

# The Food Systems Summit - A call for integrating the role of food science and technology in sustainable food systems

9 September 2021 (available online [here](#))

## Introduction

Throughout the history of mankind, food has played a critical role in all cultures by providing nourishment, improving our wellbeing, and connecting us with each other and our natural environment. Food systems not only transform agricultural produce into tasty, nutritious, safe, affordable and culturally acceptable foods, but also enable economic prosperity through the generation of income and creation of employment. However, the way that we produce, transport, preserve, and consume food utilises significant amounts of finite resources and has an adverse impact on the environment. Yield losses and waste account for an important portion of the environmental impact. Food accounts for approximately 60% loss in biodiversity and about a quarter of global greenhouse gas emissions with agriculture using 50% the world's habitable land and 70% of fresh water<sup>1,2</sup>. Furthermore, current power imbalances within present food systems contribute to increasing socioeconomic inequalities and poverty resulting in underlying health, ethical and human rights issues which translate into poor diets and all forms of malnutrition.

These problems are likely to continue and possibly get worse as the global population increases, war, political, and cultural conflicts continue to displace people and create humanitarian crises in refugee camps and beyond, natural disasters are exacerbated by climate change, and the world faces the COVID-19 pandemic. Therefore, current food systems are not sustainable, and it is necessary to transform our food systems to assure food security and address hunger and malnutrition without compromising the health of our planet.

## The Food Systems Summit

The importance of transforming current food systems was recognised by the UN Secretary General who announced in early 2020 the organisation of the UN Food Systems Summit (FSS) to empower all people to leverage the power of food systems to achieve all 17 Sustainable Development Goals (SDGs) by 2030.<sup>3</sup> During the last 18 months there have been extensive consultation and engagement with various stakeholders across 140 countries, including relevant UN agencies, governments, SMEs, representatives from indigenous people, youth and women's groups, civil society, the private sector, scientists, and the academia. These consultations were followed up with a pre-summit in Rome from 26 to 28 July 2021<sup>4</sup> that was physically attended by around 500 people, together with an audience of around 20,000 online, representing diverse stakeholders.

The pre-summit covered a wide range of topics including the nexus between 'people, planet and prosperity', the importance of food in connecting all people, the role of marginalised communities, women, and youth, the impact of the food system on climate change, the resilience to shocks, the importance of local food systems and indigenous peoples, systems thinking and multi sector collaboration, the role of the private sector and the finance systems. Government representatives shared the outcomes of the National Food Systems Dialogues which they had engaged in and shared their perspective and expectations on the necessary food systems transformation.

The main summit will take place on 23 September 2021 during the UN General Assembly in New York where member states will share commitments and where the UN Secretary General will issue a statement of actions together with pathways for food systems to deliver SDGs by 2030.

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<sup>1</sup> <https://www.wwf.org.uk/what-we-do/food>

<sup>2</sup> <https://ourworldindata.org/environmental-impacts-of-food>

<sup>3</sup> <https://unfoodsystems.org>

<sup>4</sup> <https://www.un.org/en/food-systems-summit/pre-summit>

## The role of food science and technology

In their paper, Bounie et al. (2020)<sup>5</sup> discussed the role of Food Science and Technology (FST) in humanitarian response and highlighted how FST could contribute to humanitarian food systems. Many of the issues discussed in that paper are relevant to current food systems, in particular the importance of developing resilient local food systems in response to current and future shocks and the use of the core principles of FST to process local raw materials using appropriate, robust and frugal technologies to produce nutritious, safe, affordable, and culturally acceptable foods. The centrality of beneficiaries in the humanitarian response also points to the need to develop food systems that are primarily people centred and not just driven by technology or disembodied efforts.

FST can develop practical, affordable, and sustainable processing technologies to improve and diversify local practices and produce value added foods in local communities within integrated territorial governance systems. It can facilitate year-round access to convenience and healthy foods, including complementary foods, for improved diets, contribute to saving time and labour, reducing food losses by preserving foods and supporting local distribution and trade, generating income, and creating employment in particular for youth, women, landless labourers and migrants and therefore contributing to the revival of local economies. It can also help strengthen the cultural heritage and sovereignty of communities. The role of FST was explicitly referred to in the report issued by the High-Level Panel of Experts of the UN Committee on World Food Security (2020)<sup>6</sup> on the Impact of COVID-19 on Food Security and Nutrition.

The FSS recognised the role of science, technology, and innovation in transforming food systems and a Scientific Group was established with the task to ensure that the science underpinning the 2021 summit is robust, broad, and independent. The Scientific Group had extensive consultations with many stakeholders and partners and identified the following seven science driven priorities to end hunger and protect the planet<sup>7</sup>.

- End hunger and improve diets
- De-risk food systems
- Protect equality and rights
- Boost bioscience
- Protect resources
- Sustain aquatic foods
- Harness digital technology

These priorities reflect the Scientific Group's evidence base, documented through around 50 reports and briefs<sup>8</sup>. However, the role of FST has not been addressed in detail in these priorities and the focus tends to be on the use of science in improving farming practices and natural resources management. Furthermore, the contribution of FST has not been specifically highlighted in the recent IPCC report (2021) 'AR6 Climate Change 2022: The Physical Science Basis'<sup>9</sup> and among the relevant disciplines that have been addressed in the 'World scientist's warnings to humanity' reports for tackling the present planet's disturbances<sup>10</sup>. In a comment in the Lancet, the impact of global warming on biodiversity and health are discussed and the authors are calling governments to support the redesign of the production and distribution of food to limit the global temperature increases<sup>11</sup>. However, the role of FST is not discussed.

The FSS offers a very good opportunity for the FST community to engage in and be acknowledged as a key dimension of the sustainable food systems debate and it is a concern that this opportunity may be missed.

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<sup>5</sup> <https://doi.org/10.1016/j.tifs.2020.06.006>

<sup>6</sup> [http://www.fao.org/fileadmin/templates/cfs/Docs1920/HLPE\\_2020/New\\_HLPE\\_paper\\_COVID\\_EN.pdf](http://www.fao.org/fileadmin/templates/cfs/Docs1920/HLPE_2020/New_HLPE_paper_COVID_EN.pdf)

<sup>7</sup> *Nature* **597**, 28-30 (2021); doi: <https://doi.org/10.1038/d41586-021-02331-x>

<sup>8</sup> <http://go.nature.com/3dtoazu>

<sup>9</sup> <https://www.ipcc.ch/report/ar6/wg1/>

<sup>10</sup> <https://www.scientistwarning.org/>

<sup>11</sup> [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(21\)01915-2/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)01915-2/fulltext)

Food scientists, technologists, and engineers can contribute to the proposed FSS roadmap for development of food systems transformation, utilising the expertise of the private sector in post-harvest operations while integrating social, economic, and environmental dimensions.

The September Food Systems Summit will constitute a milestone but will lead to further research and implementation work to transform current food systems. The role of FST should be made more visible, recognised, and utilised, in particular in the following areas.

- Transforming agricultural raw materials from local biodiversity into value added nutritious, safe, culturally acceptable, affordable products
- Reducing food loss and waste, as well as preserving food to avoid “hungry seasons”
- Developing resilient food systems in at risk or crisis-affected areas, including from conflicts and pandemics and incorporation of FST in the Humanitarian-Development-Peace nexus
- Ensuring that those engaged in food processing and other post-harvest activities have, at least, decent working conditions and wages and, whenever possible, benefit from the many incentives that can be drawn from the unique value added by FST
- Building on humanitarian experience to identify, develop, and share effective and evidence-based case studies that demonstrate how FST could help mitigate current and future shocks and thus contribute to the sustainable transformation of food systems
- Preparing future generations by raising awareness of the importance of food through personal experiences, education in schools, training and redesigning FST programs in universities on how FST may practically contribute to new behaviours regarding food use at household and industry levels in the transition of food systems

## **Conclusions**

The current food systems are not sustainable, have an adverse impact on the environment, increase poverty and have not solved the prevailing problems relating to global chronic food insecurity, hunger, malnutrition, and humanitarian crises. Following the recognition by the UN of the need to transform food systems to achieve the SDGs by 2030 and the launching of a UN Food Systems Summit to be held in 2021, significant progress has been made through the engagement of many stakeholders from all over the world. The recent pre-summit in Rome brought together multi sector stakeholders and discussions were had on key issues that will make a difference to human and planetary health by transforming the current food systems. In the summit itself in New York in September 2021 during the UN General Assembly, the focus will shift to the implementation plans in countries, and this must be done urgently if the 2030 agenda is to be met.

Despite the extensive consultation processes that have taken place to identify the problems in current food systems and in developing strategies to resolve current shortcomings, the important role of FST in post-harvest operations has not been adequately addressed in the FSS through any of the five action tracks or the priority areas identified by the Scientific Group. Therefore, it is important that the role of FST in developing sustainable global food systems is recognised and included in the FSS agenda and implementation plans.

Furthermore, appropriate stakeholders (governments, relevant UN agencies, NGOs, the research community, the private sector, and other relevant actors in the food system) should work together so that the UN SDGs are achieved by 2030. This should result in a better world for all; a world that is devoid of the prevailing global humanitarian problems related to hunger, malnutrition, conflicts, poverty, and inequality without adverse impacts on the environment; a world that is more diverse and inclusive for all; a world sustained by resilient, and sustainable local and global food systems.

## **Humanitarian Food Science and Technology Group**

*This brief was prepared by the Humanitarian Food Science and Technology Group, a global group whose main objective is to increase awareness of the role of food science and technology in humanitarian response and to facilitate humanitarian projects where the application of food science and technology would lead to capturing social, economic, environmental and health benefits to affected communities.*