decision-making cycle to discover issues relevant for FSN. The next step would be to use the findings and discuss know to address the issues. However, definitions for the cross-cutting FSN dimensions are not provided and how do they interact with the determinants is not clear.

*b. Do you think that this conceptual framework can indeed contribute to providing practical guidance for data collection for FSN?*

The framework provides an overarching guidance and structural way to approach the data collection process. However, the steps are too high level and are not explained in enough detail to provide practical guidance. For example, it is not elaborated what the subsequent steps are after filling out the matrix template. Moreover, Figure 2 and Figure 3 do not elaborate on the cross-cutting dimensions. Lastly, data collection and analysis approach would differ per levels described which is not addressed in the framework.

*c. Do you think that this four-stage data driven decision making cycle for FSN addresses the key steps in the data collection and analysis process for FSN? Where do you see the more relevant bottlenecks in the data driven decision making cycle for FSN?*

The second step around data could be split in two: 1) assess existing data: quality, completeness, accuracy and assess whether it is sufficient to answer the questions posed 2) if existing data is not sufficient, collect new data. Step around collection of new data deserves a separate process to ensure selection of the right collection method, selection of the right collection party, ensuring that collected data will be high quality, minimising the bias (e.g., sample bias, measurement bias, observer bias) etc. Final step, utilisation, should include the feedback mechanism to assess whether the data did answer the questions posed in step 1. Additionally, it would be beneficial to explain each step in more detail.

*d. Can you offer suggestions for examples that would be useful to illustrate in a matrix template that facilitates the operationalization of the conceptual framework and data driving decision-making cycle to address issues relevant for FSN?*

It would be helpful to explain in Example 1 whether data collection is done across all levels and if yes, how do findings affect each level and further evidence priorities.

2. The report adopts the broader definition of food security, proposed by HLPE in 2020, which includes the two dimensions of agency and sustainability, alongside the traditional four of availability, access, utilization and stability.

*a. Does the V0-draft cover sufficiently the implications of broadening the definition of food security for data collection, analysis and use?*

Adding the definitions of 6 FSN dimensions would provide more clarity. The implications on the data

collection, analysis and use are not sufficiently addressed, the dimensions are not included in the data driven decision making cycle and the matrix.

*b. What type of data will be most useful in measuring food security dimensions such as “agency” and “sustainability”?*

3. The V0-draft reviews existing FSN data collection and analysis tools, initiatives and trends.

*a. Do you think that the review adequately covers the existing ones? If not, what would you add?*

*b. Do you think that the trends identified are indeed the key ones in affecting data generation, analysis and use for FSN? If not, which other trends should be taken into account?*

Several challenges are presented in Chapter 2. In regard to gather, curate, analyse data step, a challenge of data combination and consent are not mentioned. Especially when existing and newly collected data need to be combined to lead to insights, it is important to understand whether data can be combined and based on which principles. Big emphasis should be made on taking account consent of the data owner/producer when collecting new data and using existing one. With respect to translation step, a challenge to minimise biases is not included. Additionally, for utilisation step, it would be good to elaborate how do we ensure that data owner ultimately benefits from the learned insights as well.

*c. In particular, can you offer feedback on how digital technology, internet of things, artificial intelligence, big data, and agriculture 4.0 affect FSN? What is their likely impact in the coming decades?*

Use of new technologies can reduce the cost, improve the reach and speed of getting the data, improve decision making and provide additional insights.

However, it needs to be ensured that people from low-income countries that have less digital access and literacy can also benefit from the technology instead of increasing the gap. Therefore, the technology needs to be adapted to be easily understood, to be operatable with low internet connectivity, training and education needs to be provided.

4. The report discusses capacity constraints at local, national and global levels, with a special focus on statistical and analytical capacity.

*a. Do you think that the V0-draft covers all the issues – and their consequences - of capacity constraints at the different levels?*

*b. If your answer a. was “no”, then what additional issues regarding capacity constraints should be added to the analysis?*

In regard to the local and country-level constraints, the participation constraint is not addressed. When new data collection involves participants (e.g., surveys), the motivation to participate in the study might be limited without presenting the right incentives. There should be consideration about which incentive to present so that it doesn’t motivate providing the wrong/incomplete data for the sake of receiving an incentive. Moreover, the incentive for data collector shouldn’t conflict with the incentive of participant (e.g., if data collector benefits more for recording larger field size but the participant benefits more for recording a small field size). Additionally, participation of some groups might be underrepresented due to residing in a remote location or lack of digital infrastructure which might skew the data and limit the insights.

5. The V0-draft discusses the role of new and emerging technologies in data collection and analysis tools for FSN.

*a. Do you think that the presentation of new and emerging technologies captures the main trends? What other new and emerging technologies could be discussed in the report?*

Another technology that can be added is synthetic data. Synthetic data is artificially generated rather than created by actual events. It still reflects the real-world data, its patterns and relationships. Synthetic data addresses the challenge of availability of high amount of quality data and real data usage restrictions (e.g., confidentially, privacy). It has a great potential for AI/ML model training and validation.

*b. In what other ways can new and emerging technologies be relevant to each of the stages/aspects of the FSN data value chain/data lifecycle (i.e., Define evidence priorities and questions; Review, consolidate, collect, curate and analyse data; Translate and disseminate results and conclusions; Engage and use results and conclusions to make decisions)?*

*c. In what other ways can new and emerging technologies be relevant to each of the FSN dimensions (i.e., Availability; Access; Utilization; Stability; Agency; Sustainability)?*

Section 4.3 elaborates how digital technology supports the FSN dimensions. It is not clear why this section is needed as it is the only place where the dimensions are mentioned in detail. There is no transition from 4.2 and 4.3 and introduction of the section is missing.

*d. What are some of the issues with respect to ethical use of data, access, agency and ownership linked to these new and emerging technologies that should be further discussed in the report?*

Not specific to the use of emerging technologies, but there needs to be focus on educating data owners/data producers about privacy, consent, data usage and which rights they have. Data owners/data producers should be informed in detailed about the purpose of using and processing the data and whether it is shared beyond the organisation collecting it.

There is also regulatory uncertainty with respect to the use of new and emerging technologies and creation of laws. Often there is a delay with introducing laws due to limited understanding of the impact that the technology could have.

6. The report reviews issues concerning institutions and governance for data collection, analysis and use, with a focus on data governance principles, data protection, transparency and governance of official statistics, the implications for governance of an increasingly digitalized world, and examples of initiatives addressing governance challenges.

*a. Are there any issues concerning governance of data for FSN that have not been sufficiently covered in the draft report?*

*b. What are some of the risks inherent in data-driven technologies for FSN? How can these risks be mitigated? What are some of the issues related to data privacy, access and control that should be carefully considered?’*

*c. What are the minimum requirements of an efficient FSN data system and how should these be prioritized?*

*d. Which mechanism or organization should ensure good governance of data and information systems for FSN? How to regulate and mitigate potential conflicts between public and private ownership of data?*

*e. What are the financing needs and the financial mechanisms and tools that should be established to allow all countries to collect, analyse and use FSN data?*

7. Drawing on HLPE reports and analysis in the wider literature, in the next draft the report will outline examples of potential policy pathways to address challenges to data collection and analysis tools for FSN.

*a. What data do the global community and international organizations need in order to gain an appropriate insight into the current state of world food security and to agree on and design international action to improve it?*

*b. What data do countries need for more effective decision-making for food security and nutrition and to inform policies for the transformation of food systems?*

*c. Please suggest references to cases that illustrate policies and initiatives aimed at:*

i. improving equity in access to data for FSN policies and decisions, including at grassroot and local levels;

ii. enhancing capacities with respect to data generation, access, analysis and use by different actors;

iii. specifically harnessing of traditional and indigenous/first nations knowledge.

*d. Please provide references and examples of success: good data leading to good policies (context-specific), or any lessons to be learned from a failed data collection/utilization attempt.*

*e. Please also suggest any initiative and good practice aimed at addressing:*

i. the specific constraints of generating a minimum set of indicators in conflict and disaster- affected areas;

ii. capacity gaps of local institutions, farmers’, producers’ and workers’ organizations in generating, sharing and analysing good quality data, as well as in using data to inform decision-making in food systems;

iii. capacity gaps at country level to generate and use data in policy-making processes, monitoring and reporting related to SDG2; including with respect to financial resources, human resources, data management, legislation and the enabling environment and FSN governance.

*f. Please also provide any additional references with respect to:*

i. minimum data requirements (baseline) for FSN at country level;

ii. qualitative data;

iii. data representing traditional knowledge.

8. Please provide your feedback on the following:

*a. Are there any major omissions or gaps in the V0-draft?*

*b. Are topics under- or over-represented in relation to their importance?*

*c. Are there any redundant facts or statements that could be eliminated from the V0-draft?*

*d. Are any facts or conclusions refuted, questionable or assertions with no evidence-base?*

General feedback below.

Considering the impact of smallholder farmers on the food systems and food security and that data challenges, limited understanding of privacy, lack of data ownership are significantly affecting that population, it was interesting to see that report didn’t explicitly address the smallholders.

Although the sustainability dimension wasn’t defined in the report, every time it is mentioned, it refers to the environmental sustainability only, excluding the social and economic aspects.

The lack interoperability of data is under-represented in the report. Integrating data from multiple sources without uniform protocols is a big barrier for making the most of the available data. There needs to be more focus on developing uniform and widely accepted standards in regard to data collection, data definition, formatting.

Lastly, report addresses a lot of topics and challenges at the same time. The story is not so coherent and sometimes hard to focus on the goal of the report.

1. <https://foodsystems.community/food-producers-declaration-for-the-united-nations-2021-food-systemssummit/> [↑](#footnote-ref-1)
2. It has been observed until recently, during the COVID-19 pandemic (FAO, 2020) [↑](#footnote-ref-2)
3. See in the [UNPFII Recommendations database](https://esa.un.org/unpfiidata/UNPFII_Recommendations_Database_list.asp?TargetPageNumber=1&action=Search&lang=&orderby=&dir=&PageSize=20&masterkey=&SearchField=AnyField&SearchOption=Contains&SearchFor=&PageSizeSelect=20) [↑](#footnote-ref-3)
4. ,4,5,6 Retrieved from [FAO and Alliance of Bioversity International and CIAT, 2021. Indigenous Peoples’ food systems: insights on sustainability and resilience from the front line of climate change](https://www.fao.org/3/cb5131en/cb5131en.pdf) [↑](#footnote-ref-4)
5. [↑](#footnote-ref-5)
6. [↑](#footnote-ref-6)
7. Retrieved from FAO. 2021*. The White/Wiphala Paper on Indigenous Peoples' food systems.* Rome. <https://doi.org/10.4060/cb4932en> [↑](#footnote-ref-7)
8. Kempeneer, S. (2021). A big data state of mind: Epistemological challenges to accountability and transparency in data-driven regulation. Government Information Quarterly 38(1),101578. 1-8. <https://doi.org/10.1016/j.giq.2021.101578>. [↑](#footnote-ref-8)